

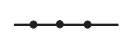
香港天文台 HONG KONG OBSERVATORY

二零一零年的熱帶氣旋路徑圖  
TRACKS OF TROPICAL CYCLONES IN 2010

每日協調世界時零時位置(香港時間上午八時), 符號中央數字代表該月的日子  
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



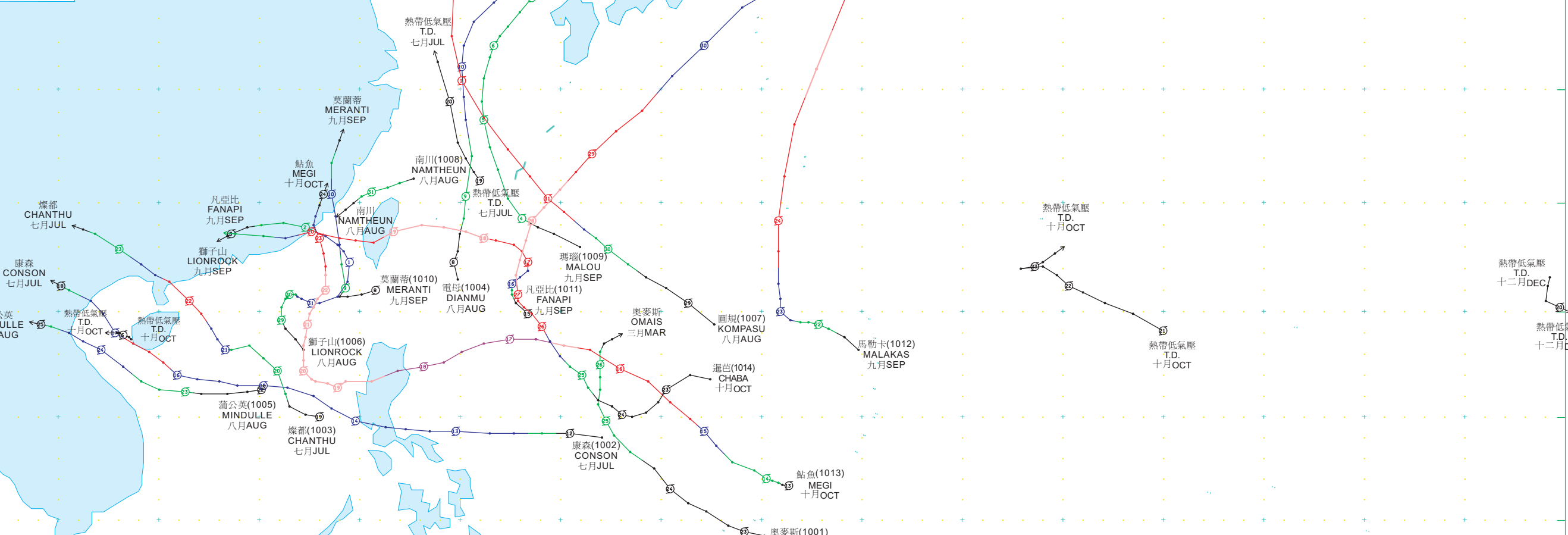
強烈熱帶風暴 Severe Tropical Storm



熱帶風暴 Tropical Storm



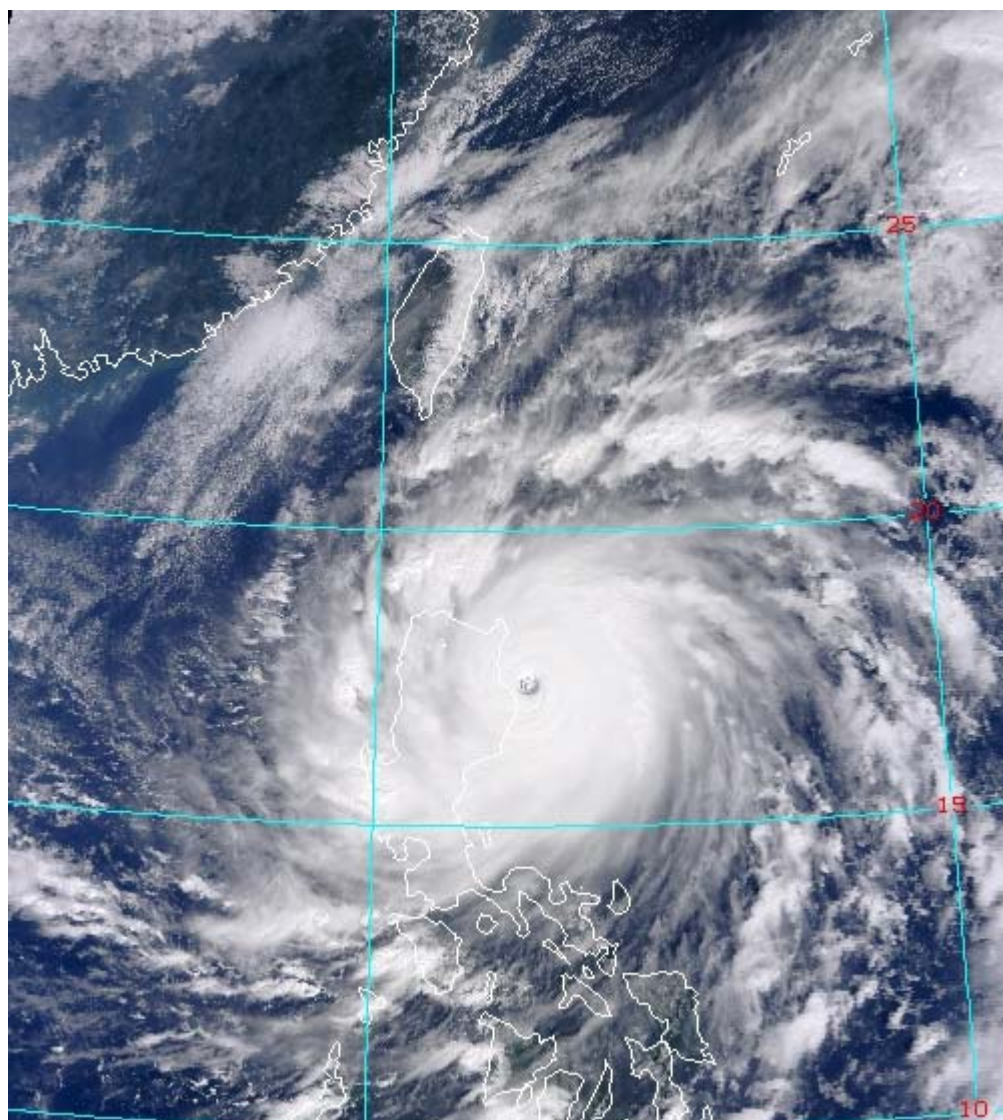
熱帶低氣壓 Tropical Depression



# 二零一零年熱帶氣旋

# TROPICAL CYCLONES

# IN 2010



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551.515.2:551.506.1(512.317)

## **封面**

超強颱風鮎魚於二零一零年十月十八日上午10時25分的真彩衛星圖像。  
〔此衛星圖像接收自美國太空總署地球觀測系統的Terra 衛星。〕

## **Cover**

True colour satellite image of Super Typhoon Megi captured at 10:25 a.m. on 18 October 2010.  
(The image was captured by the Terra satellite of the Earth Observing System operated by the U.S. National Aeronautics and Space Administration.)

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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有過短暫中斷外，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。由於有氣象偵察機提供報告（此項服務已在一九八七年八月停辦）及氣象衛星圖片，在原本資料短缺的海洋上追蹤熱帶氣旋位置的工作比從前順利得多。因此，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》，但內容則大致上維持不變。本年報由一九九七年起以中英雙語刊出，一年後加設電腦光碟版，並在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。

爲了能盡早滿足傳媒、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，供有需要的人士使用。初時，天文台只就那些曾導致天文台發出烈風或暴風信號的熱帶氣旋編寫臨時報告，但自一九六八年起，天文台爲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

爲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」分爲三級，即「颱風」、「強颱風」和「超強颱風」。本年報根據熱帶氣旋中心附近的最高持續地面風速，把熱帶氣旋分爲以下六個級別：

- (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<sup>#</sup> (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。

除特別列明外，在本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；每日雨量為該日香港時間午夜前24小時內的總雨量。

### 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。但由二零零零年開始，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。表1.1是二零零九年一月一日起生效的熱帶氣旋名單。這套名單經颱風委員會通過，一共有140個名字，分別由14個國家和地區提供。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，亦是向國際傳媒發放熱帶氣旋消息時採用的規範名稱。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“1001”代表在二零一零年區內第一個被日本氣象廳分類為熱帶風暴或更強的熱帶氣旋。在本年報內，此編號會顯示在熱帶氣旋名稱後的括弧內，例如熱帶風暴奧麥斯(1001)。

### 1.4 資料來源

本年報內的海平面氣壓及地面風資料，是由天文台所操作的氣象站及測風站網絡錄得的。表1.2及1.3分別是該些網絡內各站的位置及海拔高度。

熱帶氣旋產生的最大風暴潮是由裝置在香港多處的潮汐測量器量度的。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。

本年報內的雨量資料，是由天文台所操作的氣象站和雨量站及土力工程處的雨量站所錄得的雨量。

<sup>#</sup> 二零零九年以前颱風的最高持續風速為每小時118公里或以上。

\* 二零零九年新增等級

## 1.5 年報內容

本年報第二節是二零一零年所有影響北太平洋西部及南海區域的熱帶氣旋的概述。

而本年報第三節是二零一零年影響香港的熱帶氣旋的個別詳細報告，內容包括：

- (a) 該熱帶氣旋對香港造成的影響；
- (b) 發出熱帶氣旋警告信號的過程；
- (c) 香港各地錄得的最高陣風風速及最高每小時平均風速；
- (d) 香港天文台錄得的最低平均海平面氣壓；
- (e) 香港天文台及其他地方錄得的每日總雨量；
- (f) 香港各潮汐測量站錄得的最高潮位及最大風暴潮；及
- (g) 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本年報第四節內。

二零一零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，則表列於本年報的第五節內。

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

## 1.6 香港的熱帶氣旋警告系統

表 1.4 是香港熱帶氣旋警告信號的意義。

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(請參閱圖 1.1)。

揀選這些測風站，是基於它們處於較為空曠的位置及地理上的分佈，當中包括自然山脈分隔的考慮。這個參考測風站網絡應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錄得的持續風速達到有關的風速限值，且風勢可能持續時，則會發出 3 號或 8 號信號。3 號信號風速範圍為每小時 41 至 62 公里，而 8 號信號則為每小時 63 至 117 公里。



## Section 1 INTRODUCTION

### 1.1 Evolution of tropical cyclone publications

Apart from a short break 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 "Summary of Radiosonde-Radiowind Ascents" and "Surface Observations in Hong Kong" in 1981 and 1987 respectively. In 1993, both of these publications were made obsolete, and since then surface and upper-air data have been included in one revised publication entitled "Summary of Meteorological Observations in Hong Kong".

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 occurring in 1968 within the area bounded by the Equator, 45°N, 100°E and 160°E. With reconnaissance aircraft reports (terminated from August 1987 onwards) and satellite pictures facilitating the tracking of tropical cyclones over the otherwise data-sparse ocean, 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 19YY" 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 remained fixed at 0000 UTC after 1944. Details of the variation 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 have been prepared since 1960 to meet the immediate needs of the press, shipping companies and others. These reports are printed and supplied on request. Initially, provisional reports were only written on those tropical cyclones for which gale or storm signals had been issued in Hong Kong. From 1968 onwards, provisional reports were prepared for all tropical cyclones that necessitated the issuing of tropical cyclone warning signals.

### 1.2 Classification of tropical cyclones

To heighten people's alertness of stronger typhoons, the Observatory further categorised 'Typhoon' into 'Typhoon', 'Severe Typhoon' and 'Super Typhoon' starting from the 2009 typhoon season. In this publication, tropical cyclones are classified into the following six categories according to the maximum sustained surface winds near their centres:

- (i) A TROPICAL DEPRESSION (T.D.) has maximum sustained winds of less than 63 km/h.
- (ii) A TROPICAL STORM (T.S.) has maximum sustained winds in the range 63-87 km/h.
- (iii) A SEVERE TROPICAL STORM (S.T.S.) has maximum sustained winds in the range 88-117 km/h.
- (iv) A TYPHOON<sup>#</sup> (T.) has maximum sustained winds of 118-149 km/h.
- (v) A SEVERE TYPHOON\* (S.T.) has maximum sustained winds of 150-184 km/h.
- (vi) A SUPER TYPHOON\* (SuperT.) has maximum sustained winds of 185 km/h or more.

Throughout this publication, maximum sustained surface winds when used without qualification refer to wind speeds averaged over a period of 10 minutes. Mean hourly 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.

### 1.3 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. However, with effect from 2000, the Japan Meteorological Agency assigns names from a new list to tropical cyclones attaining tropical storm strength. Table 1.1 shows the name list effective from 1 January 2009. The name list was adopted by the Typhoon Committee. It consists of a total of 140 names contributed by 14 countries and territories. Apart from being used in forecasts and warnings issued to the international aviation and shipping communities, the names will also be used officially in information on tropical cyclones issued to the international press. Besides, Japan Meteorological Agency has been delegated since 1981 with the responsibility of assigning to each tropical cyclone in the western North Pacific and the South China Sea of tropical storm strength a numerical code of four digits. For example, the first tropical cyclone of tropical storm strength or above as classified by Japan Meteorological Agency which occurred within the region in 2010 was assigned the code "1001". In this publication, the appropriate code immediately follows the name of the tropical cyclone in bracket, e.g. Tropical Storm Omais (1001).

### 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 and raingauges operated by the Geotechnical Engineering Office (GEO).

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<sup>#</sup> Prior to 2009, the maximum sustained winds of typhoon was defined to be 118 km/h or more

\* New categories starting 2009

## 1.5 Content

In Section 2, an overview of all the tropical cyclones over the western North Pacific and the South China Sea in 2010 is presented.

The reports in Section 3 are individual accounts of the life history of tropical cyclones affecting Hong Kong in 2010. 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 are tabulated in Section 5.

In this publication, different times are used in different 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 issue 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 as depicted in Figure 1.1.

The reference anemometers were selected on account of their good exposure and geographical distribution, taking into account the natural separation by Hong Kong’s mountain ranges. Together, they provide a broad picture of the wind condition in Hong Kong.

The No. 3 or No. 8 signal, as the case may be, will be issued when half or more anemometers in the reference network register or are expected to register sustained strong winds or gale/storm force winds and the wind condition is expected to persist. The wind speed range of the No.3 signal is 41-62 km/h and that of the No.8 signal is 63-117 km/h.

表 1.1 二零零九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 2009

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	莎莉嘉 Sarika
中國	China	海葵 Haikui	玉兔 Yutu	風神 Fengshen	杜鵑 Dajuan	海馬 Haima
朝鮮	DPR Korea	鴻雁 Kirogi	桃芝 Toraji	海鷗 Kalmaegi	彩虹 Mujigae	米雷 Meari
中國香港	Hong Kong, China	啓德 Kai-tak	萬宜 Man-yi	鳳凰 Fung-wong	彩雲 Choi-wan	馬鞍 Ma-on
日本	Japan	天秤 Tembin	天兔 Usagi	北冕 Kammuri	巨爵 Koppu	蝎虎 Tokage
老撾	Lao PDR	布拉萬 Bolaven	帕布 Pabuk	巴蓬 Phanfone	凱薩娜 Ketsana	洛坦 Nock-ten
中國澳門	Macau, China	三巴 Sanba	蝴蝶 Wutip	黃蜂 Vongfong	芭瑪 Parma	梅花 Muifa
馬來西亞	Malaysia	杰拉華 Jelawat	聖帕 Sepat	鸚鵡 Nuri	茉莉 Melor	苗柏 Merbok
米克羅尼西亞	Micronesia	艾雲尼 Ewiniar	菲特 Fitow	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	寶霞 Bopha	羅莎 Krosa	美莎克 Maysak	燦都 Chanthu	納沙 Nesat
中國	China	悟空 Wukong	海燕 Haiyan	海神 Haishen	電母 Dianmu	海棠 Haitang
朝鮮	DPR Korea	清松 Sonamu	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	天鷹 Washi
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	莫蘭蒂 Meranti	瑪娃 Mawar
米克羅尼西亞	Micronesia	蘇力 Soulik	米娜 Mitag	蘇廸羅 Soudelor	凡亞比 Fanapi	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	威馬遜 Rammasun	莫拉克 Morakot	暹芭 Chaba	卡努 Khanun
美國	U.S.A.	尤特 Utor	麥德姆 Matmo	艾濤 Etau	艾利 Aere	韋森特 Vicente
越南	Viet Nam	潭美 Trami	夏浪 Halong	環高 Vamco	桑達 Songda	蘇拉 Saola

表 1.2 本年報內各氣壓表的位置及海拔高度  
TABLE 1.2 Positions and elevations of various barometers mentioned in this publication

站 Station	位置 Position		氣壓表的 海拔高度(米)
	北緯 Latitude N	東經 Longitude E	Elevation of barometer above M.S.L. (m)
香港天文台 Hong Kong Observatory	22°18'07"	114°10'27"	40

表 1.3 本年報內各風速表的位置及海拔高度

TABLE 1.3 Positions and elevations of various anemometers mentioned in this publication









站 Station	位置 Position		風速表的 海拔高度(米)	
	北緯 Latitude N	東經 Longitude E	Elevation of anemometer above M.S.L. (m)	
黃麻角(赤柱)	Bluff Head (Stanley)	22°11'51"	114°12'43"	103
中環碼頭	Central Pier	22°17'20"	114°09'21"	30
長洲	Cheung Chau	22°12'04"	114°01'36"	99
長洲泳灘	Cheung Chau Beach	22°12'39"	114°01'45"	27
長沙灣	Cheung Sha Wan	22°19'58"	114°09'14"	30
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#
啓德	Kai Tak	22°18'35"	114°12'48"	16
京士柏	King's Park	22°18'43"	114°10'22"	90
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
塔門	Tap Mun	22°28'17"	114°21'38"	35
大老山	Tate's Cairn	22°21'28"	114°13'04"	587
鯽魚湖	Tsak Yue Wu	22°24'10"	114°19'23"	23
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

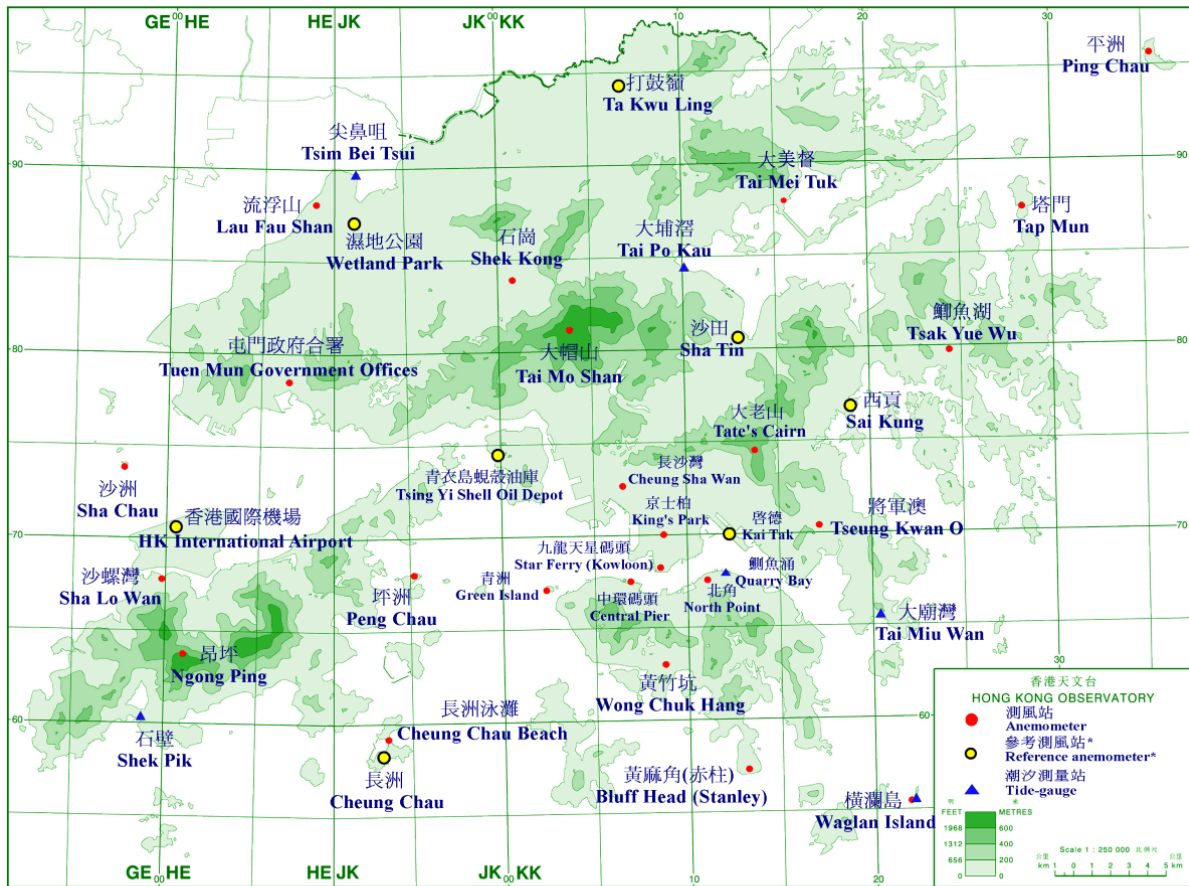
# 所指風速表在北跑道近中間位置，地面的海拔高度為4米。

# Refer to the wind sensor at the centre of the north runway, on a ground level of 4 metres.

表 1.4 二零一零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 2010

信號 Signals		顯示符號 Symbol Display	信號的意義 Meaning of Signals
戒備 Standby	1		<p>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。</p> <p>A tropical cyclone is centred within about 800 km of Hong Kong and may affect the territory.</p>
強風 Strong Wind	3		<p>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。</p> <p>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.</p>
西北 烈風或暴風 NW'LY Gale or Storm	8 西北 NW		<p>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。</p> <p>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.</p>
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		
颶風 Hurricane	10		<p>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。</p> <p>Hurricane force wind is expected or blowing with sustained speed reaching upwards from 118 km/h and gusts that may exceed 220 km/h.</p>



\* 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

圖 1.1 本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 publication.



## 第二節 二零一零年熱帶氣旋概述

### 2.1 二零一零年的熱帶氣旋回顧

#### 2.1.1 北太平洋西部（包括南海區域）的熱帶氣旋

二零一零年只有18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），遠比1971-2000年平均數的30個為少。這是自一九四六年以來的最低紀錄，打破了一九九八年創下的紀錄，當年只有20個熱帶氣旋。全年有七個熱帶氣旋達到颱風或以上強度，比正常數目（15個）少八個。

本年首個熱帶氣旋在三月形成，最後一個則在十二月形成。一月至六月只有一個熱帶氣旋出現，七月至十月有16個熱帶氣旋出現，而十一月至十二月則只有一個熱帶氣旋出現。圖2.1是二零一零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。

二零一零年內有七個熱帶氣旋在中國大陸登陸，其中兩個在香港300公里內的華南沿岸登陸。壹個熱帶氣旋橫過台灣，兩個登陸朝鮮半島，兩個登陸日本，兩個橫過菲律賓及兩個登陸越南。

二零一零年風力最強的熱帶氣旋是超強颱風鮎魚（1013）。鮎魚最高持續風速估計為每小時270公里，而最低中心氣壓為895百帕斯卡，當時鮎魚位於馬尼拉東北約590公里（圖2.3）。鮎魚是二零一零年內本區域唯一達到超強颱風強度（中心附近最高持續風速達到每小時185公里或以上）的熱帶氣旋。它亦是本區域自一九七九年十月超強颱風泰培以來最強的熱帶氣旋。

強烈熱帶風暴獅子山（1006）是二零一零年路徑最複雜的熱帶氣旋。獅子山於八月二十八日在南海北部上形成。受到北太平洋西部上兩股熱帶氣旋圓規（1007）及南川（1008）的影響，獅子山兩度改變其路徑，並兩次影響香港。圖2.4及2.5分別是這三股熱帶氣旋的路徑圖及衛星圖像。

一股熱帶低氣壓於十二月在國際換日線剛剛以西的北太平洋西部上形成後向東移動，進入北太平洋中部。它是二零一零年最後的一個熱帶氣旋。

二零一零年北太平洋西部及南海熱帶氣旋較少的部份原因是由於北太平洋西部上的副熱帶高壓脊較強，抑制了區內的對流。

#### 2.1.2 香港責任範圍內的熱帶氣旋

在二零一零年的18個熱帶氣旋中，有11個影響香港責任範圍（即北緯10至30度、東經105至125度），較1971-2000年的30年平均15.4個少（表2.1）。這11個熱帶氣旋中，有七個在香港責任範圍內形成。在二零一零年，香港天文台總共發出276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

二零一零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），當中有四個在南海上形成，其餘五個從北太平洋西部進入南海。

### 2.1.4 影響香港的熱帶氣旋

二零一零年香港的颱風季節於七月十五日開始，當時強烈熱帶風暴康森(1002)橫過南海，天文台發出一號戒備信號。在十月二十二日，颱風鮎魚遠離香港，天文台取消所有熱帶氣旋信號，本港颱風季節隨即結束。

年內共有五個熱帶氣旋影響香港（圖2.2），比平均的6.5個（表2.2）為少。這五個熱帶氣旋分別為七月的颱風康森(1002)及颱風燦都（1003）、八月至九月的強烈熱帶風暴獅子山（1006）、九月的強颱風凡亞比(1011)及十月的超強颱風鮎魚(1013)。燦都、凡亞比及鮎魚影響香港期間天文台發出三號強風信號，是年內發出最高的熱帶氣旋警告信號。而康森及獅子山則只引致天文台發出一號戒備信號。

### 2.1.5 熱帶氣旋的雨量

二零一零年各熱帶氣旋為香港帶來的雨量（即該熱帶氣旋在出現於香港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，天文台錄得的雨量）共為833.1毫米（表4.8.1），約佔該年總雨量2371.7毫米的百分之35，比正常的745.5毫米多約12%。

九月十九日至二十一日影響香港的強颱風凡亞比為天文台總部帶來246.6毫米的雨量，是二零一零年為香港帶來最多雨量的熱帶氣旋。

受到颱風燦都的外圍雨帶影響，香港有大雨及狂風雷暴，廣泛地區有水浸。在七月二十二日，天文台總部錄得182.4毫米的雨量，為二零一零年熱帶氣旋所帶來的最高日雨量。

## 2.2 每月概述

這一節逐月介紹二零一零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則詳述於第三節。

### 一月至二月

二零一零年一月至二月並無熱帶氣旋影響北太平洋西部及南海區域。

### 三月

熱帶低氣壓奧麥斯(1001)於三月二十三日在雅浦島以東約240公里的西北太平洋上形成，並向西北偏西移動。它於三月二十四日黃昏增強為熱帶風暴，並達到其最高強度，其中心附近最高持續風速估計達每小時65公里，翌日轉向北移動。奧麥斯於三月二十六日黃昏時減弱為熱帶低氣壓，並於翌日在呂宋東北偏東的西北太平洋上消散。

### 四月至六月

二零一零年四月至六月並無熱帶氣旋影響北太平洋西部及南海區域。

## 七月

熱帶低氣壓康森(1002)於七月十二日凌晨在馬尼拉以東約1 200公里的北太平洋西部上形成，並向西移動，當日黃昏增強為強烈熱帶風暴。康森於七月十三日晚上橫過呂宋南部，七月十四日向西北偏西移動，橫過南海，翌日採取較為偏西的路徑。康森於七月十六日轉向西北或西北偏西移動，下午增強為颱風，並達到其最高強度，其中心附近最高持續風速估計達每小時120公里，晚上掠過海南島西南部沿岸。康森於七月十七日橫過北部灣，當日黃昏在越南北部沿岸登陸，並逐漸減弱為熱帶風暴。它於翌日早上進一步減弱為熱帶低氣壓，隨後在內陸消散。根據報章報導，康森吹襲期間，造成菲律賓及海南島分別最少有26人及兩人死亡，越南則有17人失蹤。

熱帶低氣壓燦都(1003)於七月十九日在香港東南偏南約900公里的南海中部上形成，並大致向西北移動，橫過南海北部。燦都於七月二十二日凌晨在海南島以東增強為颱風，並達到其最高強度，其中心附近最高持續風速估計達每小時120公里。當日下午它在湛江附近登陸，黃昏時減弱為強烈熱帶風暴。七月二十三日燦都橫過廣西，當晚在內陸消散。根據報章報導，燦都為廣東帶來暴雨，最少有兩人死亡。

一個熱帶低氣壓於七月十九日在沖繩島以西約170公里的北太平洋西部上形成，並大致向西北偏北移動。其中心附近最高持續風速估計達每小時45公里。該熱帶低氣壓於翌日在東海上消散。

## 八月

熱帶低氣壓電母(1004)於八月八日在台北東南約 530 公里的北太平洋西部上形成，並向北移動及逐漸增強。電母於八月九日增強為強烈熱帶風暴，並達到其最高強度，其中心附近最高持續風速估計達每小時 90 公里。八月十一日它轉向東北移動，橫過濟州及韓國東南部，並減弱為熱帶風暴。電母於八月十二日橫過日本海，當日黃昏在日本以東的北太平洋西部上變為溫帶氣旋。根據報章報導，電母吹襲期間，韓國有五人死亡、130 間房屋被淹浸。

熱帶低氣壓蒲公英(1005)於八月二十二日在西沙以東約 300 公里的南海北部上形成，並向西移動。它於翌日轉向西北偏西移動及逐漸增強為強烈熱帶風暴。八月二十四日蒲公英達到其最高強度，其中心附近最高持續風速估計達每小時 105 公里。當日它向西北移動，橫過北部灣，黃昏時在越南北部登陸。蒲公英於八月二十五日在老撾消散。

熱帶低氣壓獅子山(1006)於八月二十八日在香港東南偏南約 600 公里的南海北部上形成，並向西北移動。它於翌日增強為熱帶風暴及轉向北移動。八月三十日獅子山轉向東至東南偏東移動，並增強為強烈熱帶風暴，中心附近最高持續風速達到每小時 90 公里。獅子山於八月三十一日在南海東北部向東北偏東移動，但於九月一日大致轉向西北移動，橫過南海東北部。它於九月二日在福建南部沿岸登陸並減弱為熱帶風暴。隨後獅子山大致向西移動，九月三日在廣東消散。據報章報導，獅子山為廣東帶來暴雨，造成最少 165 間房屋倒塌。

熱帶低氣壓圓規(1007)於八月二十九日在沖繩島東南約 1280 公里的北太平洋西部上形成，並向西北移動。圓規逐漸增強，並於八月三十一日在沖繩島東南處增強為颱風，中心附近最高持續風速達到每小時 145 公里。圓規於九月一日向北移動橫過濟州以西的海域。它於九月二日向東北移動，橫過韓國半島及進入日本海，並減弱為熱帶風暴。圓規於翌日在日本海變為溫帶氣旋。根據報章報導，受圓規影響，韓國有五人死亡，數萬家園沒有電力供應。超過 60 班國際航班被取消或延誤。

熱帶低氣壓南川(1008)於八月三十日在台北東北約 160 公里的東海南部上形成，並向西南偏西移動，當日黃昏增強為熱帶風暴，並達到其最高強度，中心附近最高持續風速達到每小時 65 公里。南川於八月三十一日橫過台灣海峽及減弱為熱帶低氣壓，九月一日在廈門以東的中國東南部沿岸海域上消散。

## 九月

熱帶低氣壓瑪瑙(1009)於九月三日在沖繩島東南約 490 公里的北太平洋西部上形成，並向西北偏西移動。它於翌日增強為熱帶風暴。瑪瑙於九月五日轉向北移動。瑪瑙於九月六日達到其最高強度，中心附近持續風力達到每小時 85 公里，並轉向東北移動。它於翌日橫過日本海，隨後於九月八日在本州中部登陸，九月九日在日本以東變為溫帶氣旋。根據報章報導，受到大風的影響，渤海上一油台傾側約 45 度，全部人皆獲救。

熱帶低氣壓莫蘭蒂(1010)於九月八日在高雄東南偏南約 190 公里上形成，並向西移動。它於九月九日增強為熱帶風暴並轉向北移動。黃昏時莫蘭蒂增強為強烈熱帶風暴，並達到其最高強度，中心附近持續風力達到每小時 110 公里。莫蘭蒂於九月十日在中國東南部沿岸登陸，當日黃昏在浙江逐漸消散。根據報章報導，莫蘭蒂在台灣東南部大東市觸發山泥傾瀉，有七百人被困。福建泉州有三人死亡，超過 350 間房屋傾塌，直接經濟損失達到一億元人民幣。

熱帶低氣壓凡亞比(1011)於九月十五日在沖繩島以南約 710 公里的北太平洋西部上形成，並向西北移動。當日黃昏它增強為熱帶風暴。凡亞比於九月十六日增強為強烈熱帶風暴及向東北緩慢移動。九月十七日它再次採取西北的路徑，並在台灣以東增強為颱風。凡亞比於九月十八日進一步增強為強颱風，並達到其最高強度，中心附近持續風力達到每小時 165 公里，同時大致轉向西移動。它於九月十九日橫過台灣及減弱為颱風。凡亞比於當晚橫過台灣海峽，九月二十日在福建南部沿岸地區登陸。隨後凡亞比逐漸減弱並向西移動橫過華南，九月二十一日在廣州附近消散。根據報章報導，凡亞比吹襲期間，台灣有兩人死亡，廣東則有 33 人死亡，42 人失蹤。

熱帶低氣壓馬勒卡(1012)於九月二十一日在關島以北約 520 公里的北太平洋西部上形成，並大致向西北偏西移動。它於翌日增強為熱帶風暴。馬勒卡於九月二十三日轉向北移動，翌日增強為颱風。它於九月二十五日轉向東北偏北移動，並增強為強颱風及達到其最高強度，中心附近持續風力達到每小時 155 公里，黃昏時在日本以東的北太平洋西部上變成溫帶氣旋。

## 十月

一股熱帶低氣壓於十月五日在三亞西北偏西約110公里的北部灣形成，並移動緩慢。該熱帶低氣壓強度持續偏弱，中心附近最高持續風速為每小時45公里。它於十月七日在海南島西部沿岸海域消散。

熱帶低氣壓鮎魚於十月十三日在關島西南偏西約430公里的北太平洋西部上形成，並向西北偏西移動，當日黃昏增強為熱帶風暴。鮎魚於十月十五日向西北移動，並在菲律賓以東的太平洋上逐漸增強為颱風，翌日向西北偏西移動。它於十月十七日轉向西南偏西移動，及增強為超強颱風，並達到其最高強度，中心附近持續風力達到每小時270公里。它於十月十八日橫過呂宋，並減弱為強颱風。鮎魚於十月十九日大致向偏西移動橫過南海，隨後四天大致向北移動。鮎魚於十月二十二日在南海東北部減弱為颱風，翌日在福建漳浦沿岸登陸，並減弱為強烈熱帶風暴。它於十月二十四日進一步移入內陸，早上在內陸消散。根據報章報導，鮎魚造成菲律賓最少有36人死亡，台灣最少13人死亡，26人失蹤。一艘貨船及漁船分別在福建及浙江海域沉沒，共有一人死亡、20人失蹤。

一股熱帶低氣壓於十月二十一日在威克島以西約690公里的北太平洋西部上形成，並向西北偏西移動。該熱帶低氣壓的中心附近最高持續風速達到每小時55公里。它於十月二十三日轉向東北偏東移動，黃昏時在威克島西北偏西的北太平洋西部上消散。

熱帶低氣壓暹芭於十月二十二日在雅浦島以北約810公里的北太平洋西部上形成，初時向西移動，翌日轉向西南移動。暹芭於十月二十四日轉向西北移動，十月二十五日逐漸增強為強烈熱帶風暴，翌日在琉球羣島東南偏南處增強為颱風。十月二十七日它轉向北移動，及進一步增強為強颱風，中心附近持續風力達到每小時175公里。暹芭於十月二十八日轉向東北移動，十月三十日逐漸減弱為強烈熱帶風暴，並掠過日本以南海域，十月三十一日在本州以東的北太平洋西部上變成溫帶氣旋。

## 十一月

二零一零年十一月並無熱帶氣旋在北太平洋西部及南海區域上形成。

## 十二月

一股熱帶低氣壓於十二月十九日在威克島東北偏東約1 360公里的北太平洋西部上形成，並大致向南移動。其中心附近最高持續風速為每小時55公里。該熱帶低氣壓於翌日轉向東移動，橫過國際換日線，進入北太平洋中部，並增強為熱帶風暴。

## Section 2 TROPICAL CYCLONE OVERVIEW FOR 2010

### 2.1 Review of tropical cyclones in 2010

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

In 2010, only 18 tropical cyclones occurred over the western North Pacific and the South China Sea bounded by the Equator, 45°N, 100° and 180°E, considerably less than the normal (1971-2000) figure of around 30 tropical cyclones in a year. This was the lowest on record since 1946, breaking the previous record of 20 set in 1998. During the year, seven tropical cyclones attained typhoon intensity or above, eight below the normal figure of 15.

The first tropical cyclone of the year formed in March and the last one in December. Only one tropical cyclone occurred between January and June, 16 occurred between July and October, and another one occurred from November to December. Figure 2.1 shows the monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2010.

During the year, seven tropical cyclones made landfall over Mainland China, with two of them making landfall over the south China coast within 300 km of Hong Kong. One tropical cyclone crossed Taiwan, two made landfall over the Korean Peninsula, two made landfall over Japan, two traversed the Philippines and another two made landfall over Vietnam.

The most intense tropical cyclone in 2010 was Super Typhoon Megi (1013). Megi had an estimated maximum sustained wind speed of 270 km/h and a minimum sea-level pressure of 895 hPa (Table 4.1) when it was located over the western North Pacific about 590 km northeast of Manila (Fig. 2.3). Megi was the only super typhoon (maximum sustained wind speed of 185 km/h or above near the centre) in the region during 2010. It was also the most intense tropical cyclone in the region since Super Typhoon Tip in October 1979.

The track of Severe Tropical Storm Lionrock (1006) was the most complicated in 2010. Lionrock formed over the northern part of the South China Sea on 28 August. Under the influence of another two tropical cyclones Kompasu (1007) and Namtheun (1008) over the western North Pacific, Lionrock changed its track twice and affected Hong Kong in two separate episodes. Figures 2.4 and 2.5 show respectively the tracks and a satellite image of the three tropical cyclones.

In December, a tropical depression moved east into the central North Pacific, after forming over the western North Pacific just west of the International Date Line. It was the last tropical cyclone of the year.

Partly due to the stronger than normal subtropical ridge of high pressure over the western North Pacific, which suppressed convection over the region, the number of tropical cyclones over the western North Pacific and the South China Sea was fewer than normal in 2010.

#### 2.1.2 Tropical cyclones in Hong Kong's area of responsibility

Amongst the 18 tropical cyclones in 2010, 11 occurred inside Hong Kong's area of responsibility (i.e. the area bounded by 10°N, 30°N, 105°E and 125°E), less than the 30-year (1971-2000) annual average of 15.4 (Table 2.1). Seven of these 11 tropical cyclones developed within Hong Kong's area of responsibility. Altogether, 276 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory in 2010 (Table 4.2).

### **2.1.3 Tropical cyclones over the South China Sea**

Nine tropical cyclones affected the South China Sea (i.e. the area bounded by 10°N, 25°N, 105°E and 120°E) in 2010. Four of them formed over the area. Five moved into the South China Sea from the western North Pacific.

### **2.1.4 Tropical cyclones affecting Hong Kong**

In 2010, the typhoon season in Hong Kong started on 15 July when Severe Tropical Storm Conson (1002) moved across the South China Sea and necessitated the issuance of the Standby Signal No.1. The typhoon season ended on 22 October as Typhoon Megi moved away from Hong Kong and all tropical cyclone warning signals were cancelled.

Five tropical cyclones affected Hong Kong during 2010 (Figure 2.2), less than the average number of 6.5 (Table 2.2). These five tropical cyclones were Typhoon Conson (1002) and Typhoon Chanthu (1003) in July, Severe Tropical Storm Lionrock (1006) in August - September, Severe Typhoon Fanapi (1011) in September and Super Typhoon Megi (1013) in October. The Strong Wind Signal No. 3 was issued during the passages of Chanthu, Fanapi and Megi, which was the highest tropical cyclone warning signal in 2010. Conson and Lionrock only necessitated the issuance of the Standby Signal No. 1 in Hong Kong.

### **2.1.5 Tropical cyclone rainfall**

Tropical cyclone rainfall (the total rainfall recorded at the Hong Kong Observatory from the time when a tropical cyclone is centred within 600 km of Hong Kong to 72 hours after it has dissipated or moved farther than 600 km away from Hong Kong) in 2010 was 833.1 mm (Table 4.8.1). This was 12% above the normal of 745.5 mm and accounted for some 35% of the year's total rainfall of 2371.7 mm.

Severe Typhoon Fanapi, which affected Hong Kong on 19-21 September, brought 246.6 mm of rainfall to the Hong Kong Observatory Headquarters, and was the wettest tropical cyclone in 2010.

Heavy rain and squally thunderstorms associated with the outer rainbands of Typhoon Chanthu affected Hong Kong and brought widespread flooding to the territory. On 22 July, 182.4 mm of rainfall was recorded at Hong Kong Observatory Headquarters, the highest daily rainfall associated with tropical cyclone in 2010.

## **2.2 Monthly overview**

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

### JANUARY TO FEBRUARY

No tropical cyclone occurred over the western North Pacific and the South China Sea from January and February.

### MARCH

Omais (1001) formed over the western North Pacific about 240 km east of Yap on 23 March and moved west-northwestwards. It intensified into a tropical storm on the evening of 24 March reaching its peak intensity with estimated maximum sustained winds of 65 km/h near its centre. It turned to move northwards the next day. Omais weakened into a tropical depression during the evening of 26 March and dissipated over the western North Pacific to the east-northeast of Luzon the following day.

### APRIL TO JUNE

No tropical cyclone occurred over the western North Pacific and the South China Sea from April to June.

### JULY

Conson (1002) formed as a tropical depression over the western North Pacific about 1 200 km east of Manila early on 12 July. Moving westwards, it intensified into a severe tropical storm that evening. Conson crossed the southern part of Luzon during the night of 13 July. It moved west-northwestwards across the South China Sea on 14 July but took on a more westerly track the following day. Conson moved in a northwest to west-northwest direction on 16 July. It intensified into a typhoon in the afternoon reaching its peak intensity with estimated maximum winds of 120 km/h near its centre. Conson skirted the coast of southwestern Hainan that night. It crossed Beibu Wan on 17 July, making landfall over the coast of northern Vietnam that evening and gradually weakening into a tropical storm. Conson weakened further into a tropical depression next morning and dissipated inland thereafter. According to press reports, at least 26 people and two people were killed in the Philippines and Hainan Island respectively, while 17 people were missing in Vietnam during the passage of Conson.

Chanthu (1003) formed as a tropical depression over the central part of the South China Sea about 900 km south-southeast of Hong Kong on 19 July. It moved generally northwestwards across the northern part of the South China Sea. Chanthu intensified into a typhoon to the east of Hainan Island in the early hours of 22 July, reaching its peak intensity with estimated maximum sustained winds of 120 km/h near its centre. Chanthu made landfall near Zhanjiang that afternoon and weakened into a severe tropical storm that evening. It moved across Guangxi on 23 July and eventually dissipated inland that night. According to press reports, Chanthu brought rainstorms to Guangdong where at least two people were killed.

A tropical depression formed over the western North Pacific about 170 km west of Okinawa on 19 July and moved generally north-northwestwards. The estimated maximum winds reached 45 km/h near its centre. The tropical depression dissipated over the East China Sea the next day.



## AUGUST

On 8 August, Dianmu (1004) formed as a tropical depression over the western North Pacific about 530 km southeast of Taipei. It moved northwards and gradually intensified to a severe tropical storm reaching its peak intensity with estimated maximum sustained winds of 90 km/h near its centre on 9 August. It turned to move northeastwards across Jeju and the southeastern part of the Republic of Korea on 11 August and weakened into a tropical storm. Dianmu moved across the Sea of Japan on 12 August. It became an extra-tropical cyclone to the east of Japan that evening. According to press reports, five people were killed and around 130 houses were flooded in the Republic of Korea during the passage of Dianmu.

Mindulle (1005) formed as a tropical depression over the northern part of the South China Sea about 300 km east of Xisha on 22 August and moved westwards. It turned west-northwest and intensified gradually into a severe tropical storm the next day. On 24 August, Mindulle reached its peak intensity with estimated maximum sustained winds of 105 km/h near its centre. It moved northwestwards across Beibu Wan that day and made landfall over northern Vietnam in the evening. It subsequently dissipated over Laos on 25 August.

Lionrock (1006) formed as a tropical depression over the northern part of the South China Sea about 600 km south-southeast of Hong Kong on 28 August and moved northwestwards. It intensified into a tropical storm the next day and turned to the north. Lionrock moved eastwards on 30 August and intensified into a severe tropical storm with maximum sustained winds of 90 km/h near its centre. Lionrock moved east-northeastwards over the northeastern part of the South China Sea on 31 August, but turned to move generally northwestwards across the northeastern part of the South China Sea on 1 September. It made landfall over the coast of southern Fujian on 2 September and weakened into a tropical storm. Lionrock then moved generally westwards and subsequently dissipated over Guangdong on 3 September. According to press reports, Lionrock brought rainstorms to Guangdong where at least 165 houses collapsed.

Kompasu (1007) formed as a tropical depression over the western Pacific about 1 280 km southeast of Okinawa on 29 August and moved northwestwards. It gradually intensified and became a typhoon to the southeast of Okinawa on 31 August, with maximum sustained winds of 145 km/h near its centre. Kompasu moved north across the seas to the west of Jeju on 1 September. It turned to move northeastwards crossing the Korean Peninsula and entering the Sea of Japan on 2 September and weakened into a tropical storm. Kompasu became an extra-tropical cyclone over the Sea of Japan the following day. According to press reports, Kompasu caused the death of five people in the Republic of Korea and power outage to tens of thousands of homes. More than 60 international flights were cancelled or delayed.

Namtheun (1008) formed as a tropical depression over the southern part of the East China Sea about 160 km northeast of Taipei on 30 August and moved west-southwestwards. It intensified into a tropical storm that evening, reaching its peak intensity with maximum sustained winds of 65 km/h near its centre. Namtheun moved across the Taiwan Strait on 31 August and weakened into a tropical depression. It dissipated over the coastal waters of southeastern China to the east of Xiamen on 1 September.

## SEPTEMBER

Malou (1009) formed over the western North Pacific about 490 km southeast of Okinawa on 3 September and moved west-northwestwards. It intensified into a tropical storm the next day. Malou turned to move northwards on 5 September. It reached its peak intensity with maximum sustained winds of 85 km/h near its centre on 6 September and turned to move northeastwards. Malou crossed the Sea of Japan the following day. It then made landfall over central Honshu on 8 September and became an extra-tropical cyclone to the east of Japan on 9 September. According to press reports, an oil rig at Bo Ha was tilted by strong winds to about 45 degrees. All affected were rescued.

Meranti (1010) formed as a tropical depression about 190 km south-southeast of Gaoxiong on 8 September and moved westwards. It intensified into a tropical storm on 9 September and turned to move northwards. Meranti intensified into a severe tropical storm that evening, reaching its peak intensity with maximum sustained winds of about 110 km/h. Meranti made landfall over the coast of southeast China on 10 September and gradually dissipated over Zhejiang that evening. According to press reports, Meranti triggered landslides in Taitung County in southeastern Taiwan, trapping about 700 people there. In Quanzhou, Fujian, three people were killed and over 350 houses collapsed. The direct economic losses amounted to 100 million RMB.

Fanapi (1011) formed as a tropical depression over the western North Pacific about 710 km south of Okinawa on 15 September and moved northwestwards. It intensified into a tropical storm that evening. Fanapi intensified into a severe tropical storm on 16 September and moved northeastwards slowly. It resumed a northwesterly track on 17 September and intensified into a typhoon to the east of Taiwan. Fanapi intensified further into a severe typhoon on 18 September, reaching its peak intensity with estimated maximum sustained winds of 165 km/h near its centre and turning to move generally westwards. It crossed Taiwan on 19 September and weakened into a typhoon. Fanapi crossed the Taiwan Strait that night and made landfall over the coastal areas of southern Fujian on 20 September. Fanapi then gradually weakened and tracked westwards across southern China and finally dissipated near Guangzhou on 21 September. According to press reports, Fanapi caused the death of two people in Taiwan, and another 33 people being killed and 42 people missing in Guangdong.

Malakas (1012) formed as a tropical depression over the western North Pacific about 520 km north of Guam on 21 September and moved generally west-northwestwards. It intensified into a tropical storm the next day. Malakas turned to move northwards on 23 September and gradually intensified into a typhoon on 24 September. It turned to move north-northeastwards on 25 September and intensified into a severe typhoon, reaching its peak intensity with estimated maximum sustained winds of 155 km/h near its centre. Malakas became an extra-tropical cyclone over the western North Pacific to the east of Japan that evening.

## OCTOBER

A tropical depression formed over the Beibu Wan about 110 km west-northwest of Sanya on 5 October and was slow moving. The tropical depression remained weak with maximum sustained winds of 45 km/h near the centre. It dissipated over the coastal waters of western Hainan on 7 October.

Megi (1013) formed as a tropical depression over the western North Pacific about 450 km west-southwest of Guam on 13 October and moved west-northwestwards. It intensified into a tropical storm that evening. On 15 October, Megi moved northwestwards and gradually intensified into a typhoon over the Pacific to the east of the Philippines. Megi moved west-northwestwards the next day. It turned to move west-southwestwards and became a super typhoon on 17 October, reaching its peak intensity with maximum sustained winds of about 270 km/h near its centre. Megi crossed Luzon on 18 October and weakened into a severe typhoon. It moved generally westwards across the South China Sea on 19 October, but turned to move generally northwards for the next four days. Megi weakened into typhoon over the northeastern part of the South China Sea on 22 October. It made landfall over the coast of Zhangpu, Fujian on 23 October and weakened into a severe tropical storm. Megi continued to move further inland and dissipated on the morning of 24 October. According to press reports, Megi caused the death of at least 36 people in the Philippines, and the death of at least 13 people with 26 others missing in Taiwan. A freighter and a fishing boat sank in the waters of Fujian and Zhejiang respectively, with one person killed and 20 others missing.

A tropical depression formed over the western North Pacific about 690 km west of Wake Island on 21 October and moved west-northwestwards. The maximum sustained winds near the centre of the tropical depression were around 55 km/h. The tropical depression turned to move east-northeastwards on 23 October and dissipated over the western North Pacific to the west-northwest of Wake Island that evening.

Chaba (1014) formed as a tropical depression over the western North Pacific about 810 km north of Yap on 22 October and moved westwards at first. It turned to move southwestwards the next day. Chaba took on a northwesterly track on 24 October, gradually intensifying. Chaba became a severe tropical storm on 25 October and a typhoon to the south-southeast of Ryukyu Islands the next day. It turned north on 27 November and intensified further into a severe typhoon, reaching its peak intensity with maximum sustained winds of about 175 km/h near its centre. Chaba turned to move northeast on 28 October. It gradually weakened into a severe tropical storm and crossed the seas to the south of Japan on 30 October. Chaba became an extra-tropical cyclone over the western North Pacific to the east of Honshu on 31 October.

## NOVEMBER

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

## DECEMBER

A tropical depression formed over the western North Pacific about 1 360 km east of Wake Island on 19 December and moved mainly southwards. The maximum sustained wind near its centre was about 55 km/h. The tropical depression turned to move eastwards across the International Date Line into the central North Pacific the following day and intensified into a tropical storm.

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

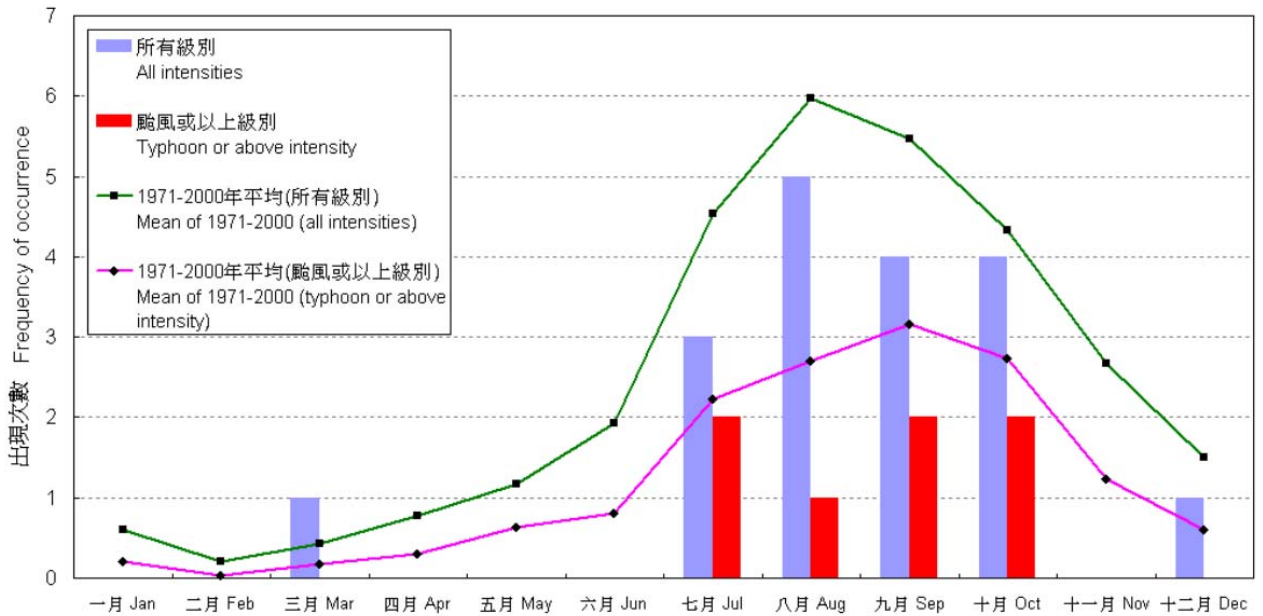


圖 2.1 二零一零年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈 (以熱帶氣旋在該月初次出現為準)。

Figure 2.1 Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2010 (based on the first occurrence of the tropical cyclone in the month).

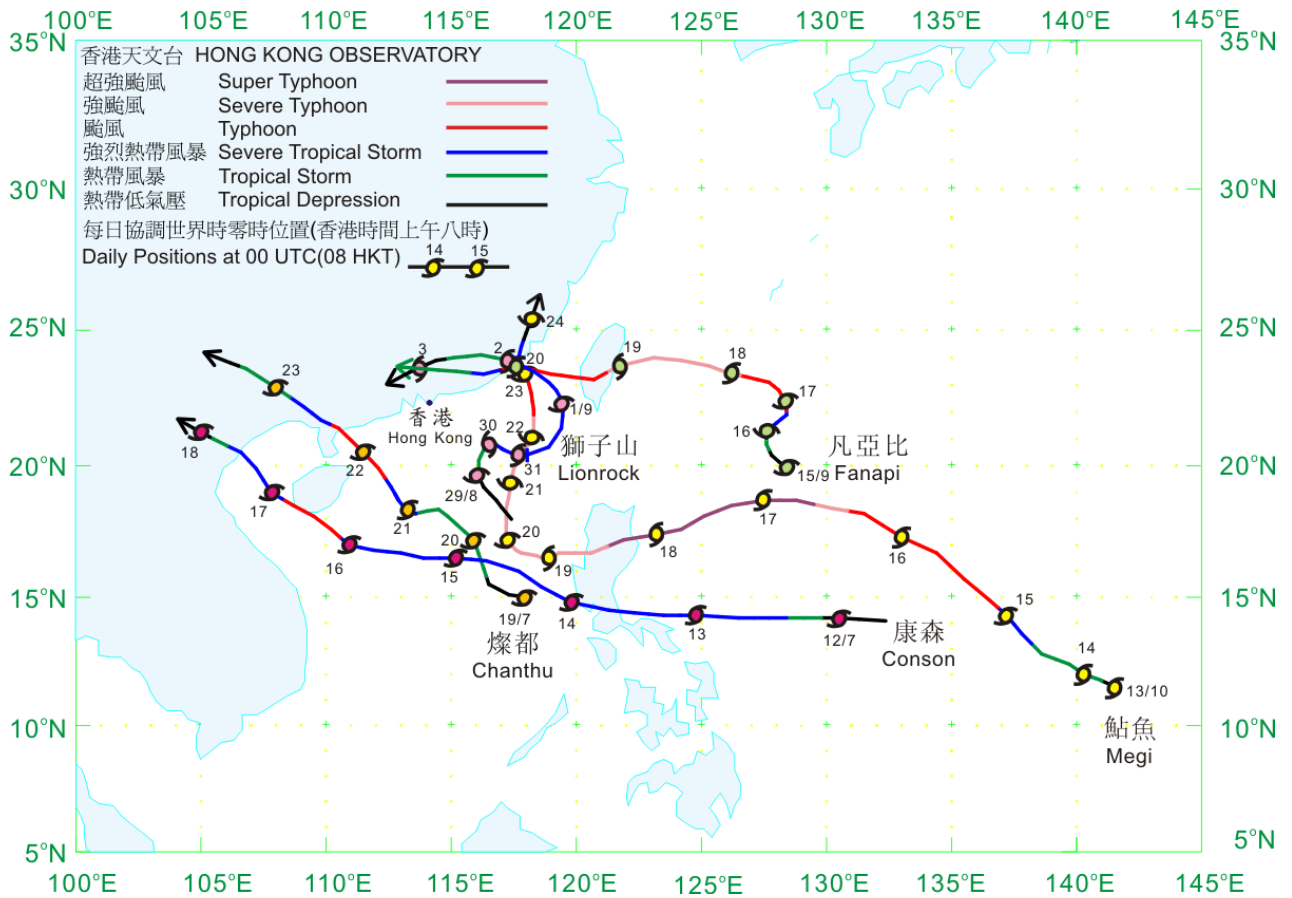


圖 2.2 二零一零年五個影響香港的熱帶氣旋的路徑圖。

Figure 2.2 Tracks of the five tropical cyclones affecting Hong Kong in 2010.

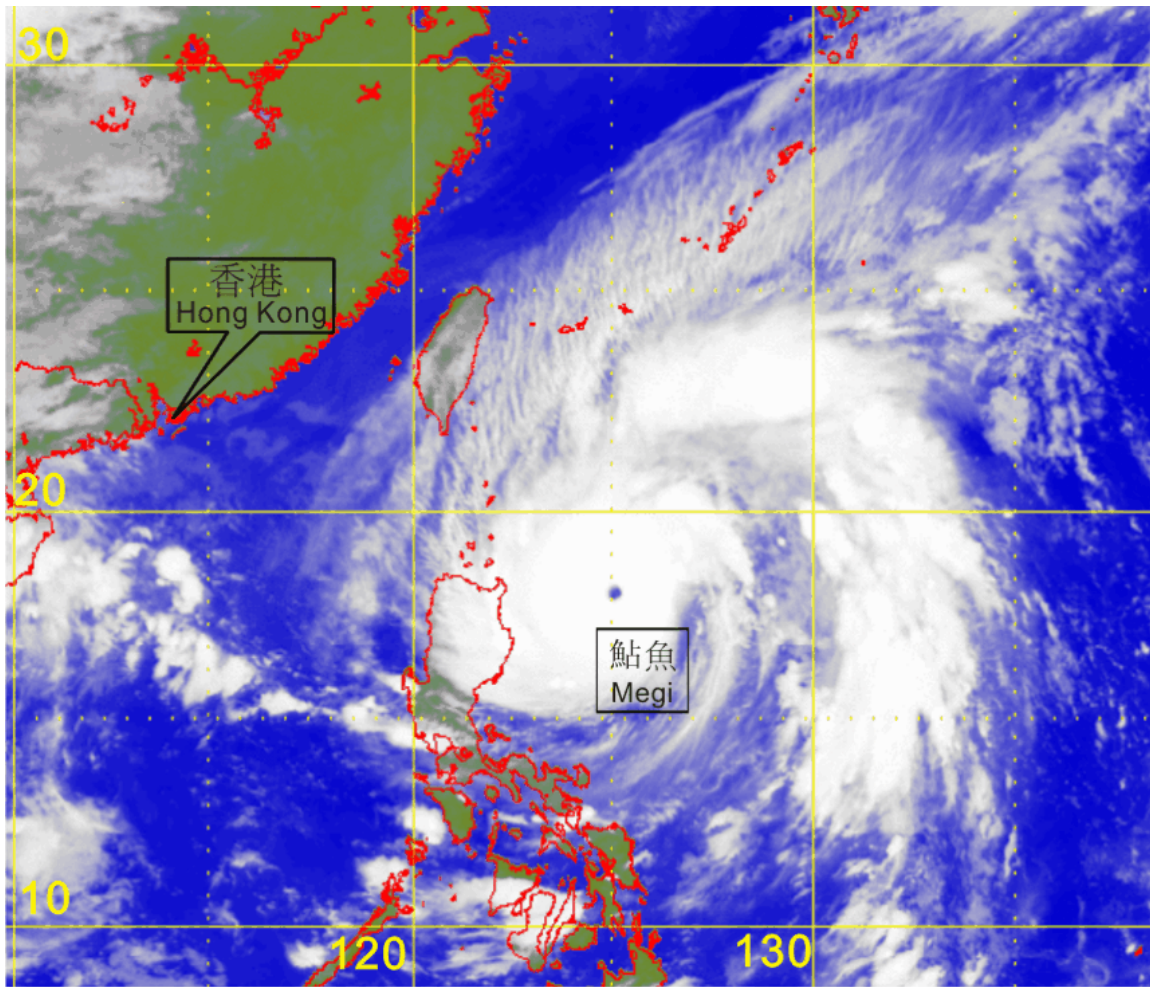


圖 2.3 超強颱風鮎魚(1013)在二零一零年十月十七日下午8時的紅外線衛星圖片。當時鮎魚位於馬尼拉東北約590公里的北太平洋西部上，最高風速估計為每小時270公里，而最低中心氣壓為895百帕斯卡，是2010年風力最強的熱帶氣旋。

Figure 2.3 Infra-red satellite imagery at 8 p.m. on 17 September 2010 of Super Typhoon Megi (1013) at peak intensity. Megi, the most intense tropical cyclone in 2010, was centred over the western North Pacific about 590 km northeast of Manila with an estimated maximum sustained winds of 270 km/h and a minimum sea-level pressure of 895 hPa at that time.

[ 此衛星圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2) 。 ]

[The satellite imagery was originally captured by the Multi-functional Transport Satellite-1R (MTSAT-2) of Japan Meteorological Agency (JMA).]

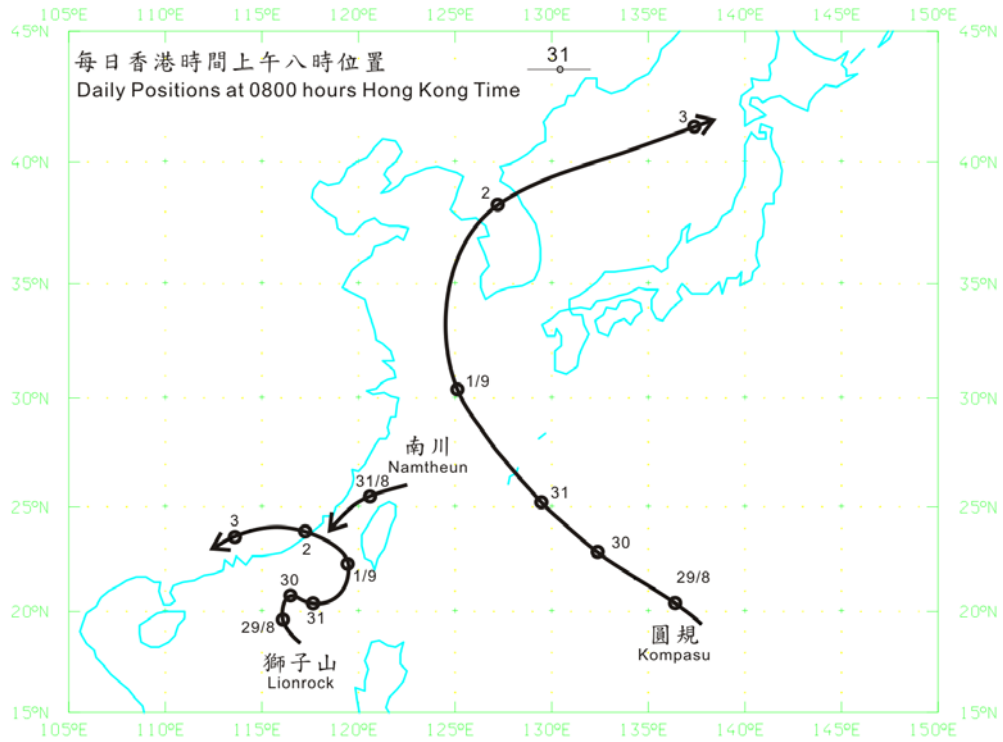


圖 2.4 獅子山(1006)，圓規(1007)及南川(1008)的路徑圖。  
 Figure 2.4 Tracks of Lionrock (1006), Kompasu (1007) and Namtheun (1008).

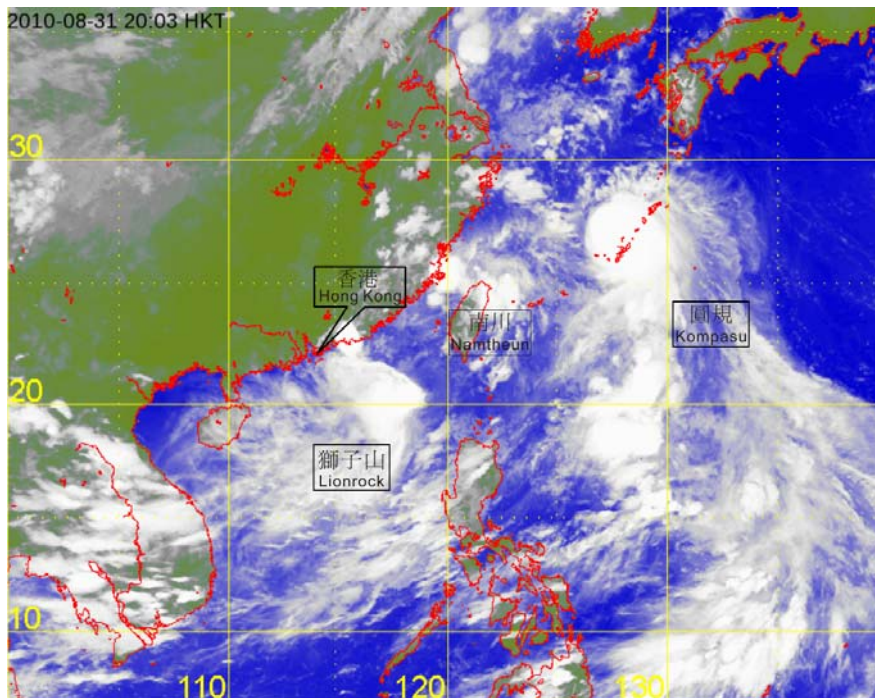


圖 2.5 二零一零年八月三十一日下午8時的紅外衛星圖像，顯示了三個熱帶氣旋，獅子山、南川和圓規。  
 [此圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2)。]

Figure 2.5 Infrared satellite image showing the three tropical cyclones, Lionrock, Namtheun and Kompasu at 8 p.m. on 31 August 2010.  
 [The satellite imagery was originally captured by Multi-functional Transport Satellite-2 (MTSAT-2) 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

年份 Year	月份 Month												共 Total
	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	
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
正常* Normal*	0.1	0.0	0.1	0.2	0.7	1.4	2.5	3.1	2.5	2.4	1.6	0.7	15.4

\* 1971-2000 氣候平均值。 1971-2000 Climatological normal.

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

年份 Year	月份 # Month #												共 Total
	一月	二月	三月	四月	五月	六月	七月	八月	九月	十月	十一月	十二月	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
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
正常* Normal*	0.0	0.0	0.0	0.1	0.2	0.8	1.5	1.3	1.4	1.0	0.1	0.0	6.5

# 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.

\* 1971-2000 氣候平均值。1971-2000 Climatological normal.



### 第三節 二零一零年影響香港的熱帶氣旋

#### 3.1 颱風康森(1002)：二零一零年七月十二日至十八日

康森是香港天文台在二零一零年首個需要發出警告信號的熱帶氣旋。

熱帶低氣壓康森於七月十二日凌晨在馬尼拉以東約1 200公里的北太平洋西部上形成，並向西移動，當日下午增強為熱帶風暴，黃昏時再增強為強烈熱帶風暴。康森於七月十三日晚上橫過呂宋南部，翌日早上進入南海，向西北偏西方向移動。它於七月十五日採取一個較為偏西的路徑，橫過南海。康森於七月十六日轉向西北偏西至西北移動，下午增強為颱風，並達到其最高強度，其中心附近最高持續風速估計達每小時120公里，於黃昏在海南島三亞附近登陸，晚上掠過海南島西南部沿岸。康森於七月十七日橫過北部灣，早上減弱為強烈熱帶風暴，黃昏時在越南北部沿岸登陸，晚上減弱為熱帶風暴。它於翌日早上進一步減弱為熱帶低氣壓，隨後在內陸消散。根據報章報導，康森為菲律賓帶來暴雨，並引致最少26人死亡，另60人失蹤。海南島有兩人死亡、受災人口超過57萬，直接經濟損失2.4億元人民幣。越南則有17人失蹤，超過600間房屋及43艘漁船被損毀。

香港天文台於七月十五日下午7時20分發出一號戒備信號，當時康森位於香港以南約640公里。黃昏時香港吹和緩東風，晚間離岸風勢轉為清勁，高地吹強風。康森於下午八時左右最接近香港，位於香港以南約630公里。香港天文台總部較早前在當日下午3時42分至5時42分錄得最低瞬時海平面氣壓1006.2百帕斯卡。七月十六日本港吹和緩至清勁東至東南風，高地吹強風。隨着康森逐漸遠離本港，天文台於下午9時15分取消所有熱帶氣旋警告信號。康森影響香港期間各站錄得的最高風速可參考表3.1.1.1。

香港於七月十五日多雲，短暫時間有陽光，但亦有幾陣驟雨及局部地區性雷暴。受到康森的外圍雨帶影響，七月十六日本港有狂風驟雨及雷暴。

康森吹襲期間，屯門有一棵大樹的樹幹倒下，損毀一輛客貨車的擋風玻璃，幸而無人受傷。

表3.1.2及3.1.3分別是康森影響香港期間本港的日雨量及最高潮位資料。圖3.1.1-3.1.4分別為康森的路徑圖、本港的雨量分佈圖、康森的衛星圖像及相關的雷達圖像。

## Section 3 TROPICAL CYCLONES AFFECTING HONG KONG IN 2010

### 3.1 Typhoon Conson (1002): 12 – 18 July 2010

Conson was the first tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by Hong Kong Observatory in 2010.

Conson formed as a tropical depression over the western North Pacific about 1 200 km east of Manila early on 12 July. Moving westwards, it intensified into a tropical storm that afternoon and further developed into a severe tropical storm in the evening. Conson crossed the southern part of Luzon during the night of 13 July and entered the South China Sea the following morning. Conson moved west-northwestwards on 14 July but took on a more westerly track across the South China Sea the following day. It moved west-northwest to northwest on 16 July and intensified into a typhoon that afternoon, reaching its peak intensity with estimated maximum winds of 120 km/h near its centre. Conson made landfall near Sanya, Hainan Island that evening and skirted the coast of southwest Hainan that night. It crossed Beibu Wan and weakened into a severe tropical storm on the morning of 17 July, making landfall over the coast of northern Vietnam that evening and weakening into a tropical storm at night. Conson weakened further into a tropical depression next morning and dissipated inland thereafter. According to press reports, Conson brought rainstorms to the Philippines, where at least 26 people were killed and 60 others injured. In Hainan Island, at least two people were killed, 570 000 people affected and the direct economic losses amounted to 240 million RMB. In Vietnam, 17 people were missing with more than 600 homes and 43 fishing vessels damaged.

In Hong Kong, the Standby Signal No. 1 was issued at 7:20 p.m. on 15 July when Conson was about 640 km south of Hong Kong. Local winds were moderate easterlies that evening, becoming fresh offshore and strong on high ground that night. Conson was closest to Hong Kong at around 8 p.m. that evening when it was about 630 km to the south. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1006.2 hPa was recorded earlier between 3:42 p.m. and 5:42 p.m. that day. Local winds became moderate to fresh east to southeasterlies on 16 July and were strong on high ground. All tropical cyclone warning signals were cancelled at 9:15 p.m. on 16 July as Conson gradually moved away from Hong Kong. The maximum winds recorded at various stations during the passage of Conson are given in Table 3.1.1.

The weather in Hong Kong was cloudy with sunny intervals on 15 July, but there were also a few showers and isolated thunderstorms. Under the influence of the outer rainbands of Conson, squally showers and thunderstorms affected Hong Kong on 16 July.

The windscreen of a van was damaged by a fallen tree trunk in Tuen Mun during the passage of Conson. Fortunately no one was injured.

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

表 3.1.1 在康森影響下，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 signal for Conson was 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)	東南偏東	ESE	59	15/7	22:23	東南	SE	31	16/7	05:00
中環碼頭	Central Pier	東南	SE	51	15/7	22:53	東	E	31	16/7	12:00
長洲	Cheung Chau	東南偏東	ESE	81	16/7	12:12	東南偏東	ESE	40	16/7	12:00
							東南偏東	ESE	40	16/7	13:00
長洲泳灘	Cheung Chau Beach	東南偏東	ESE	88	16/7	12:12	東	E	34	16/7	12:00
長沙灣	Cheung Sha Wan	東南偏東	ESE	49	16/7	14:16	東南偏東	ESE	14	16/7	12:00
							東南偏東	ESE	14	16/7	13:00
青洲	Green Island	東南	SE	85	16/7	14:10	東北偏東	ENE	34	16/7	13:00
香港 國際機場	Hong Kong International Airport	東南	SE	65	16/7	12:29	東南	SE	38	16/7	12:00
啓德	Kai Tak	東南偏東	ESE	59	16/7	17:57	東南偏東	ESE	27	16/7	13:00
京士柏	King's Park	東南偏東	ESE	43	16/7	12:49	東南偏東	ESE	20	15/7	23:00
流浮山	Lau Fau Shan	東南	SE	72	16/7	14:41	東南	SE	23	16/7	15:00
昂坪	Ngong Ping	東	E	142	15/7	22:50	東	E	75	15/7	23:00
北角	North Point	東	E	47	16/7	12:03	東	E	27	16/7	13:00
坪洲	Peng Chau	南	S	58	16/7	14:11	東南偏東	ESE	23	15/7	23:00
平洲	Ping Chau	東南偏東	ESE	45	15/7	23:25	東南	SE	9	16/7	19:00
西貢	Sai Kung	東南	SE	54	16/7	14:19	東南偏南	SSE	27	16/7	00:00
沙洲	Sha Chau	東南偏南	SSE	70	16/7	14:25	東南	SE	34	16/7	13:00
沙螺灣	Sha Lo Wan	東南	SE	70	15/7	22:56	東	E	25	16/7	11:00
沙田	Sha Tin	東南偏南	SSE	47	15/7	23:23	東南偏南	SSE	14	16/7	13:00
石崗	Shek Kong	東	E	49	16/7	10:35	東	E	19	16/7	13:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏南	SSE	62	16/7	18:02	東	E	30	16/7	12:00
打鼓嶺	Ta Kwu Ling	東	E	45	16/7	14:00	東	E	19	16/7	14:00
大美督	Tai Mei Tuk	東南	SE	68	16/7	14:32	東	E	31	16/7	14:00
大帽山	Tai Mo Shan	東南	SE	79	16/7	00:07	東南	SE	58	16/7	01:00
塔門	Tap Mun	東南偏東	ESE	58	15/7	23:22	東南	SE	23	16/7	00:00
大老山	Tate's Cairn	南	S	68	16/7	18:11	東南	SE	38	15/7	23:00
		西南偏南	SSW	68	16/7	18:16					
鯽魚湖	Tsak Yue Wu	西南偏南	SSW	31	16/7	18:25	東南偏南	SSE	9	16/7	13:00
將軍澳	Tseung Kwan O	東南	SE	43	16/7	14:11	東南	SE	13	16/7	11:00
青衣島蜆殼 油庫	Tsing Yi Shell Oil Depot	東南	SE	56	15/7	23:04	東南	SE	23	16/7	13:00
屯門政府合署	Tuen Mun Government Offices	南	S	75	16/7	14:27	東南	SE	22	16/7	15:00
橫瀾島	Waglan Island	東南	SE	85	15/7	22:16	東南	SE	40	15/7	23:00
濕地公園	Wetland Park	東南偏南	SSE	49	16/7	14:39	東南偏東	ESE	20	16/7	12:00
黃竹坑	Wong Chuk Hang	東南	SE	58	16/7	04:30	東	E	19	15/7	23:00
							東南偏東	ESE	19	16/7	12:00

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

站 (參閱圖 3.1.2) Station (See Fig. 3.1.2)	七月十五日 15 Jul	七月十六日 16 Jul	總雨量(毫米) Total(mm)
香港天文台 Hong Kong Observatory	8.4	17.8	26.2
長洲 Cheung Chau (CCH)	3.5	17.5	21.0
香港國際機場 Hong Kong International Airport (HKA)	1.1	16.9	18.0
N05 粉嶺 Fanling	16.5	[7.0]	[23.5]
N13 糧船灣 High Island	10.5	10.5	21.0
K04 佐敦谷 Jordan Valley	11.0	13.5	24.5
N06 葵涌 Kwai Chung	17.0	16.0	33.0
H12 半山區 Mid Levels	21.5	27.0	48.5
H21 淺水灣 Repulse Bay	6.0	15.0	21.0
SHA 沙田 Sha Tin	6.5	16.5	23.0
H19 筲箕灣 Shau Kei Wan	5.0	9.0	14.0
SEK 石崗 Shek Kong	2.5	21.5	24.0
K06 蘇屋邨 So Uk Estate	14.5	13.5	28.0
PLC 大美督 Tai Mei Tuk	[3.0]	12.5	[15.5]
R21 踏石角 Tap Shek Kok	9.0	15.5	24.5
N17 東涌 Tung Chung	12.0	16.0	28.0
R27 元朗 Yuen Long	2.0	22.0	24.0

註： [ ] 基於不齊全的每小時雨量數據。  
Note: [ ] based on incomplete hourly data.

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

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	2.16	16/7	13:05	0.16	15/7	22:20
石壁	Shek Pik	2.22	16/7	11:06	0.25	16/7	17:33
大廟灣	Tai Miu Wan	2.03	16/7	10:34	0.16	16/7	10:15
大埔滘	Tai Po Kau	2.29	16/7	13:55	0.29	16/7	15:19
尖鼻咀	Tsim Bei Tsui	2.64	16/7	12:48	0.27	16/7	19:43
橫瀾島	Waglan Island	2.13	16/7	12:39	0.15	15/7	21:52

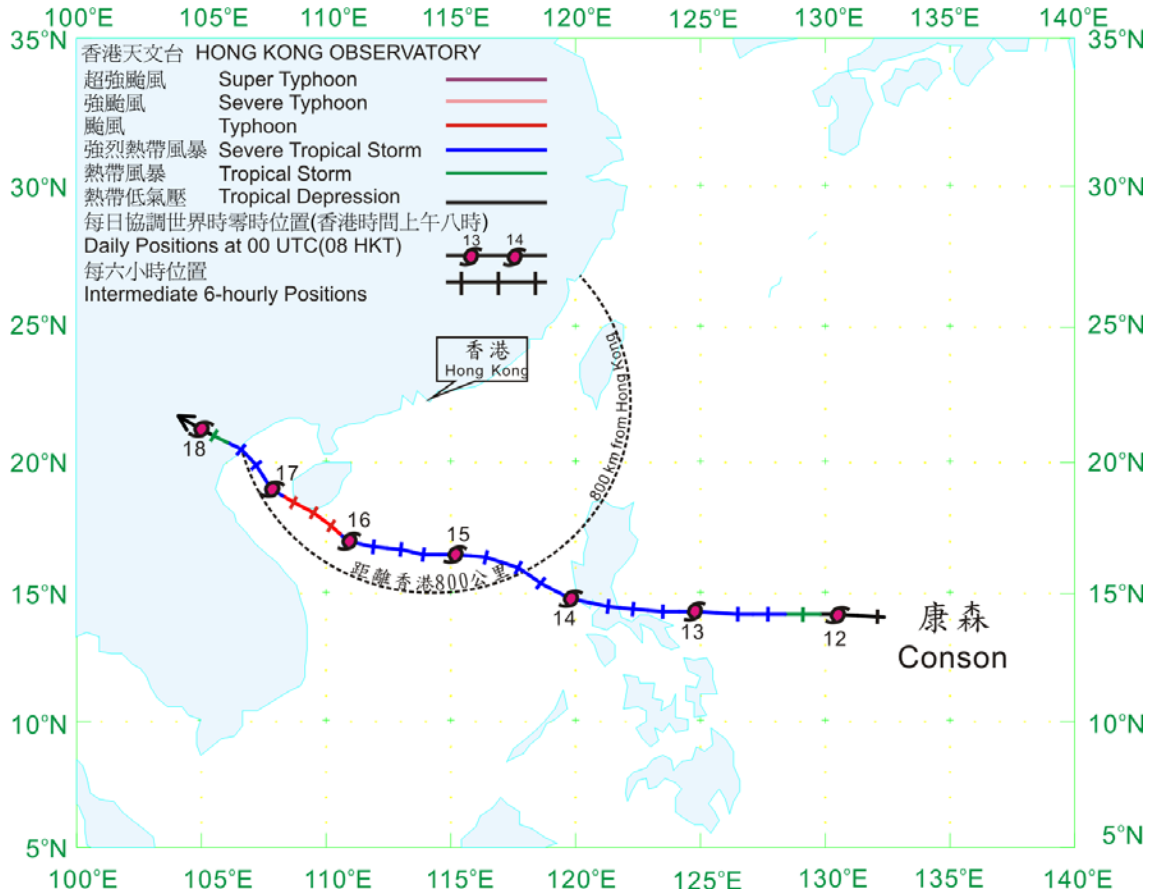


圖 3.1.1 康森 (1002) 在二零一零年七月十二日至十八日的路徑圖。  
Figure 3.1.1 Track of Conson (1002) on 12 – 18 July 2010.

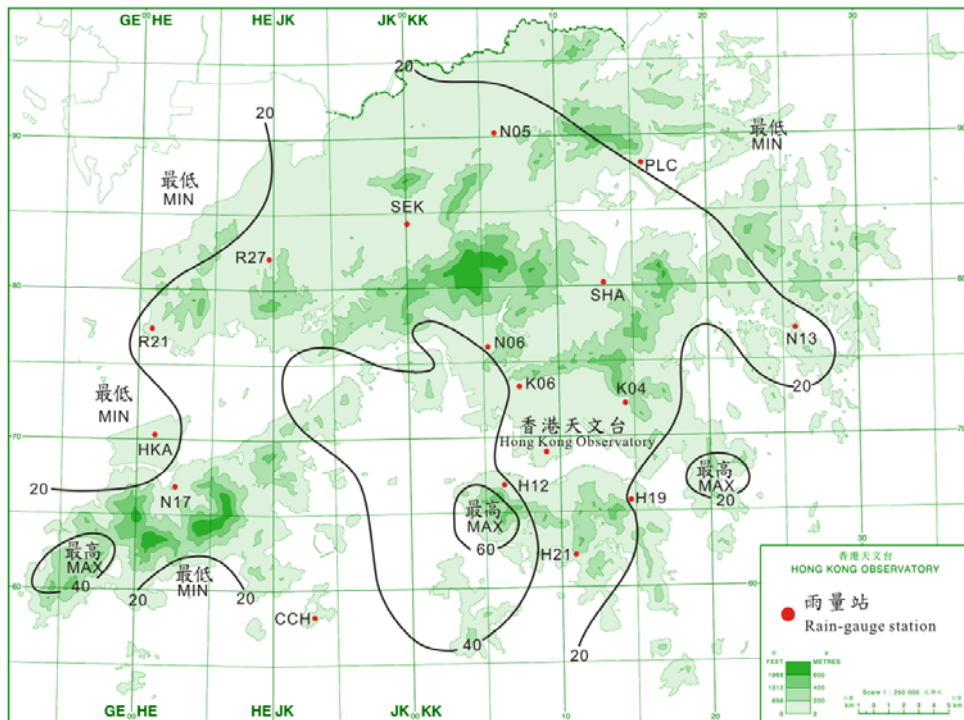


圖 3.1.2 二零一零年七月十五日至十六日的雨量分佈(等雨量線單位為毫米)。  
Figure 3.1.2 Rainfall distribution on 15 – 16 July 2010 (isohyets are in millimetres).

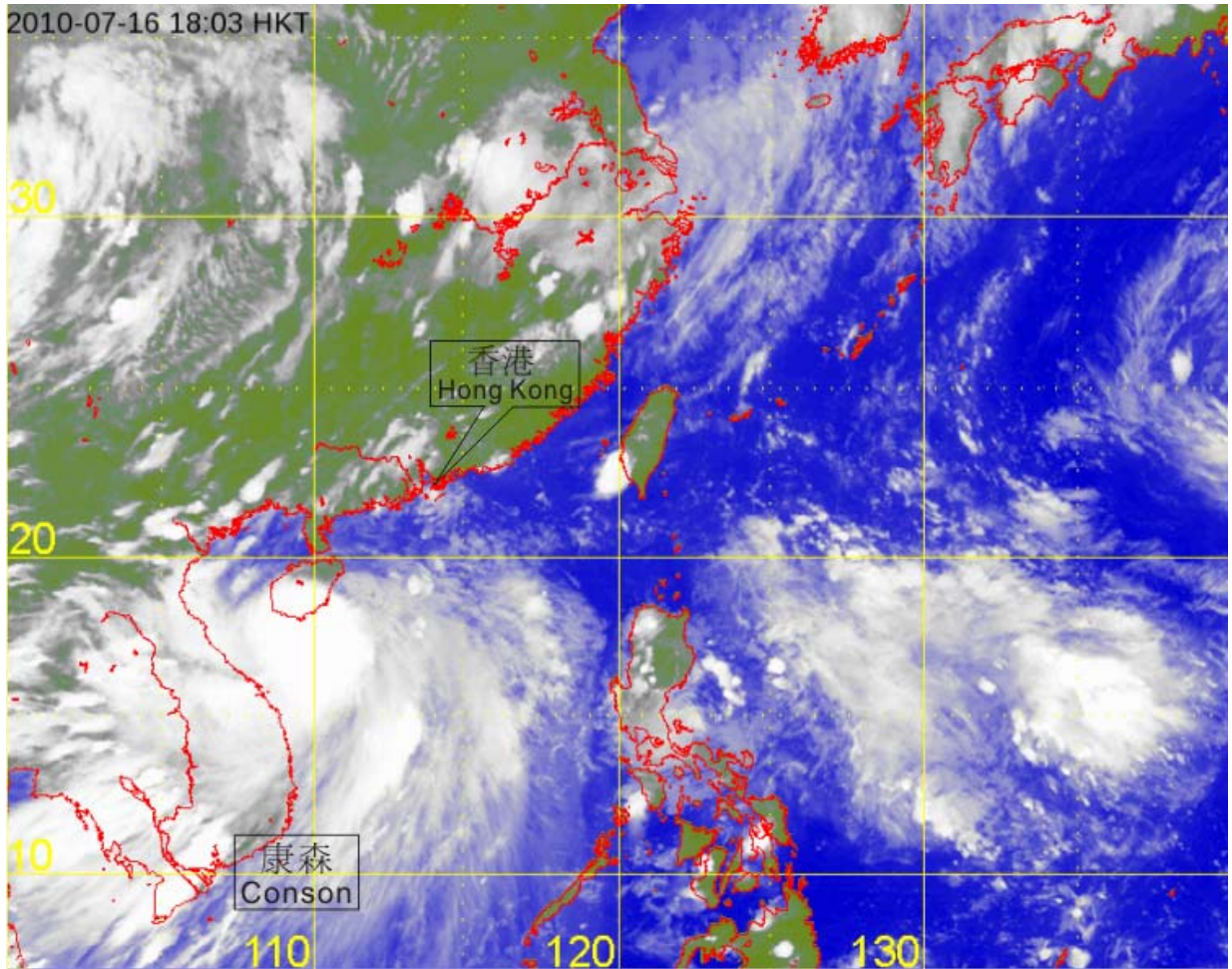


圖 3.1.3 颱風康森在二零一零年七月十六日下午 6 時的紅外線衛星圖片。當時康森達到其最高強度，中心附近估計最高持續風速達到每小時 120 公里。

Figure 3.1.3 Infra-red satellite imagery at 6 p.m. on 16 July 2010 of Typhoon Conson at its peak intensity with estimated maximum sustained winds of 120 kilometres per hour near its centre.

[ 此衛星圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2) 。 ]

[The satellite imagery was originally captured by the Multi-functional Transport Satellite-2 (MTSAT-2) of Japan Meteorological Agency (JMA).]

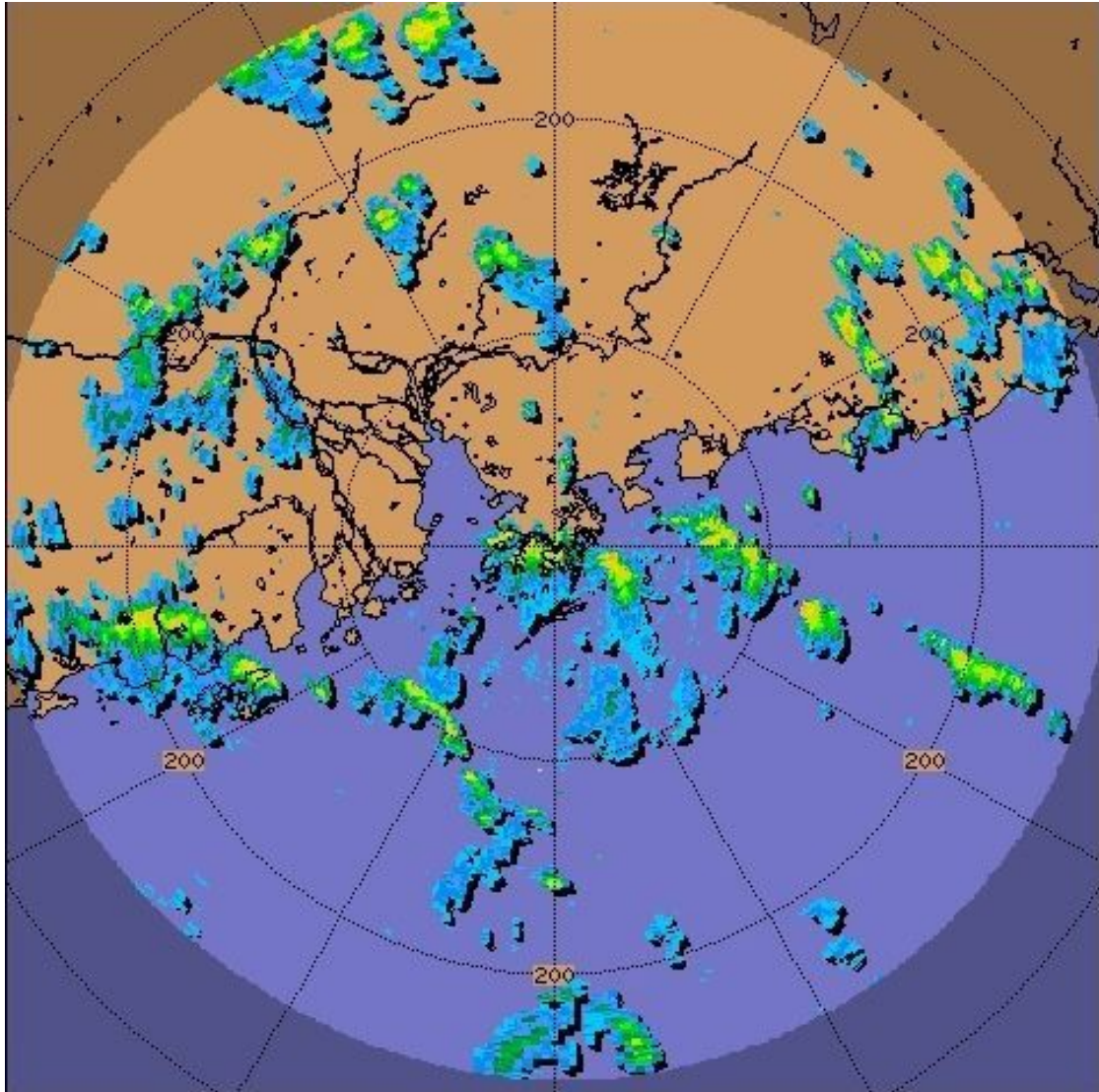


圖 3.1.4 二零一零年七月十六日下午 6 時的雷達回波圖像，顯示康森的外圍雨帶正影響香港。

Figure 3.1.4 Radar imagery at 6 p.m. on 16 July 2010. Squally showers associated with the outer rainbands of Conson were affecting Hong Kong around that time.

## 3.2 颱風燦都 (1003)：二零一零年七月十九日至二十三日

燦都是香港天文台在二零一零年第二個需要發出警告信號的熱帶氣旋。

一個熱帶低氣壓於七月十九日在香港東南偏南約900公里的南海中部上形成，並大致向西北移動。它於七月二十日增強為熱帶風暴，並命名為燦都，黃昏時一度轉向西移動。燦都於七月二十一日增強為強烈熱帶風暴，並再次向西北移動，橫過南海北部。它於七月二十二日凌晨在海南島以東增強為颱風，並達到其最高強度，其中心附近最高持續風速估計達每小時120公里。當日下午燦都在湛江附近登陸，黃昏時減弱為強烈熱帶風暴。七月二十三日燦都橫過廣西，早上減弱為熱帶風暴，黃昏再減弱為熱帶低氣壓，當晚在內陸消散。根據報章報導，燦都為廣東帶來暴雨，最少有兩人死亡、超過2 900間房屋倒塌，直接經濟損失達22.1億元人民幣。

香港天文台於七月二十日下午 12 時 15 分發出一號戒備信號，當時燦都位於香港東南偏南約 540 公里。當日下午香港吹和緩東風，晚間高地間中吹強風。七月二十一日燦都移近香港並增強，本港轉吹清勁東風，高地吹強風。香港天文台於下午 4 時 40 分發出三號強風信號，當時燦都位於香港西南偏南約 400 公里。燦都於七月二十二日上午五時左右最接近香港，並在香港西南約 330 公里掠過。香港天文台總部在當日上午 5 時 06 分錄得最低瞬時海平面氣壓 1005.2 百帕斯卡。七月二十二日早上本港離岸及高地風勢強烈，日間轉吹東南風。隨着燦都逐漸遠離本港，天文台於上午 11 時 40 分改發一號戒備信號，取代三號強風信號。下午本港風勢進一步減弱，天文台於下午 2 時 40 分取消所有熱帶氣旋警告信號。燦都影響香港期間各站錄得的最高風速及持續風力達到強風的時段可參考表 3.2.1 及 3.2.2。

受到燦都外圍的下沉氣流影響，香港於七月二十日天晴及天氣酷熱。在燦都的外圍雨帶影響下，隨後兩天本港有狂風驟雨及雷暴。七月二十二日下午本港雨勢頗大，天文台分別在下午4時35分、下午5時20分及下午5時30分發出黃色、紅色及本年首個黑色暴雨警告信號，而新界北水浸特別報告及山泥傾瀉警告則分別在下午5時40分及6時10分發出。

七月二十一日深水埗有物體被風吹起，從高空墮下，一名途人受傷。此外，荃灣一棵20米高樹其中一節被折斷墮下，幸無人受傷。受到七月二十二日下午大雨的影響，本港最少有42宗水浸及七宗山泥傾瀉報告。在暴雨警告發出期間，港島、九龍和新界多處出現水浸，其中新界北部水災最嚴重。上水、大埔及沙田共有四人在洪水中死亡，另數十人受傷。香港國際機場有兩班航機因天氣關係轉飛其它地區。

表3.2.3及3.2.4 分別是燦都影響香港期間本港的日雨量及最高潮位資料。圖3.2.1-3.2.6 分別為燦都的路徑圖、本港的雨量分佈圖、天文台每小時錄得的雨量、長洲的風速序列圖、燦都的衛星圖像及相關的雷達圖像。



### **3.2 Typhoon Chanthu (1003): 19 – 23 July 2010**

Chanthu was the second tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2010.

A tropical depression formed over the central part of the South China Sea about 900 km south-southeast of Hong Kong on 19 July and moved generally northwestwards. It intensified into a tropical storm on 20 July and was named Chanthu, turning to move westwards for a while that evening. Chanthu intensified into a severe tropical storm and resumed a northwesterly track on 21 July across the northern part of the South China Sea. Chanthu intensified into a typhoon to the east of Hainan Island in the early hours of 22 July, reaching its peak intensity with estimated maximum sustained winds of 120 km/h near its centre. It made landfall near Zhanjiang that afternoon and weakened into a severe tropical storm that evening. Chanthu moved across Guangxi on 23 July. It weakened into a tropical storm that morning and a tropical depression in the evening. Chanthu eventually dissipated inland that night. According to press reports, Chanthu brought rainstorms to Guangdong where at least two people were killed and over 2 900 houses collapsed. The total economic losses amounted to 2.21 billion RMB.

In Hong Kong, the Standby Signal No. 1 was issued at 12:15 p.m. on 20 July when Chanthu was about 540 km south-southeast of Hong Kong. Local winds were moderate easterlies that afternoon, occasionally strong on high ground that night. As Chanthu moved closer and intensified, winds freshened from the east on 21 July and became strong on high grounds. The Strong Wind Signal No. 3 was issued at 4:40 p.m. when Chanthu was centred about 400 km to the south-southwest. Chanthu was closest to Hong Kong at about 5 a.m. on 22 July passing about 330 km to the southwest. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1005.2 hPa was recorded at 5:06 a.m. that day. Local winds were strong offshore and on high ground in the morning on 22 July and turned to southeasterlies during the day. As Chanthu moved gradually away from Hong Kong, the No. 3 Signal was replaced by the Standby Signal No. 1 at 11:40 a.m. All tropical cyclone warning signals were cancelled at 2:40 p.m. as local winds subsided further that afternoon. The maximum winds recorded at various stations and the periods of strong winds during the passage of Chanthu are given in Tables 3.2.1 and 3.2.2 respectively.

Affected by the subsidence zone ahead of Chanthu, the weather in Hong Kong was fine and very hot on 20 July. Under the influence of the outer rainbands of Chanthu, there were squally showers and thunderstorms in the following two days. Heavy rain affected Hong Kong in the afternoon on 22 July and the Amber, Red and the first Black Rainstorm Warning Signal this year were issued at 4:35 p.m., 5:20 p.m. and 5:30 p.m. respectively. The Special Announcement on Flooding in the northern New Territories and the Landslip Warning were also issued at 5:40 p.m. and 6:10 p.m. respectively.

In Hong Kong, a passer-by was injured by fallen objects blown off by winds in Sham Shui Po. A section of a 20-metre tall tree fell in Tsuen Wan on 21 July, fortunately no one was injured. The heavy rain during the afternoon on 22 July resulted in at least 42 reports of flooding and seven reports of landslips. During the period when the rainstorm warnings were in force, there were widespread flooding in Hong Kong Island, Kowloon and the New Territories and the flooding was most severe in the northern part of the New Territories. Four people were killed by the flood water in Sheung Shui, Tai Po and Sha Tin and tens of people were injured. At the Hong Kong International Airport, two flights were diverted due to adverse weather.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Chanthu is given in Tables 3.2.3 and 3.2.4 respectively. Figures 3.2.1 - 3.2.6 show respectively the track of Chanthu, the rainfall distribution for Hong Kong, hourly rainfall recorded at the Hong Kong Observatory, time series of the wind speed recorded at Cheung Chau, a satellite imagery of Chanthu and a related radar imagery.

表 3.2.1 在燦都影響下，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 tropical cyclone warning signals for Chanthu 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)	東南偏東	ESE	59	22/7	09:29	東南偏東	ESE	40	22/7	07:00
中環碼頭	Central Pier	東	E	54	21/7	14:03	東	E	27	22/7	03:00
長洲	Cheung Chau	東南偏東	ESE	68	21/7	23:35	東南	SE	52	22/7	08:00
長洲泳灘	Cheung Chau Beach	東	E	67	21/7	23:19	東	E	51	22/7	08:00
長沙灣	Cheung Sha Wan	東南偏東	ESE	47	21/7	13:49	東	E	14	22/7	08:00
青洲	Green Island	東北偏東	ENE	76	21/7	13:50	東北	NE	43	21/7	22:00
香港 國際機場	Hong Kong International Airport	東南偏東	ESE	68	22/7	08:36	東南偏東	ESE	36	22/7	09:00
啓德	Kai Tak	東	E	68	21/7	13:45	東	E	31	22/7	08:00
京士柏	King's Park	東南偏東	ESE	65	21/7	13:48	東南偏東	ESE	22	22/7	08:00
流浮山	Lau Fau Shan	南	S	52	22/7	13:32	東	E	23	21/7	11:00
昂坪	Ngong Ping	東	E	131	21/7	22:36	東	E	87	21/7	16:00
北角	North Point	東	E	56	21/7	13:49	東	E	25	21/7	23:00
坪洲	Peng Chau	東南偏南	SSE	62	22/7	13:03	東	E	36	21/7	18:00
平洲	Ping Chau	東南	SE	43	21/7	14:32	東南偏東	ESE	12	22/7	11:00
							東南偏東	ESE	12	22/7	13:00
西貢	Sai Kung	東南	SE	68	22/7	09:41	東南偏南	SSE	31	22/7	12:00
沙洲	Sha Chau	東南偏南	SSE	72	22/7	13:06	東南	SE	45	22/7	08:00
沙螺灣	Sha Lo Wan	東南	SE	65	22/7	08:36	東	E	27	22/7	07:00
							東南	SE	27	22/7	09:00
沙田	Sha Tin	東南	SE	47	21/7	14:21	東南	SE	22	22/7	08:00
石崗	Shek Kong	東南偏東	ESE	43	21/7	14:13	東	E	23	22/7	02:00
九龍天星 碼頭	Star Ferry (Kowloon)	東	E	67	21/7	13:50	東	E	31	22/7	10:00
打鼓嶺	Ta Kwu Ling	東	E	40	22/7	04:51	東	E	16	22/7	05:00
大美督	Tai Mei Tuk	東南偏東	ESE	75	22/7	09:52	東北偏東	ENE	34	21/7	18:00
大帽山	Tai Mo Shan	東南偏東	ESE	110	21/7	13:57	東南	SE	76	21/7	15:00
塔門	Tap Mun	東南	SE	56	22/7	10:49	東南	SE	31	22/7	11:00
大老山	Tate's Cairn	東南偏南	SSE	96	21/7	13:50	東南偏東	ESE	45	21/7	23:00
鯽魚湖	Tsak Yue Wu	西南偏南	SSW	38	22/7	11:49	東北偏東	ENE	12	21/7	19:00
							東	E	12	22/7	04:00
將軍澳	Tseung Kwan O	東南	SE	58	21/7	13:41	東南	SE	14	22/7	14:00
青衣島蜆 殼油庫	Tsing Yi Shell Oil Depot	東南	SE	72	21/7	13:56	東南偏東	ESE	23	22/7	13:00
屯門政府 合署	Tuen Mun Government Offices	東南偏東	ESE	58	22/7	07:17	東南	SE	25	22/7	09:00
							東南	SE	25	22/7	10:00
橫瀾島	Waglan Island	東南	SE	67	21/7	13:28	東南偏東	ESE	43	22/7	08:00
濕地公園	Wetland Park	東南偏東	ESE	45	21/7	14:12	東南	SE	19	22/7	09:00
黃竹坑	Wong Chuk Hang	東北偏東	ENE	54	21/7	22:09	東	E	22	21/7	23:00

表 3.2.2 在燦都影響下，在熱帶氣旋警告系統的八個參考測風站所錄到持續風力達到強風程度的時段

Table 3.2.2 Periods during which sustained strong winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Chanthu were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 First time strong wind speed* was reached		最後達到強風*時間 Last time strong wind speed* was reached	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	21/7	10:52	22/7	13:04
香港國際 機場	Hong Kong International Airport	22/7	08:43	22/7	13:09
啓德	Kai Tak	21/7	13:48	21/7	13:51

\* 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: 本表列出持續風力最初及最後達到強風程度的時間。其間，風力可能高於或低於指定的風力。

Note: The table gives the first and last time when strong winds were recorded. Note that the winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.2.3 燦都影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.2.3 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Chanthu

站 (參閱圖 3.2.2) Station (See Fig. 3.2.2)	七月二十日 20 Jul	七月二十一日 21 Jul	七月二十二日 22 Jul	總雨量(毫米) Total(mm)
香港天文台 Hong Kong Observatory	0.0	29.6	182.4	212.0
長洲 Cheung Chau (CCH)	0.0	19.5	11.5	31.0
香港國際機場 Hong Kong International Airport (HKA)	0.0	28.4	9.8	38.2
N05 粉嶺 Fanling	0.0	23.0	165.5	188.5
N13 糧船灣 High Island	0.0	22.5	75.5	98.0
K04 佐敦谷 Jordan Valley	0.0	[32.0]	131.0	[163.0]
N06 葵涌 Kwai Chung	0.0	21.5	252.5	274.0
H12 半山區 Mid Levels	0.0	41.5	99.0	140.5
H21 淺水灣 Repulse Bay	0.0	46.0	118.0	164.0
N09 沙田 Sha Tin	0.0	44.5	159.0	203.5
H19 筲箕灣 Shau Kei Wan	0.0	27.5	131.5	159.0
SEK 石崗 Shek Kong	0.0	23.0	88.5	111.5
K06 蘇屋邨 So Uk Estate	0.0	24.0	254.5	278.5
R31 大美督 Tai Mei Tuk	0.0	38.0	129.0	167.0
R21 踏石角 Tap Shek Kok	0.0	27.5	13.0	40.5
N17 東涌 Tung Chung	0.0	29.5	12.0	41.5
R27 元朗 Yuen Long	0.0	12.0	46.5	58.5

註： [ ] 基於不完整的每小時雨量數據。

Note: [ ] based on incomplete hourly data.

表 3.2.4 燦都影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.2.4 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Chanthu

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鯽魚涌	Quarry Bay	2.30	22/7	06:24	0.19	22/7	08:49
石壁	Shek Pik	2.35	22/7	05:53	0.25	22/7	11:41
大廟灣	Tai Miu Wan	2.15	22/7	06:33	0.15	22/7	08:54
大埔滘	Tai Po Kau	2.35	22/7	07:40	0.32	22/7	07:47
尖鼻咀	Tsim Bei Tsui	2.60	22/7	06:11	0.25	22/7	10:02
橫瀾島	Waglan Island	2.25	22/7	06:29	0.09	22/7	03:25

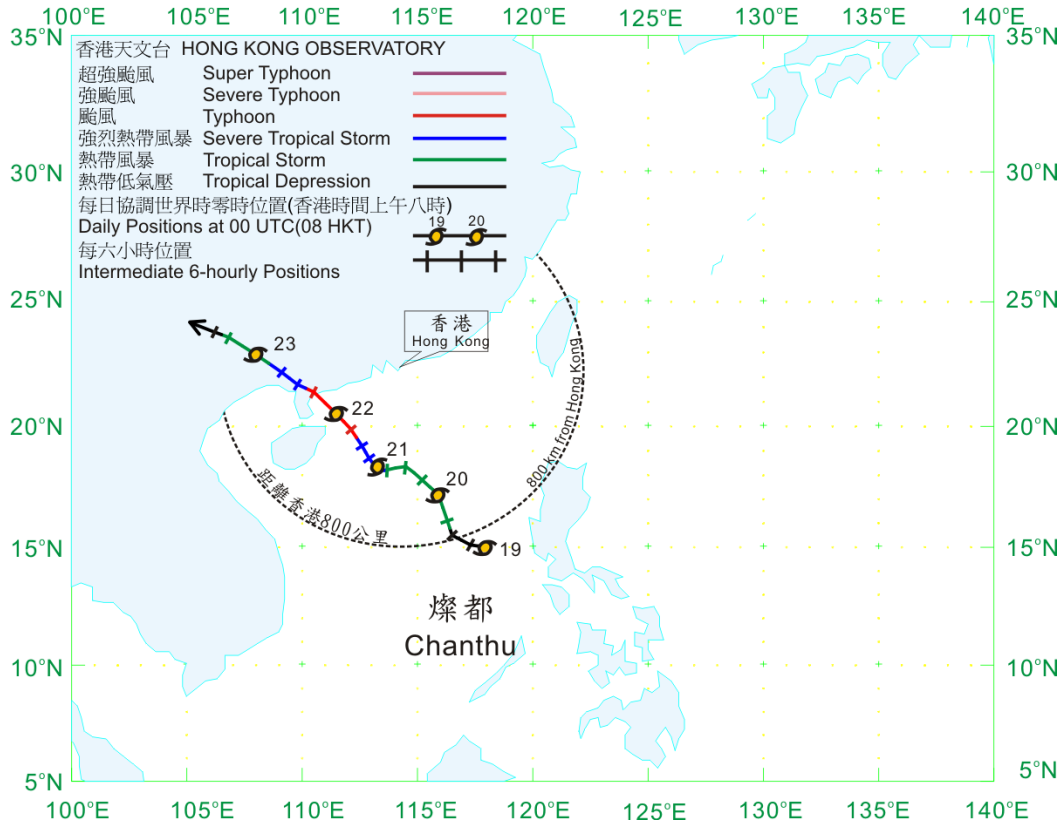


圖 3.2.1 燦都 (1003) 在二零一零年七月十九日至二十三日的路徑圖。  
 Figure 3.2.1 Track of Chanthu (1003) on 19 – 23 July 2010.

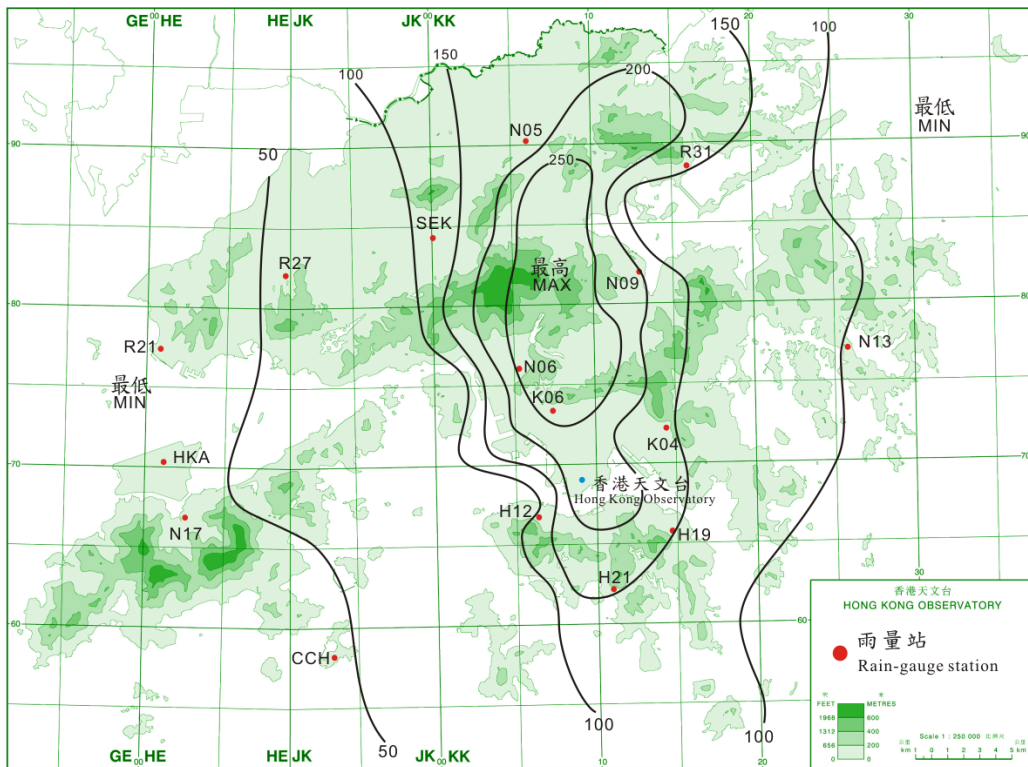


圖 3.2.2 二零一零年七月二十日至二十二日的雨量分佈(等雨量線單位為毫米)。  
 Figure 3.2.2 Rainfall distribution on 20 – 22 July 2010 (isohyets are in millimetres).

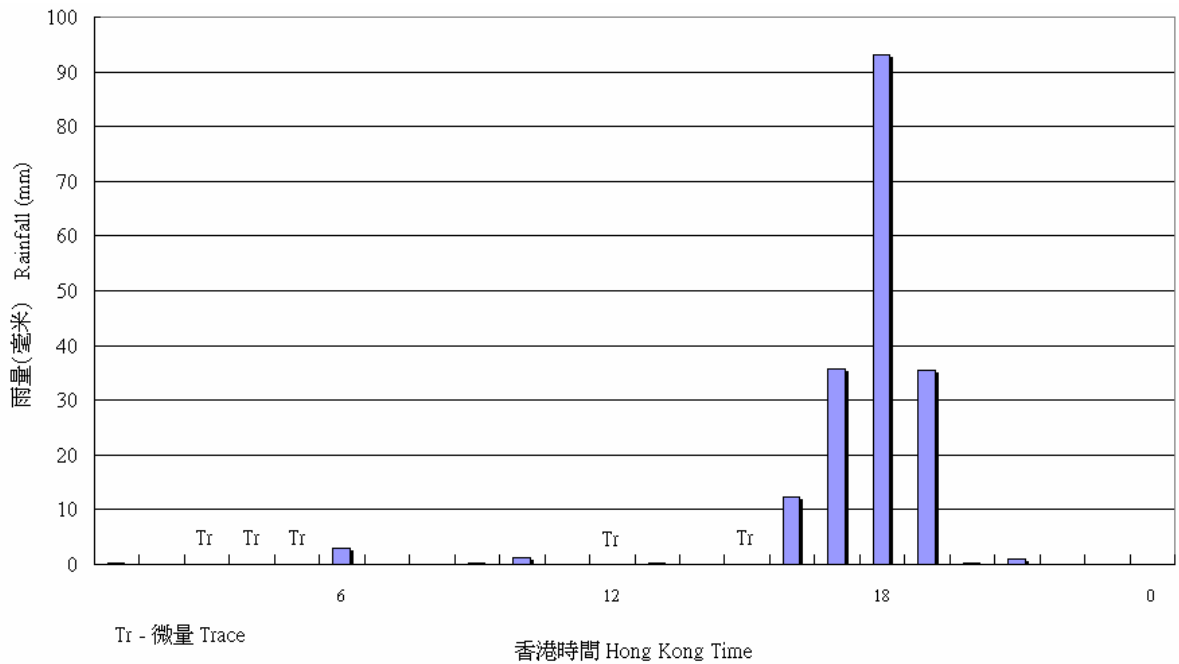


圖 3.2.3 二零一零年七月二十二日天文台總部錄得的每小時雨量。  
 Figure 3.2.3 Hourly rainfall amounts recorded at the Hong Kong Observatory Headquarters on 22 July 2010.

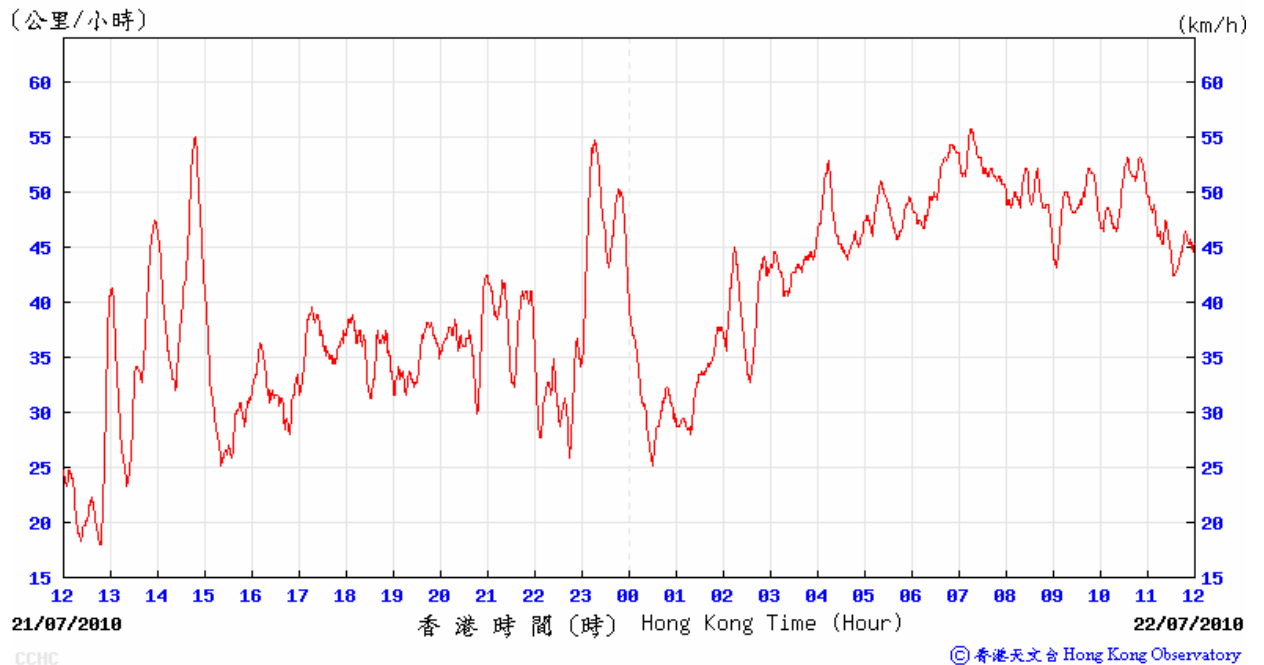


圖 3.2.4 二零一零年七月二十一至二日長洲自動氣象站錄得十分鐘平均風速的時間序列。  
 Figure 3.2.4 Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 21-22 July 2010.

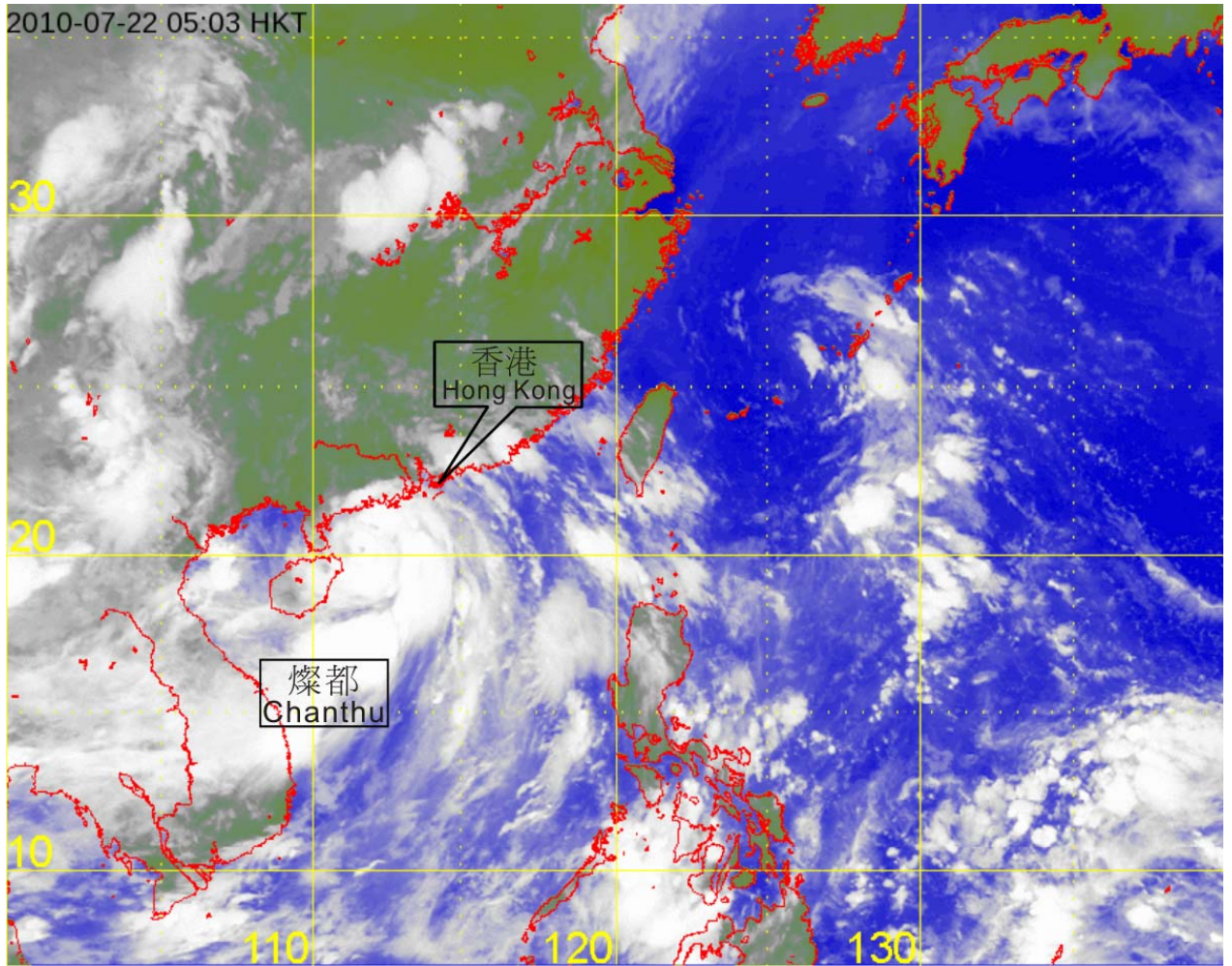


圖 3.2.5 颱風燦都在二零一零年七月二十二日上午 5 時的紅外線衛星圖片。當時燦都達到其最高強度，中心附近估計最高持續風速達到每小時 120 公里。

Figure 3.2.5 Infra-red satellite imagery at 5 a.m. on 22 July 2010 of Typhoon Chanthu at its peak intensity with estimated maximum sustained winds of 120 kilometres per hour near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2)。〕

[The satellite imagery was originally captured by the Multi-functional Transport Satellite-2 (MTSAT-2) of Japan Meteorological Agency (JMA).]



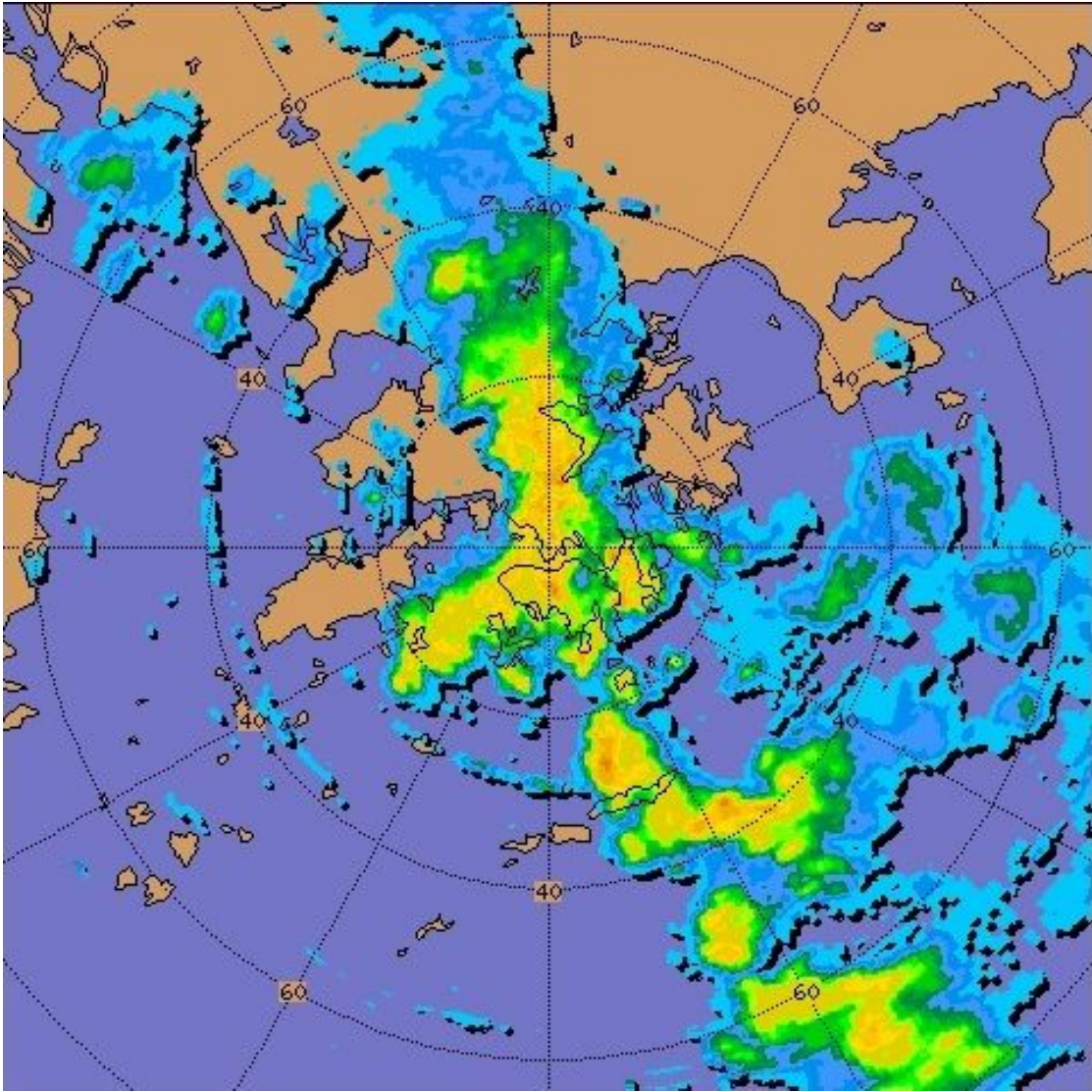


圖 3.2.6 二零一零年七月二十二日下午 5 時 30 分的雷達回波圖像。受到燦都的外圍雨帶影響，香港下午有大雨及狂風雷暴。

Figure 3.2.6 Radar imagery at 5:30 p.m. on 22 July 2010. Under the influence of the outer rainbands of Chanthu, heavy rain and squally thunderstorms affected Hong Kong that afternoon.

### 3.3 強烈熱帶風暴獅子山 (1006)：二零一零年八月二十八日至九月三日

獅子山是二零一零年第三個引致香港天文台發出警告信號的熱帶氣旋。

熱帶低氣壓獅子山於八月二十八日在香港東南偏南約 600 公里的南海北部上形成，並向西北移動。它於翌日增強為熱帶風暴，隨後採取北至東北路徑推進。八月三十日獅子山移動速度減慢，轉往東至東南偏東方向，它於當晚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達每小時 90 公里。獅子山於八月三十一日重拾速度，並逐漸拐向東北偏北方向。隨後一日獅子山採取西北路徑，橫過南海東北部。它於九月二日在福建南部沿岸登陸後，減弱為熱帶風暴。其後獅子山大致向西移動，最終於九月三日下午在廣東消散。據報章報導，獅子山為廣東帶來暴雨，造成最少 165 間房屋倒塌，超過 10 000 公頃農田受淹浸。

香港天文台於八月二十九日上午 10 時 35 分發出一號戒備信號，當時獅子山位於香港東南約 340 公里。當日香港吹和緩北風，翌日高地間中吹強風。隨着獅子山遠離，而且對本港沒有構成威脅，天文台於八月三十日下午 7 時 10 分取消所有熱帶氣旋警告信號。其後兩天本港普遍吹輕微至和緩北風，九月二日獅子山橫過華南，再次趨近香港，本地轉吹和緩西風，天文台於當日下午 8 時 40 分再度發出一號戒備信號。九月三日本港轉吹南風，離岸地區風勢間中清勁，同日下午，獅子山在廣東消散，天文台於 4 時 40 分取消所有熱帶氣旋警告信號。獅子山於九月三日下午 2 時左右最接近香港，並在香港西北偏北約 150 公里掠過。另外，香港天文台總部在八月三十日下午 4 時 57 分錄得最低瞬時海平面氣壓 1001.6 百帕斯卡，當時，獅子山位於香港東南偏東約 340 公里。獅子山影響香港期間各站錄得的最高風速可參考表 3.3.1。

在獅子山的外圍雨帶影響下，香港在八月二十九日及三十日皆有局部地區狂風雷暴。受到獅子山外圍的下沉氣流影響，香港於隨後兩天天氣酷熱及部份時間有陽光。九月二日，香港有幾陣驟雨，翌日間中有大雨及幾陣狂風雷暴。

獅子山吹襲香港期間，本港並無嚴重破壞報告。

表 3.3.2 及 3.3.3 分別是獅子山影響香港期間本港的日雨量及最高潮位資料。圖 3.3.1-3.3.4 分別為獅子山的路徑圖、本港的雨量分佈圖及獅子山的衛星及雷達圖像。

### 3.3 Severe Tropical Storm Lionrock (1006): 28 August - 3 September 2010

Lionrock was the third tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2010.

Lionrock formed as a tropical depression over the northern part of the South China Sea about 600 km south-southeast of Hong Kong on 28 August and moved northwestwards. It intensified into a tropical storm the next day and then took a north to northeasterly track. Lionrock slowed down and drifted east to east-southeastwards on 30 August. It intensified into a severe tropical storm that evening, reaching its peak intensity with estimated maximum sustained winds of 90 km/h near its centre. On 31 August, Lionrock speeded up and gradually changed its course to the north-northeast. It adopted a northwesterly course the following day and traversed the northeastern part of the South China Sea. After making landfall over the coast of southern Fujian on 2 September morning, Lionrock weakened into a tropical storm. It then moved generally westwards and subsequently dissipated over Guangdong on 3 September afternoon. According to press reports, Lionrock brought rainstorms to Guangdong where at least 165 houses collapsed and more than 10 000 hectares of farmland inundated.

In Hong Kong, the Standby Signal No. 1 was issued at 10:35 a.m. on 29 August when Lionrock was about 340 km southeast of Hong Kong. Local winds were moderate northerlies that day and became occasionally strong on high ground the next day. All signals were cancelled at 7:10 p.m. on 30 August as Lionrock moved away and did not pose a threat to Hong Kong. Light to moderate northerlies generally prevailed for the next two days. The winds turned to moderate westerlies on 2 September. The Standby Signal No. 1 was issued again at 8:40 p.m. on 2 September when Lionrock moved across southern China, edging closer to Hong Kong once more. Local winds turned to the south on 3 September and were occasionally fresh offshore. All tropical cyclone warning signals were cancelled at 4:40 p.m. on 3 September as Lionrock dissipated over Guangdong. Lionrock was closest to Hong Kong at about 2:00 p.m. on 3 September passing about 150 km to the north-northwest. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1001.6 hPa was recorded at 4:57 p.m. on 30 August when Lionrock was located about 340 km to the east-southeast. The maximum winds recorded at various stations during the passage of Lionrock are given in Table 3.3.1.

Under the influence of the outer rainbands of Lionrock, there were isolated squally thunderstorms on 29 August and 30 August. Under the subsidence ahead of Lionrock, it was very hot with sunny periods in the following two days. The weather turned cloudy with a few showers on 2 September. Rain became heavy at times with a few squally thunderstorms the following day.

No significant damage was reported in Hong Kong during the passage of Lionrock.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Lionrock is given in Tables 3.3.2 and 3.3.3 respectively. Figures 3.3.1 - 3.3.4 show respectively the track of Lionrock, the rainfall distribution for Hong Kong, a satellite imagery of Lionrock and a related radar imagery.

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

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

(a) 第一次影響香港期間 [二零一零年八月二十九日至三十日]  
First passage [29 – 30 August 2010]

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust				最高每小時平均風速 Maximum Hourly Mean Wind					
		風向 Direction	風速 (公里/時) Speed (km/h)	日期/ 月份 Date/ Month	時間 Time	風向 Direction	風速 (公里/時) Speed (km/h)	日期/ 月份 Date/ Month	時間 Time		
中環碼頭	Central Pier	西	W	40	30/8	15:23	西	W	22	30/8	15:00
長洲	Cheung Chau	西北偏北	NNW	34	30/8	07:19	東南	SE	23	29/8	19:00
長洲泳灘	Cheung Chau Beach	東北偏東	ENE	34	30/8	07:40	東南偏東	ESE	19	29/8	19:00
長沙灣	Cheung Sha Wan	西南	SW	27	30/8	14:14	西南	SW	13	30/8	15:00
青洲	Green Island	西北偏北	NNW	38	30/8	08:46	西北偏北	NNW	25	30/8	07:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	47	29/8	17:31	西北	NW	23	29/8	15:00
啓德	Kai Tak	東南偏東	ESE	41	29/8	17:16	東南偏東	ESE	14	29/8	18:00
京士柏	King's Park	北	N	27	29/8	13:54	北	N	13	29/8	11:00
流浮山	Lau Fau Shan	西北偏西	WNW	31	30/8	15:08	西北	NW	23	30/8	16:00
昂坪	Ngong Ping	東北	NE	76	29/8	17:43	東北偏東	ENE	30	30/8	10:00
北角	North Point	東南偏東	ESE	30	29/8	16:53	西南偏西	WSW	19	30/8	15:00
		東	E	30	29/8	17:21					
坪洲	Peng Chau	西北	NW	36	30/8	15:03	西北	NW	20	30/8	17:00
平洲	Ping Chau	東北	NE	25	30/8	08:23	西北偏西	WNW	6	29/8	12:00
		東北偏北	NNE	25	30/8	08:24	北	N	6	29/8	13:00
西貢	Sai Kung	東	E	45	29/8	16:58	東北偏北	NNE	20	29/8	14:00
沙洲	Sha Chau	北	N	36	30/8	08:08	北	N	27	30/8	09:00
沙螺灣	Sha Lo Wan	東	E	38	29/8	17:35	西南	SW	14	29/8	18:00
沙田	Sha Tin	東南偏東	ESE	27	29/8	17:16	東北	NE	12	29/8	14:00
石崗	Shek Kong	東	E	30	29/8	19:09	東	E	13	29/8	19:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	31	29/8	17:10	西	W	23	30/8	15:00
打鼓嶺	Ta Kwu Ling	東	E	31	29/8	18:22	東	E	13	29/8	19:00
大美督	Tai Mei Tuk	東北	NE	36	30/8	09:42	東北	NE	19	30/8	10:00
大帽山	Tai Mo Shan	東北偏北	NNE	41	30/8	08:27	北	N	27	30/8	08:00
塔門	Tap Mun	東	E	43	29/8	16:03	東南偏東	ESE	19	29/8	17:00
鯽魚湖	Tsak Yue Wu	東北	NE	31	29/8	16:13	東北偏北	NNE	16	29/8	14:00
將軍澳	Tseung Kwan O	東北	NE	36	29/8	16:42	西北偏北	NNW	12	29/8	13:00
							東北偏東	ENE	12	29/8	14:00
							東北	NE	12	29/8	15:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西北	NW	31	29/8	13:17	西北	NW	14	29/8	13:00
							西	W	14	30/8	15:00
屯門政府合署	Tuen Mun Government Offices	東	E	40	29/8	17:08	西北偏西	WNW	14	30/8	17:00
橫瀾島	Waglan Island	東北	NE	47	29/8	16:57	北	N	23	30/8	09:00
濕地公園	Wetland Park	北	N	25	29/8	13:52	北	N	12	29/8	14:00
黃竹坑	Wong Chuk Hang	西北偏西	WNW	34	30/8	14:22	西北偏西	WNW	14	30/8	15:00

黃麻角(赤柱) 及大老山沒有資料。No data for Bluff Head (Stanley) and Tate's Cairn.

## (b) 第二次影響香港期間 [二零一零年九月二日至三日]

## Second passage [2 – 3 September 2010]

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	52	3/9	17:30	東南偏南	SSE	34	3/9	18:00
中環碼頭	Central Pier	東南偏東	ESE	40	3/9	17:29	西	W	16	2/9	21:00
							西	W	16	2/9	22:00
長洲	Cheung Chau	東南	SE	49	3/9	19:23	東南	SE	31	3/9	20:00
長洲泳灘	Cheung Chau Beach	西	W	40	2/9	21:39	西	W	25	2/9	22:00
長沙灣	Cheung Sha Wan	西南偏西	WSW	31	3/9	12:06	西南	SW	13	3/9	13:00
青洲	Green Island	東南偏南	SSE	58	3/9	17:43	東南偏南	SSE	31	3/9	18:00
香港國際機場	Hong Kong International Airport	東南	SE	38	3/9	17:58	西北	NW	31	2/9	21:00
啓德	Kai Tak	東南偏南	SSE	41	3/9	17:45	西	W	20	2/9	21:00
							東南	SE	20	3/9	18:00
京士柏	King's Park	東南偏南	SSE	34	3/9	17:45	西	W	12	2/9	21:00
							西	W	12	2/9	23:00
流浮山	Lau Fau Shan	東南	SE	40	3/9	18:19	東南	SE	23	3/9	19:00
		東南偏南	SSE	40	3/9	18:20					
昂坪	Ngong Ping	東	E	85	3/9	18:39	西南	SW	45	3/9	14:00
北角	North Point	西	W	38	3/9	01:27	西南偏西	WSW	22	2/9	21:00
坪洲	Peng Chau	東南偏南	SSE	43	3/9	19:57	西北	NW	23	2/9	21:00
平洲	Ping Chau	東南偏東	ESE	38	3/9	17:17	西	W	14	3/9	01:00
西貢	Sai Kung	東南偏南	SSE	49	3/9	17:48	南	S	31	3/9	18:00
沙洲	Sha Chau	西南偏南	SSW	38	3/9	11:55	西南偏南	SSW	25	3/9	14:00
沙螺灣	Sha Lo Wan	東南	SE	40	3/9	18:22	南	S	16	3/9	17:00
沙田	Sha Tin	西南	SW	38	3/9	18:10	西南	SW	14	3/9	14:00
石崗	Shek Kong	東南偏南	SSE	30	3/9	17:15	南	S	7	3/9	13:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	31	3/9	17:05	西	W	16	2/9	22:00
		東南偏東	ESE	31	3/9	17:06					
打鼓嶺	Ta Kwu Ling	東南	SE	27	3/9	18:31	東南偏南	SSE	9	3/9	19:00
大美督	Tai Mei Tuk	西南偏西	WSW	40	3/9	18:20	西南偏西	WSW	19	3/9	14:00
大帽山	Tai Mo Shan	西南偏南	SSW	58	3/9	17:09	西	W	41	3/9	03:00
塔門	Tap Mun	東南	SE	49	3/9	18:12	東南偏南	SSE	20	3/9	18:00
大老山	Tate's Cairn	西南偏南	SSW	62	3/9	17:48	南	S	36	3/9	18:00
鯽魚湖	Tsak Yue Wu	西南偏南	SSW	22	3/9	14:45	西南偏南	SSW	6	3/9	15:00
將軍澳	Tseung Kwan O	西南偏西	WSW	23	3/9	17:57	西南偏南	SSW	9	3/9	09:00
							西南偏南	SSW	9	3/9	15:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	40	3/9	17:50	東南偏南	SSE	14	3/9	13:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	41	3/9	18:00	東南偏南	SSE	14	3/9	13:00
							東南	SE	14	3/9	18:00
橫瀾島	Waglan Island	西南偏南	SSW	76	3/9	06:56	東南偏南	SSE	47	3/9	18:00
濕地公園	Wetland Park	東南偏南	SSE	27	3/9	18:12	東南偏南	SSE	9	3/9	13:00
							東南偏南	SSE	9	3/9	15:00
							南	S	9	3/9	19:00
黃竹坑	Wong Chuk Hang	東北	NE	31	3/9	17:19	西北偏西	WNW	13	2/9	21:00

表 3.3.2 獅子山影響香港期間，香港天文台總部及其他各站所錄得的日雨量

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

站 (參閱圖 3.3.2)		八月二十九日	八月三十日	八月三十一日	九月一日	九月二日	九月三日	總雨量 (毫米)
Station (See Fig. 3.3.2)		29-Aug	30-Aug	31-Aug	1-Sep	2-Sep	3-Sep	Total(mm)
香港天文台 Hong Kong Observatory		0.0	0.0	0.0	0.0	16.2	47.4	63.6
長洲 Cheung Chau (CCH)		1.0	0.0	0.0	0.0	0.5	64.0	65.5
香港國際機場 Hong Kong International Airport (HKA)		14.4	0.0	0.0	0.0	2.0	123.1	139.5
N05	粉嶺 Fanling	0.0	0.0	0.0	0.0	[0.0]	[52.0]	[52.0]
N13	糧船灣 High Island	4.5	3.5	0.0	0.0	[1.5]	[39.0]	[48.5]
K04	佐敦谷 Jordan Valley	0.0	0.0	0.0	0.0	[0.0]	[61.0]	[61.0]
N06	葵涌 Kwai Chung	0.0	0.0	0.0	0.0	[4.0]	[94.0]	[98.0]
H12	半山區 Mid Levels	0.0	0.0	0.0	0.0	[2.5]	[68.5]	[71.0]
H21	淺水灣 Repulse Bay	0.0	0.0	4.0	0.0	[3.0]	[65.0]	[72.0]
N09	沙田 Sha Tin	0.0	0.0	0.0	5.5	[0.0]	[55.5]	[61.0]
H19	筲箕灣 Shau Kei Wan	1.0	0.0	0.0	0.0	[5.0]	45.5	[51.5]
SEK	石崗 Shek Kong	0.0	0.0	0.0	0.0	[2.5]	33.0	[35.5]
K06	蘇屋邨 So Uk Estate	0.0	0.0	0.0	0.0	[4.5]	[83.0]	[87.5]
R31	大美督 Tai Mei Tuk	0.0	0.0	4.0	0.0	0.5	59.5	64.0
R21	踏石角 Tap Shek Kok	0.0	0.0	0.0	0.0	0.5	105.0	105.5
N17	東涌 Tung Chung	5.5	0.0	0.0	0.0	[0.5]	[159.0]	[165.0]
R27	元朗 Yuen Long	8.5	0.0	0.0	0.0	[1.0]	[54.5]	[64.0]

註： [ ] 基於不完整的每小時雨量數據。

Note : [ ] based on incomplete hourly data.

表 3.3.3 獅子山影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

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

	站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位(海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮(天文潮高度以上) Maximum storm surge (above astronomical tide)		
			高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
第一次影響 香港期間 First passage	鰂魚涌	Quarry Bay	2.03	30/8	00:19	0.15	30/8	15:10
	石壁	Shek Pik	2.12	30/8	00:30	0.18	30/8	16:10
	大廟灣	Tai Miu Wan	1.86	30/8	01:01	0.10	30/8	15:51
	大埔滘	Tai Po Kau	2.00	30/8	01:01	0.23	30/8	15:55
	尖鼻咀	Tsim Bei Tsui	2.39	30/8	00:36	0.22	30/8	16:47
	橫瀾島	Waglan Island	1.93	29/8	23:52	0.02	30/8	15:28
第二次影響 香港期間 Second passage	鰂魚涌	Quarry Bay	2.04	3/9	03:01	0.01	3/9	08:57
	石壁	Shek Pik	2.11	3/9	03:27	0.04	3/9	07:23
	大廟灣	Tai Miu Wan	1.89	3/9	04:03	0.07	3/9	06:09
	大埔滘	Tai Po Kau	2.10	3/9	04:40	0.07	2/9	23:13
	尖鼻咀	Tsim Bei Tsui	2.25	3/9	02:31	0.13	3/9	08:54
	橫瀾島	Waglan Island	沒有資料 No data					

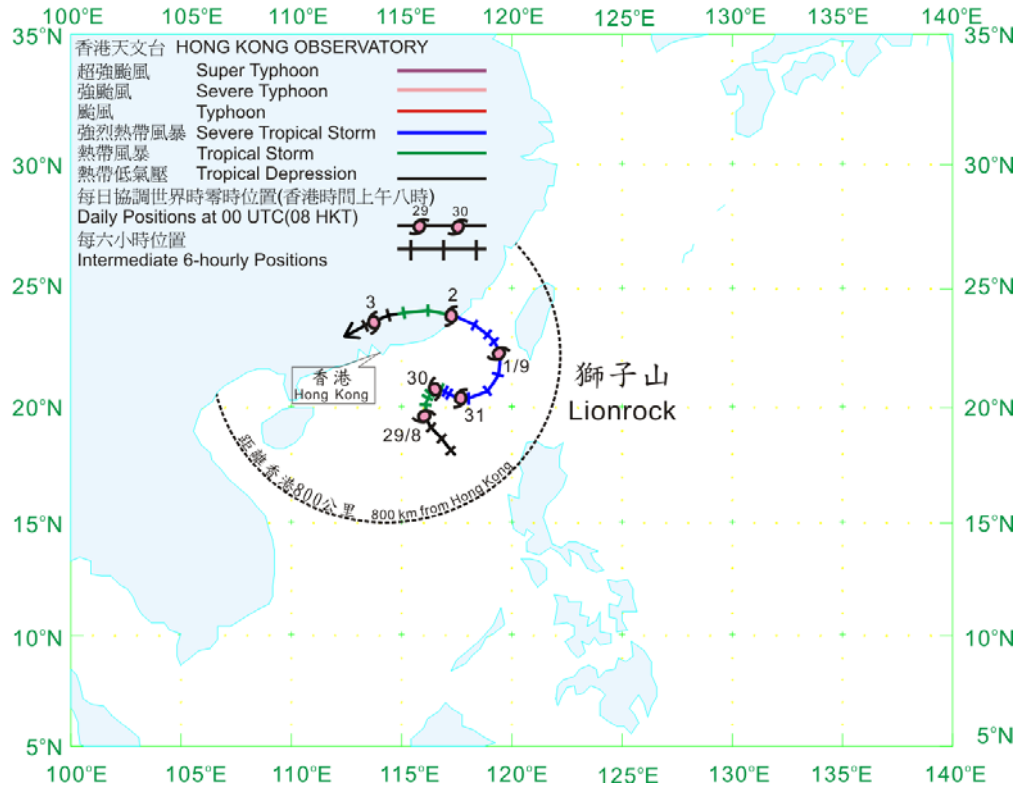


圖 3.3.1 獅子山 (1006) 在二零一零年八月二十八日至九月三日的路徑圖。  
Figure 3.3.1 Track of Lionrock (1006) on 28 August – 3 September 2010.

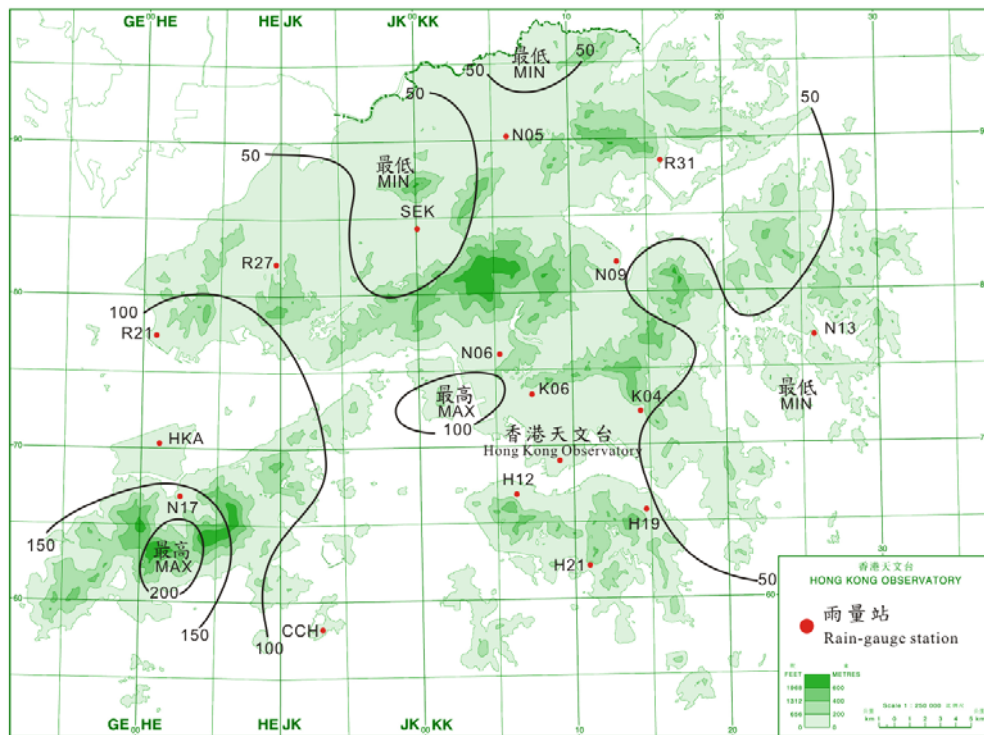


圖 3.3.2 二零一零年八月二十九日至九月三日的雨量分佈(等雨量線單位為毫米)。  
Figure 3.3.2 Rainfall distribution on 29 August – 3 September 2010 (isohyets are in millimetres).



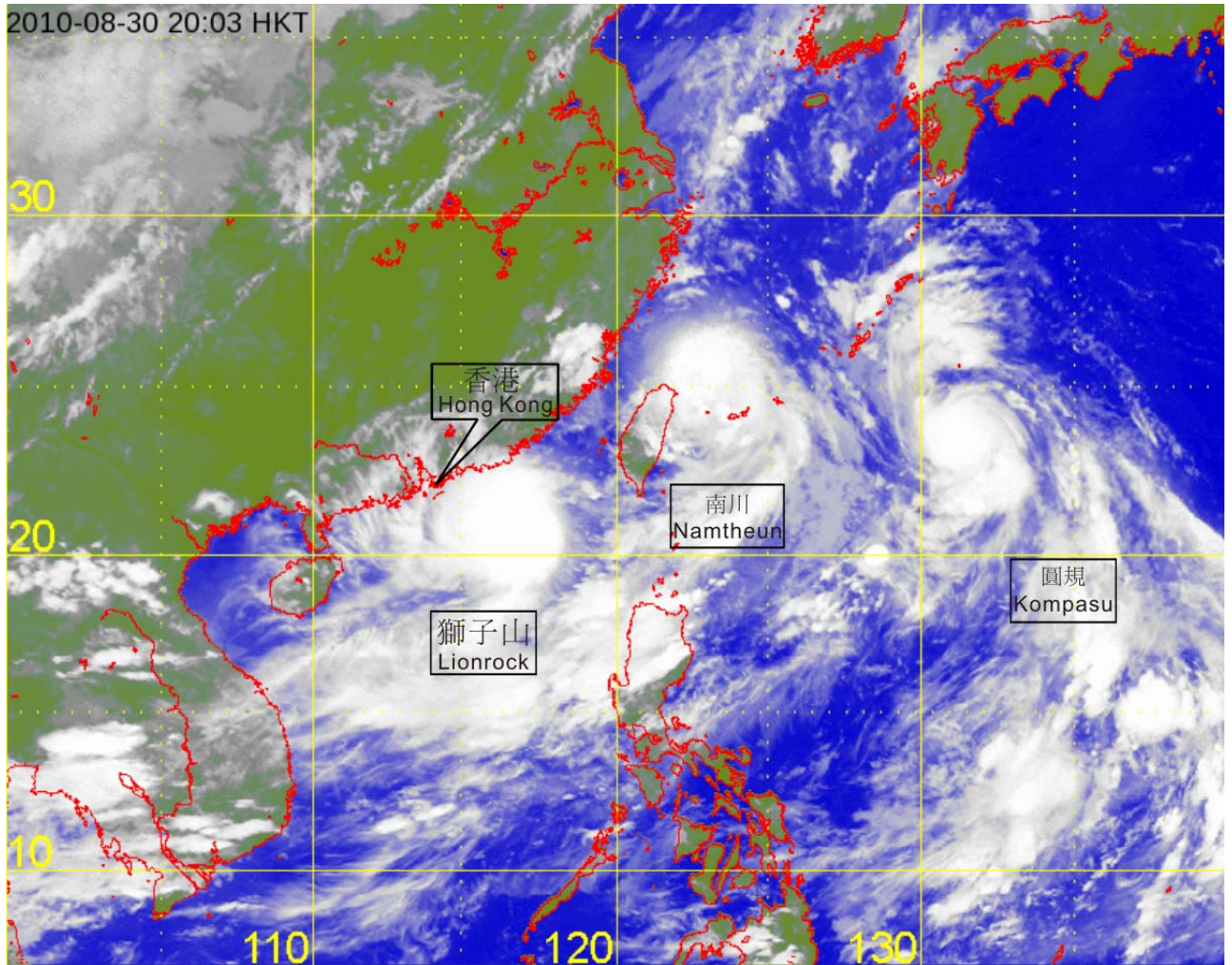


圖 3.3.3 強烈熱帶風暴獅子山在二零一零年八月三十日下午 8 時的紅外線衛星圖片。當時獅子山達到其最高強度，中心附近估計最高持續風速達到每小時 90 公里。另外兩股熱帶氣旋南川及圖規則集結在北太平洋西部上。

Figure 3.3.3 Infra-red satellite imagery at 8 p.m. on 30 August 2010 of Severe Tropical Storm Lionrock at its peak intensity with estimated maximum sustained winds of 90 kilometres per hour near its centre. Another two tropical cyclones, Namtheun and Kompasu were located over the western North Pacific.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2)。〕

[The satellite imagery was originally captured by the Multi-functional Transport Satellite-2 (MTSAT-2) of Japan Meteorological Agency (JMA).]

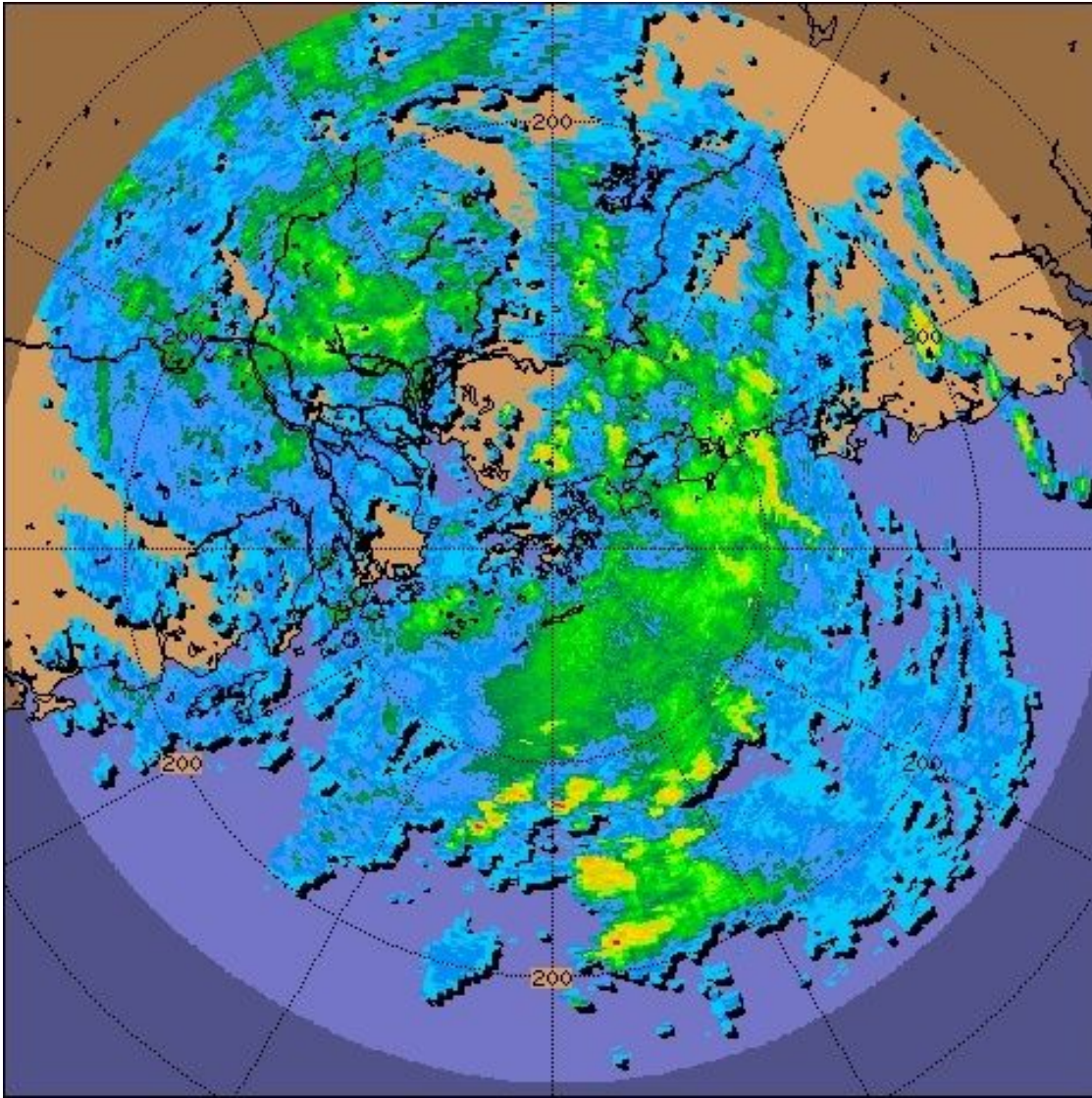


圖 3.3.4 二零一零年九月三日下午 2 時的雷達回波圖像，當時獅子山的中心正在香港西北偏北約 150 公里處掠過。

Figure 3.3.4 Radar imagery at 2:00 p.m. on 3 September 2010, when the centre of Lionrock was passing about 150 km to the north-northwest of Hong Kong.

### 3.4 強颱風凡亞比 (1011)：二零一零年九月十五日至二十一日

凡亞比是香港天文台在二零一零年第四個需要發出警告信號的熱帶氣旋。

熱帶低氣壓凡亞比於九月十五日在沖繩島以南約710公里的北太平洋西部上形成，並向西北移動。當日黃昏它增強為熱帶風暴。凡亞比於九月十六日增強為強烈熱帶風暴及向東北緩慢移動。九月十七日它再次採取西北的路徑，並在台灣以東的北太平洋西部上增強為颱風。凡亞比於九月十八日進一步增強為強颱風，並達到其最高強度，中心附近持續風力達到每小時165公里，同時大致轉向西移動。它於九月十九日橫過台灣及減弱為颱風。凡亞比於當晚橫過台灣海峽，九月二十日在福建南部沿岸地區登陸，並減弱為強烈熱帶風暴。隨後凡亞比向西移動橫過廣東，當日黃昏減弱為熱帶風暴。它於九月二十一日早上在廣州附近消散。根據報章報導，凡亞比吹襲期間，台灣有兩人死亡，超過100人受傷，超過63 000戶電力中斷，農作物損失約2億7千萬新台幣。福建有100間房屋倒塌，直接經濟損失達到2.8億元人民幣。凡亞比帶來的暴雨引致廣東33人死亡，42人失蹤，倒塌房屋共1 438間，受災農作物面積達三萬公頃，直接經濟損失達20億元人民幣。

香港天文台於九月十九日下午4時35分發出一號戒備信號，當時凡亞比位於香港以東約640公里。當日香港吹和緩西風，翌日風勢轉為清勁，高地間中吹強風。香港天文台總部在九月二十日下午3時02分錄得最低瞬時海平面氣壓997.2百帕斯卡，當時凡亞比位於香港東北偏東約230公里。由於凡亞比繼續移近本港，天文台於當日下午4時05分改發三號強風信號，當時凡亞比位於香港東北偏東約220公里。當日晚上香港轉吹西南風，風勢進一步增強，離岸海域吹強風，高地風勢間中達烈風程度。凡亞比於九月二十一日上午1至2時左右最接近香港，並在天文台總部以北約150公里掠過。隨着凡亞比在內陸減弱，當日早上香港的風勢緩和，天文台於上午7時35分取消所有熱帶氣旋警告信號。另外，凡亞比影響香港期間各站錄得的最高風速及持續風力達到強風的時段可參考表3.4.1及3.4.2。

在凡亞比的外圍下沉空氣影響下，香港在九月十九日大致天晴及天氣酷熱。凡亞比的雨帶翌日下午開始影響香港，帶來大雨及狂風雷暴。天文台在下午8時05分發出黃色暴雨警告，隨後在下午9時50分取消警告。九月二十日本港繼續有大雨及幾陣狂風雷暴，天文台分別在上午1時55分及2時40分發出黃色及紅色暴雨警告，隨後在上午4時55分再改發黃色暴雨警告，並於上午5時25分取消是項警告。

受到凡亞比相關雨帶的影響，九月二十一日早上有三宗水浸報告，分別在港島、西貢及元朗。港島薄扶林村一度有村民被洪水圍困，需要消防員到場拯救。本港共有47宗塌樹報告，毀壞了數輛車輛，幸而無人受傷。

表3.4.3及3.4.4分別是凡亞比影響香港期間本港的日雨量及最高潮位資料。圖3.4.1-3.4.6分別為凡亞比的路徑圖、本港的雨量分佈圖、天文台每小時錄得的雨量、長洲的風速序列圖及凡亞比的衛星及雷達圖像。

### 3.4 Severe Typhoon Fanapi (1011) : 15 – 21 September 2010

Fanapi was the fourth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2010.

Fanapi formed as a tropical depression over the western North Pacific about 710 km south of Okinawa on 15 September and moved northwestwards. It intensified into a tropical storm that evening. Fanapi strengthened into a severe tropical storm on 16 September and moved northeastwards slowly. It resumed a northwesterly track on 17 September and intensified into a typhoon over the western North Pacific to the east of Taiwan. Fanapi intensified further into a severe typhoon on 18 September, reaching its peak intensity with estimated maximum sustained winds of 165 km/h near its centre and turning to move generally westwards. It crossed Taiwan on 19 September and weakened into a typhoon. Fanapi crossed the Taiwan Strait that night. It made landfall over the coastal areas of southern Fujian on 20 September and weakened into a severe tropical storm. Fanapi then tracked westwards across Guangdong and weakened into a tropical storm that evening. It dissipated near Guangzhou on the morning of 21 September. According to press reports, Fanapi caused the death of two people and injured more than 100 in Taiwan. More than 63 000 households suffered from power outage. The agricultural losses amounted to almost NT\$270 million. In Fujian, 100 houses collapsed and the direct economic losses amounted to 280 million RMB. In Guangdong, rainstorms triggered by Fanapi resulted in 33 people being killed and 42 people missing. A total of 1 438 houses collapsed and the damage to crops amounted to about 30 000 hectares with a direct economic loss of about 2 billion RMB.

In Hong Kong, the Standby Signal No. 1 was issued at 4:35 p.m. on 19 September when Fanapi was about 640 km east of Hong Kong. Local winds were moderate westerlies that day and freshened the next day with occasionally strong winds on high ground. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 997.2 hPa was recorded at 3:02 p.m. on 20 September when Fanapi was located about 230 km to the east-northeast. As Fanapi continued to move closer, the Strong Wind Signal No. 3 was issued at 4:05 p.m. that day when it was about 220 km east-northeast of Hong Kong. Local winds turned to the southwest and strengthened further that night to become strong over offshore waters, occasionally reaching gale force on high ground. Fanapi was closest to Hong Kong between 1 and 2 a.m. on 21 September passing about 150 km to the north of the Hong Kong Observatory's Headquarters. As Fanapi weakened overland, local winds moderated that morning and all signals were cancelled at 7:35 a.m. The maximum winds recorded at various stations and the periods of strong winds during the passage of Fanapi are given in Table 3.4.1 and 3.4.2 respectively.

Under the influence of the subsiding air ahead of Fanapi, the weather was generally fine and very hot on 19 September. The rainbands of Fanapi started to affect Hong Kong during the afternoon of 20 September and there were heavy rain with squally thunderstorms. The Amber rainstorm Warning was issued at 8:05 p.m. and was cancelled at 9:50 p.m. Heavy rain with a few squally thunderstorms continued to affect Hong Kong on 21 September. The Amber and Red Rainstorm Warnings were issued at 1:55 a.m. and 2:40 a.m. respectively. The Red Rainstorm Warning was replaced by the Amber Rainstorm at 4:55 a.m. which was cancelled at 5:25 a.m.

Affected by the rainbands associated with Fanapi, there were three reports of flooding in Hong Kong Island, Sai Kung and Yuen Long on the morning of 21 September. At Pokfulam Village in Hong Kong Island, villagers were affected by flood waters and had to be rescued by firemen. There were 47 reports of fallen trees in Hong Kong, damaging a few vehicles, but fortunately no one was injured.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Fanapi is given in Tables 3.4.3 and 3.4.4 respectively. Figures 3.4.1 - 3.4.6 show respectively the track of Fanapi, the rainfall distribution for Hong Kong, hourly rainfall at the Hong Kong Observatory, time series of the wind speed recorded at Cheung Chau, a satellite and radar imagery of Fanapi.

表 3.4.1 在凡亞比影響下，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 tropical cyclone warning signals for Fanapi 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	-	-	96	21/9	03:53	-	-	43	21/9	05:00
中環碼頭	Central Pier	西北偏西	WNW	58	21/9	03:29	西	W	25	20/9	11:00
長洲	Cheung Chau	西南偏西	WSW	81	21/9	03:57	南	S	49	21/9	04:00
長洲泳灘	Cheung Chau	西南偏南	SSW	72	21/9	03:58	西南	SW	43	21/9	05:00
長沙灣	Cheung Sha	西南	SW	56	21/9	03:42	西南偏西	WSW	25	21/9	05:00
香港國際機場	Hong Kong International Airport	西南偏南	SSW	88	21/9	02:50	西南	SW	41	21/9	05:00
啓德	Kai Tak	西南	SW	62	21/9	03:32	西南	SW	27	21/9	05:00
京士柏	King's Park	西南偏西	WSW	70	21/9	03:21	西南偏南	SSW	22	21/9	04:00
							西南	SW	22	21/9	05:00
流浮山	Lau Fau Shan	西南偏南	SSW	79	21/9	03:04	西北	NW	40	20/9	11:00
昂坪	Ngong Ping	西南偏西	WSW	149	21/9	02:48	西南偏西	WSW	79	21/9	05:00
北角	North Point	西	W	63	20/9	23:47	西	W	30	20/9	12:00
坪洲	Peng Chau	西	W	67	21/9	02:57	西南	SW	27	21/9	05:00
平洲	Ping Chau	西北	NW	47	20/9	09:49	西南偏西	WSW	19	21/9	02:00
西貢	Sai Kung	西南偏南	SSW	65	21/9	04:07	西南偏南	SSW	20	21/9	05:00
沙洲	Sha Chau	西南偏南	SSW	87	21/9	02:55	西南偏南	SSW	38	21/9	06:00
沙螺灣	Sha Lo Wan	西南	SW	92	21/9	02:48	西南	SW	31	21/9	03:00
沙田	Sha Tin	西南偏南	SSW	56	21/9	03:24	西南偏南	SSW	25	21/9	05:00
石崗	Shek Kong	南	S	34	21/9	03:24	西	W	14	20/9	11:00
九龍天星碼頭	Star Ferry (Kowloon)	西南偏西	WSW	88	21/9	04:11	西	W	31	21/9	05:00
打鼓嶺	Ta Kwu Ling	西南偏南	SSW	38	21/9	04:45	西北偏西	WNW	13	20/9	11:00
大美督	Tai Mei Tuk	西南偏西	WSW	79	21/9	04:46	西南偏西	WSW	34	21/9	05:00
大帽山	Tai Mo Shan	西南	SW	112	21/9	03:06	西南	SW	65	21/9	05:00
		西南	SW	112	21/9	03:08					
塔門	Tap Mun	西北偏西	WNW	56	20/9	19:13	西	W	30	20/9	09:00
鯽魚湖	Tsak Yue Wu	西南偏西	WSW	43	21/9	00:39	西南	SW	12	21/9	01:00
							西南	SW	12	21/9	05:00
將軍澳	Tseung Kwan O	西南	SW	43	21/9	03:51	西南	SW	13	21/9	05:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南偏南	SSE	63	21/9	03:54	南	S	25	21/9	05:00
屯門政府合署	Tuen Mun Government Offices	西南	SW	68	21/9	02:59	西北偏西	WNW	19	20/9	11:00
橫瀾島	Waglan Island	西南	SW	122	21/9	03:58	西南	SW	59	21/9	00:00
濕地公園	Wetland Park	西南	SW	47	21/9	03:05	西北偏西	WNW	13	20/9	10:00
黃竹坑	Wong Chuk	-	-	59	21/9	03:26	-	-	23	20/9	10:00

青洲及大老山沒有資料。 No data for Green Island and Tate's Cairn.

表 3.4.2 在凡亞比影響下，在熱帶氣旋警告系統的八個參考測風站所錄到持續風力達到強風程度的時段

Table 3.4.2 Periods during which sustained strong winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Fanapi were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 First time strong wind speed* was reached		最後達到強風*時間 Last time strong wind speed* was reached	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	20/9	14:50	21/9	05:46
香港國際 機場	Hong Kong International Airport	20/9	22:48	21/9	04:35

\* 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: 本表列出持續風力最初及最後達到強風程度的時間。其間，風力可能高於或低於指定的風力。

Note: The table gives the first and last time when strong winds were recorded. Note that the winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.4.3 凡亞比影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.4.3 Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Fanapi

站 (參閱圖 3.4.2) Station (See Fig. 3.4.2)	九月十九日 19 Sep	九月二十日 20 Sep	九月二十一日 21 Sep	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory	0.0	67.0	178.8	245.8
長洲 Cheung Chau (CCH)	[0.0]	[52.5]	128.0]	[180.5]
香港國際機場 Hong Kong International Airport (HKA)	0.0	42.3	86.8	129.1
N05 粉嶺 Fanling	0.0	75.5	[64.5]	[140.0]
N13 糧船灣 High Island	0.0	56.0	[113.5]	[169.5]
K04 佐敦谷 Jordan Valley	0.0	90.0	[161.5]	[251.5]
N06 葵涌 Kwai Chung	0.0	75.0	[119.0]	[194.0]
H12 半山區 Mid Levels	0.0	99.5	[196.0]	[295.5]
H21 淺水灣 Repulse Bay	0.0	106.5	[139.0]	[245.5]
N09 沙田 Sha Tin	1.0	76.5	120.5	198.0
H19 筲箕灣 Shau Kei Wan	0.0	71.0	[132.5]	[203.5]
SEK 石崗 Shek Kong	0.0	60.0	69.0	129.0
K06 蘇屋邨 So Uk Estate	0.0	74.0	[161.0]	[235.0]
R31 大美督 Tai Mei Tuk	0.0	[42.0]	[65.5]	[107.5]
R21 踏石角 Tap Shek Kok	1.5	[49.5]	[67.5]	[118.5]
N17 東涌 Tung Chung	0.0	48.0	[98.0]	[146.0]
R27 元朗 Yuen Long	0.0	35.5	92.5	128.0

註： [ ] 基於不齊全的每小時雨量數據。

Note: [ ] based on incomplete hourly data.

表 3.4.4 凡亞比影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.4.4 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Fanapi

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	20/9	07:16	0.06	21/9	03:56
石壁	Shek Pik	2.17	21/9	08:10	0.01	21/9	02:45
大埔滘	Tai Po Kau	2.15	20/9	08:13	0.10	20/9	14:02
尖鼻咀	Tsim Bei Tsui	2.35	21/9	09:07	0.44	21/9	05:00
橫瀾島	Waglan Island	2.21	20/9	07:23	0.06	20/9	13:45

大廟灣沒有資料。 No data for Tai Miu Wan.



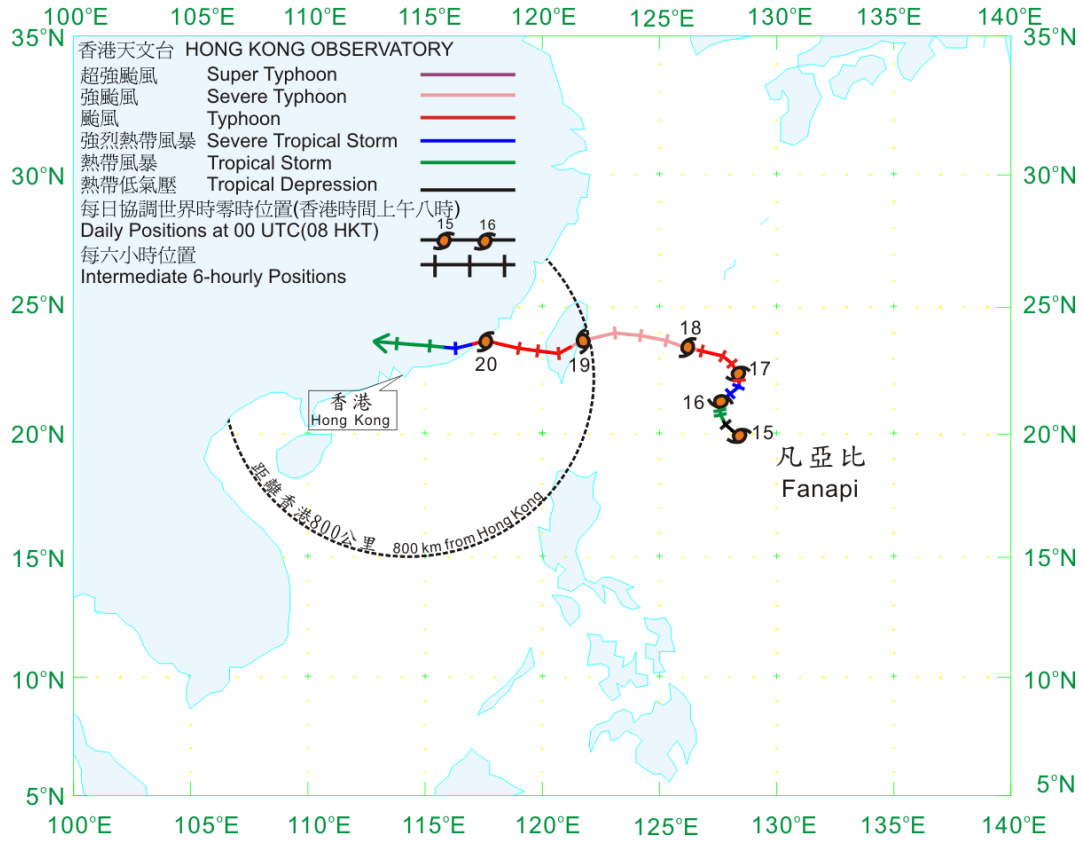


圖 3.4.1 凡亞比 (1011) 在二零一零年九月十五日至二十一日的路徑圖。  
 Figure 3.4.1 Track of Fanapi (1011) on 15 – 21 September 2010.

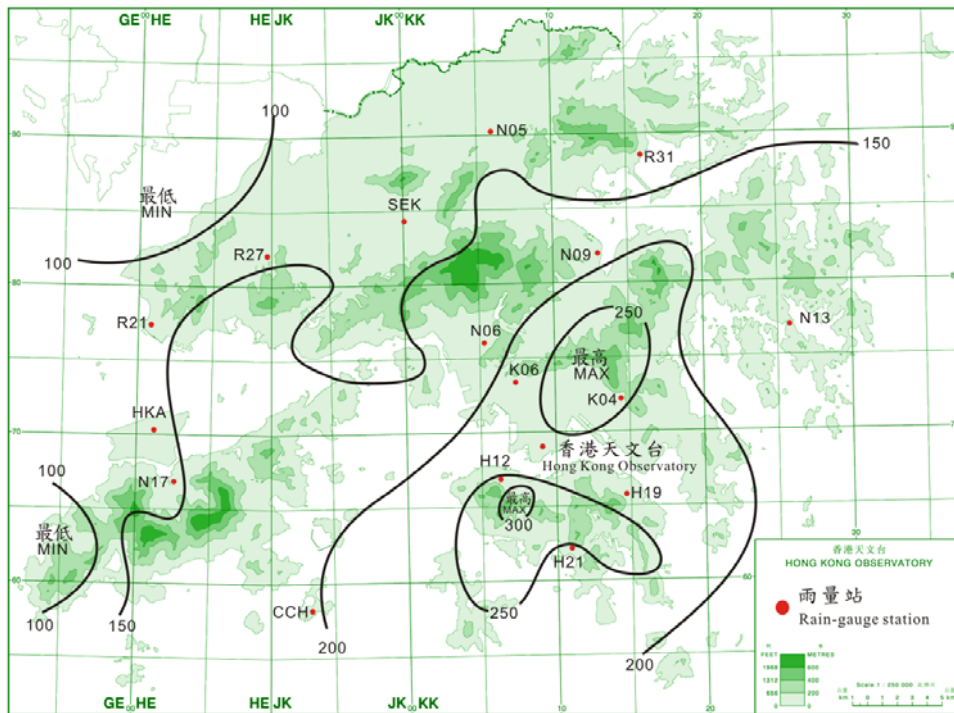


圖 3.4.2 二零一零年九月十九日至二十一日雨量分佈(等雨量線單位為毫米)。  
 Figure 3.4.2 Rainfall distribution on 19 – 21 September 2010 (isohyets are in millimetres).

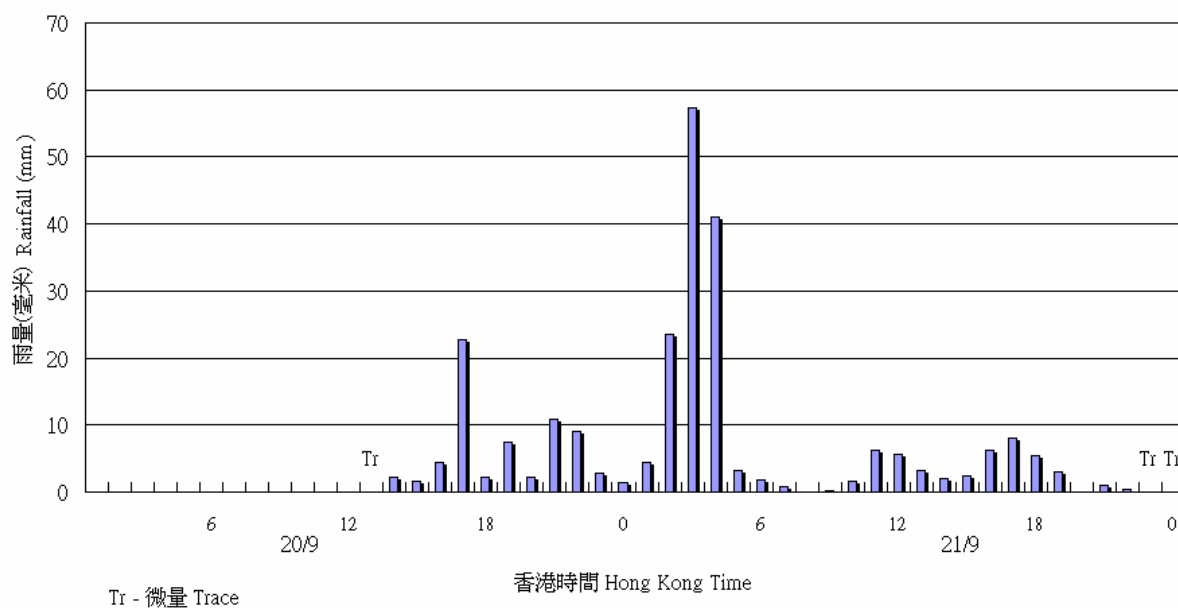


圖 3.4.3 二零一零年九月二十日至二十一日天文台總部錄得的每小時雨量。  
Figure 3.4.3 Hourly rainfall amounts recorded at the Hong Kong Observatory Headquarters on 20 – 21 September 2010.

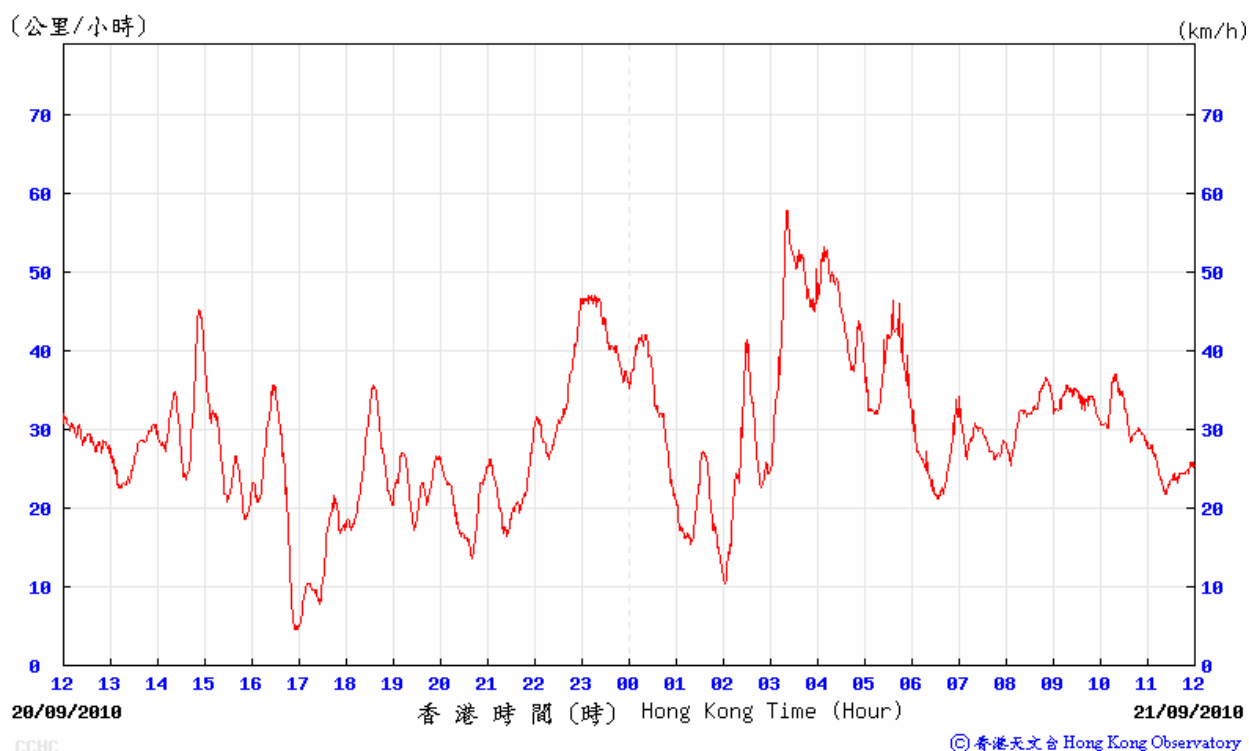


圖 3.4.4 二零一零年九月二十日至二十一日長洲自動氣象站錄得十分鐘平均風速的時間序列。  
Figure 3.4.4 Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 20-21 September 2010.

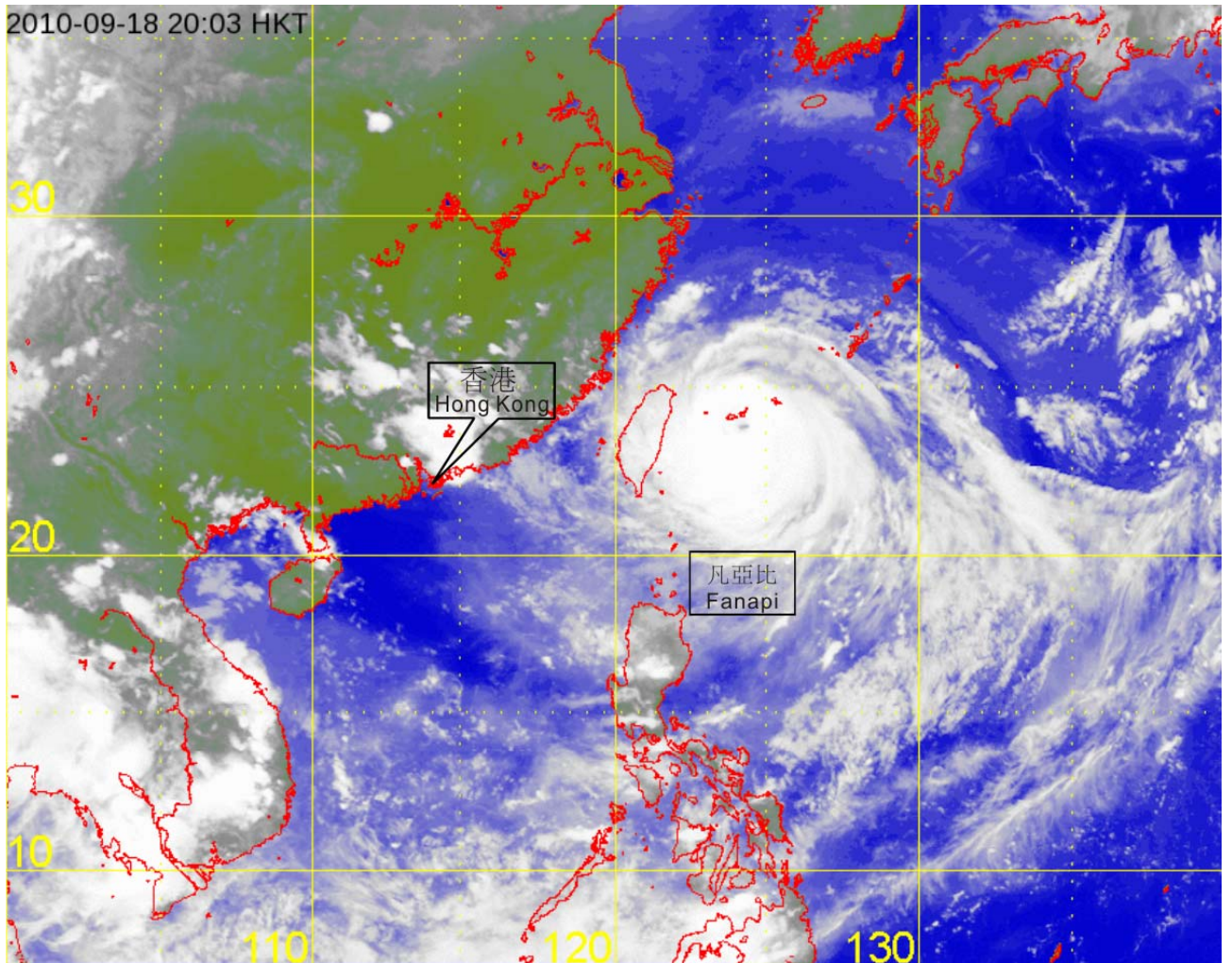


圖 3.4.5 強颱風凡亞比在二零一零年九月十八日下午 8 時的紅外線衛星圖片。當時凡亞比達到其最高強度，中心附近估計最高持續風速達到每小時 165 公里。

Figure 3.4.5 Infra-red satellite imagery at 8 p.m. on 18 September 2010 of Severe Typhoon Fanapi at its peak intensity with estimated maximum sustained winds of 165 kilometres per hour near its centre.

[ 此衛星圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2)。 ]  
 [The satellite imagery was originally captured by the Multi-functional Transport Satellite-2 (MTSAT-2) of Japan Meteorological Agency (JMA).]

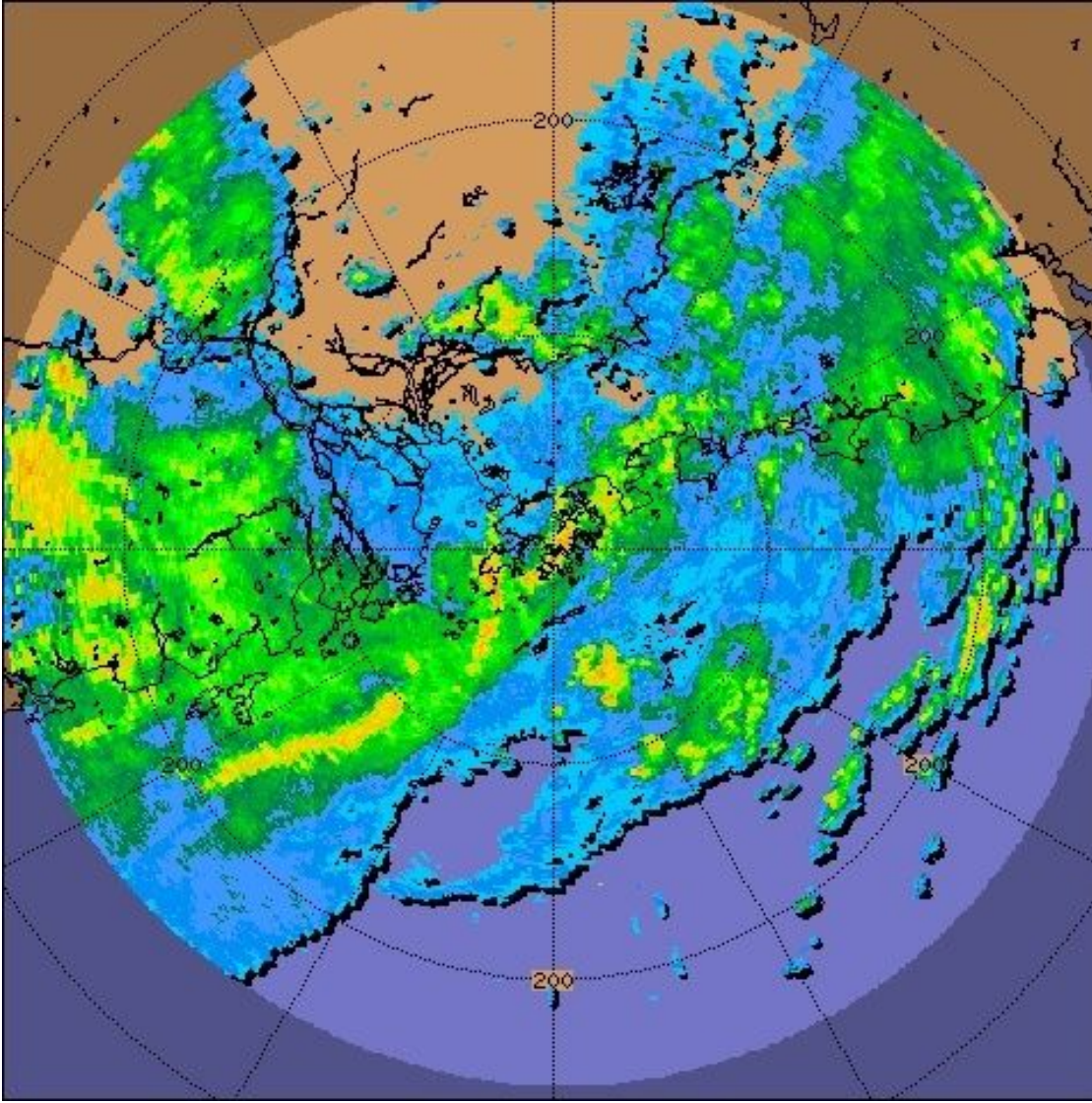


圖 3.4.6 二零一零年九月二十一日上午 2 時 42 分的雷達回波圖像，當時與凡亞比相連雨帶正為香港帶來大雨及狂風雷暴，而凡亞比的中心則集結在香港西北偏北約 155 公里處。

Figure 3.4.6 Radar imagery at 2:42 a.m. on 21 September 2010, when heavy rain and squally thunderstorms associated with the remnant rainbands of Fanapi were affecting Hong Kong. The centre of Fanapi was located about 155 km to the north-northwest of Hong Kong at that time.

### 3.5 超強颱風鮎魚 (1013)：二零一零年十月十三日至二十四日

鮎魚是香港天文台在二零一零年第五個需要發出警告信號的熱帶氣旋。它亦是二零一零年度在北太平洋西部上唯一的超強颱風。

熱帶低氣壓鮎魚於十月十三日在關島西南偏西約430公里的北太平洋西部上形成，並向西北偏西移動，當日黃昏增強為熱帶風暴。鮎魚於十月十五日向西北移動，並在菲律賓以東的太平洋上逐漸增強為颱風，翌日向西北偏西移動。它於十月十七日轉向西南偏西移動，及增強為超強颱風，並達到其最高強度，中心附近持續風力達到每小時270公里。它於十月十八日橫過呂宋，並減弱為強颱風。鮎魚於十月十九日減慢其移動速度並採取偏西路徑，於十月二十日轉為大致向北移動。它於十月二十二日在南海東北部減弱為颱風，翌日在福建漳浦沿岸登陸，並減弱為強烈熱帶風暴。鮎魚於十月二十四日進一步移入內陸，早上在福建消散。根據報章報導，鮎魚吹襲期間，菲律賓最少有36人死亡，並觸發山泥傾瀉，1 000多間房屋被摧毀，稻米損失達15億披索(約港幣2.7億元)。鮎魚為台灣帶來大雨，造成山泥傾瀉，引致最少13人死亡，26人失蹤，其中21人是由於旅遊巴在公路發生山泥傾瀉時失蹤。鮎魚造成福建超過64萬人受災，直接經濟損失約16億元人民幣。一艘貨船及漁船分別在福建及浙江海域沉沒，共有一人死亡、20人失蹤。此外，福建古雷鎮有超過2 000艘漁船被毀。

香港天文台於十月二十日下午4時35分發出一號戒備信號，當時鮎魚位於香港東南偏南約570公里。當日香港吹清勁北至東北風，離岸海域及高地間中吹強風。由於鮎魚繼續靠近華南沿岸及受到鮎魚及東北季候風的共同影響下，天文台在十月二十一日上午5時40分改發三號強風信號，當時鮎魚集結在香港東南約480公里。當日本港風勢增強，吹清勁北風，離岸吹強風，高地間中吹烈風。香港天文台總部在十月二十一日下午2時34分錄得最低瞬時海平面氣壓1002.0百帕斯卡，當時鮎魚位於香港東南約440公里。鮎魚於十月二十二日上午2時左右在香港東南偏東約430公里處掠過。鮎魚接近黃昏時減弱為颱風，本港風勢亦逐漸減弱。天文台在下午6時05分改發一號戒備信號，取代三號強風信號。其後本港風勢進一步減弱，天文台於下午8時40分取消所有熱帶氣旋警告信號。鮎魚影響香港期間各站錄得的最高風速及持續風力達到強風的時段可參考表3.5.1及3.5.2。

受到東北季候風及鮎魚的共同影響，十月二十日香港大致多雲及天氣乾燥。受到鮎魚的外圍雨帶影響，十月二十一日及二十二日有幾陣驟雨。

在三號強風信號發出期間，青衣一個地盤內一座50米高天秤向後折曲，幸事件無造成傷亡。鮎魚掠過香港期間，最少有10宗塌樹報告。中環上亞厘畢道、九龍城東頭邨及大帽山荃錦公路有大樹被風折斷，影響該處的交通。

表3.5.3及3.5.4分別是鮎魚影響香港期間本港的日雨量及最高潮位資料。圖3.5.1-3.5.4分別為鮎魚的路徑圖、本港的雨量分佈圖、鮎魚的衛星圖像及相關的雷達圖像。

### 3.5 Super Typhoon Megi (1013) : 13 – 24 October 2010

Megi was the fifth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2010. It was also the only super typhoon over the western North Pacific in 2010.

Megi formed as a tropical depression over the western North Pacific about 430 km west-southwest of Guam on 13 October and moved west-northwestwards. It intensified into a tropical storm that evening. On 15 October, Megi moved northwestwards and gradually intensified into a typhoon over the Pacific to the east of the Philippines. Megi moved west-northwestwards the next day. It turned to move west-southwestwards and became a super typhoon on 17 October, reaching its peak intensity with maximum sustained winds of about 270 km/h near its centre. Megi crossed Luzon on 18 October and weakened into a severe typhoon. It slowed down and moved generally westwards on 19 October, but turned to move generally northwards the next day. Megi weakened into typhoon over the northeastern part of the South China Sea on 22 October. It made landfall over the coast of Zhangpu, Fujian on 23 October and weakened into a severe tropical storm. Megi continued to move further inland and dissipated on the morning of 24 October over Fujian. According to press reports, Megi caused the death of at least 36 people in the Philippines. It also triggered landslides and destroyed some 1 000 houses. The damage to rice crops amounted to 1.5 billion peso (around 270 million Hong Kong dollars). Megi brought heavy rain to Taiwan, triggering landslides and caused the death of at least 13 people with 26 others missing, including 21 people in a bus missing during a landslide along a highway. In Fujian, more than 640 000 people were affected and the direct economic losses were around 1.6 billion yuan. A freighter and a fishing boat sank in the waters of Fujian and Zhejiang respectively, with one person killed and 20 others missing. In addition, Megi destroyed more than 2 000 fishing boats in Gulei, Fujian.

In Hong Kong, the Standby Signal No. 1 was issued at 4:35 p.m. on 20 October when Megi was about 570 km south-southeast of Hong Kong. Winds in Hong Kong were fresh north to northeasterlies, occasionally strong over offshore waters and on high ground. With Megi edging closer to the south China coast and under the combined effect of Megi and the northeast monsoon, the Strong Wind Signal No. 3 was issued at 5:40 a.m. on 21 October when Megi was about 480 km southeast of Hong Kong. Winds strengthened to become fresh northerlies, strong offshore and occasionally reaching gale force on high ground that day. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1002.0 hPa was recorded at 2:34 p.m. on 21 October when Megi was located about 440 km to the southeast. Megi came as close as 430 km to the east-southeast at about 2 a.m. on 22 October. It weakened into a typhoon towards the evening. Local winds also decreased gradually and the Strong Wind Signal No. 3 was replaced by the Standby Signal No. 1 at 6:05 p.m. All signals were cancelled at 8:40 p.m. as winds subsided further. The maximum winds recorded at various stations and the periods of strong winds during the passage of Megi are given in Tables 3.5.1 and 3.5.2 respectively.

Under the combined influence of the northeast monsoon and Megi, it was mainly cloudy and dry on 20 October. There were a few showers on 21 and 22 October under the influence of the outer rainbands of Megi.

During the period when the Strong Wind Signal No. 3 was issued, a 50-metre crane on a construction site in Tsing Yi collapsed. No one was injured in the incident. In Hong Kong, there were at least 10 reports of fallen trees during the approach of Megi. There were reports of branches of large trees being blown down by winds in the Upper Albert Road in Central, Tung Tau Estate in Kowloon City and Route Twisk in Tai Mo Shan, affecting traffic in the areas.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Megi is given in Tables 3.5.3 and 3.5.4 respectively. Figures 3.5.1 - 3.5.4 show respectively the track of Megi, the rainfall distribution for Hong Kong, a satellite imagery of Megi and a related radar imagery.

表 3.5.1 在鮎魚影響下，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 tropical cyclone warning signals for Megi 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)		北	N	49	20/10	20:50	西北偏北	NNW	13	21/10	00:00
							西北偏北	NNW	13	21/10	01:00
中環碼頭 Central Pier		東北	NE	43	20/10	20:14	西北偏西	WNW	30	22/10	13:00
		西北	NW	43	22/10	03:43					
長洲 Cheung Chau		東北偏北	NNE	72	21/10	01:43	東北偏北	NNE	47	21/10	01:00
長洲泳灘 Cheung Chau Beach		東北	NE	72	21/10	01:44	東北	NE	38	21/10	01:00
長沙灣 Cheung Sha Wan		北	N	51	21/10	08:28	北	N	16	21/10	01:00
青洲 Green Island		北	N	76	21/10	00:00	北	N	51	21/10	10:00
香港國際機場 Hong Kong International Airport		北	N	52	21/10	04:57	北	N	36	21/10	05:00
啓德 Kai Tak		北	N	67	21/10	04:00	北	N	31	20/10	20:00
京士柏 King's Park		東北偏北	NNE	56	21/10	00:11	北	N	23	20/10	19:00
流浮山 Lau Fau Shan		北	N	58	20/10	21:45	北	N	34	21/10	18:00
昂坪 Ngong Ping		東北	NE	72	21/10	20:16	東北偏東	ENE	45	20/10	23:00
北角 North Point		東北偏北	NNE	52	20/10	23:44	東北偏北	NNE	25	21/10	00:00
坪洲 Peng Chau		東北偏北	NNE	63	21/10	00:27	北	N	38	20/10	22:00
							北	N	38	21/10	01:00
平洲 Ping Chau		東北偏北	NNE	49	21/10	06:36	東北偏北	NNE	12	20/10	20:00
		西北偏北	NNW	49	21/10	23:51	北	N	12	21/10	04:00
							東北偏北	NNE	12	21/10	05:00
							北	N	12	21/10	07:00
西貢 Sai Kung		北	N	72	20/10	23:52	北	N	36	20/10	21:00
沙洲 Sha Chau		北	N	65	20/10	22:02	北	N	49	21/10	05:00
		北	N	65	21/10	05:22					
沙螺灣 Sha Lo Wan		東北	NE	40	20/10	21:47	東北偏北	NNE	20	20/10	22:00
		東北偏北	NNE	40	20/10	22:37					
沙田 Sha Tin		北	N	56	21/10	04:45	北	N	20	21/10	05:00
石崗 Shek Kong		東北	NE	45	21/10	11:09	東北偏北	NNE	20	21/10	11:00
九龍天星碼頭 Star Ferry (Kowloon)		西北偏西	WNW	43	21/10	18:02	西北偏西	WNW	20	22/10	14:00
打鼓嶺 Ta Kwu Ling		東北偏北	NNE	54	21/10	02:02	北	N	25	21/10	01:00
大美督 Tai Mei Tuk		東北偏北	NNE	68	21/10	21:33	東北	NE	31	21/10	00:00
							東北偏北	NNE	31	21/10	22:00
大帽山 Tai Mo Shan		東北偏北	NNE	81	21/10	04:05	東北偏北	NNE	59	21/10	05:00
		東北偏北	NNE	81	21/10	21:12					
大老山 Tate's Cairn		北	N	85	21/10	19:46	北	N	62	21/10	20:00
塔門 Tap Mun		北	N	58	21/10	20:47	北	N	22	21/10	00:00
							北	N	22	21/10	17:00
							北	N	22	22/10	04:00



表 3.5.1 (續) 在鮎魚影響下，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 (cont'd) Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when tropical cyclone warning signals for Megi were in force

鯽魚湖	Tsak Yue Wu	東北	NE	63	21/10	09:45	東北偏北	NNE	30	22/10	03:00
將軍澳	Tseung Kwan O	東北偏東	ENE	47	21/10	10:00	北	N	19	21/10	20:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西北偏北	NNW	62	21/10	01:47	西北偏北	NNW	30	21/10	02:00
屯門政府合署	Tuen Mun Government Offices	北	N	49	20/10	22:23	北	N	14	21/10	11:00
							北	N	14	21/10	17:00
橫瀾島	Waglan Island	東北偏北	NNE	65	20/10	20:07	東北偏北	NNE	51	20/10	20:00
							東北偏北	NNE	51	20/10	21:00
濕地公園	Wetland Park	東北偏北	NNE	49	20/10	21:51	東北偏北	NNE	20	20/10	22:00
黃竹坑	Wong Chuk Hang	西北	NW	52	21/10	09:10	西北偏北	NNW	20	21/10	10:00
		北	N	52	21/10	09:38					

表 3.5.2 在鮎魚影響下，在熱帶氣旋警告系統的八個參考測風站所錄到持續風力達到強風程度的時段

Table 3.5.2 Periods during which sustained strong winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Megi were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 First time strong wind speed* was reached		最後達到強風*時間 Last time strong wind speed* was reached	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	20/10	20:22	22/10	04:25
西貢	Sai Kung	20/10	20:06	20/10	20:17

\* 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：本表列出持續風力最初及最後達到強風程度的時間。其間，風力可能高於或低於指定的風力。

Note: The table gives the first and last time when strong winds were recorded. Note that the winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.5.3 鮎魚影響香港期間，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 Megi

站 (參閱圖 3.5.2) Station (See Fig. 3.5.2)	十月二十日 20 Oct	十月二十一日 21 Oct	十月二十二日 22 Oct	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory	0.0	微量 Trace	0.2	0.2
長洲 Cheung Chau (CCH)	[0.0]	[0.0]	[0.0]	[0.0]
香港國際機場 Hong Kong International Airport (HKA)	0.0	微量 Trace	0.3	0.3
N05 粉嶺 Fanling	0.0	0.5	3.0	3.5
N13 糧船灣 High Island	0.0	0.0	1.0	1.0
K04 佐敦谷 Jordan Valley	0.0	0.0	2.5	2.5
N06 葵涌 Kwai Chung	0.0	0.0	0.0	0.0
H12 半山區 Mid Levels	0.0	0.0	0.0	0.0
H21 淺水灣 Repulse Bay	0.0	0.0	0.5	0.5
N09 沙田 Sha Tin	0.0	0.0	2.5	2.5
H19 筲箕灣 Shau Kei Wan	0.0	0.0	1.5	1.5
SEK 石崗 Shek Kong	0.0	[0.0]	0.0	[0.0]
K06 蘇屋邨 So Uk Estate	0.0	0.0	0.0	0.0
R31 大美督 Tai Mei Tuk	0.0	0.5	4.0	4.5
R21 踏石角 Tap Shek Kok	0.0	0.0	0.0	0.0
N17 東涌 Tung Chung	0.0	0.0	0.0	0.0
R27 元朗 Yuen Long	0.0	0.0	0.0	0.0

註： [ ] 基於不齊全的每小時雨量數據。

Note: [ ] based on incomplete hourly data.

表 3.5.4 鮎魚影響香港期間，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 Megi

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鯽魚涌	Quarry Bay	2.82	21/10	20:39	0.72	22/10	08:45
石壁	Shek Pik	2.60	21/10	20:59	0.44	22/10	09:23
大埔滘	Tai Po Kau	2.81	21/10	21:15	0.74	22/10	03:52
大廟灣	Tai Miu Wan	2.78	21/10	20:58	0.75	21/10	20:58
尖鼻咀	Tsim Bei Tsui	3.00	21/10	22:28	0.79	22/10	10:51
橫瀾島	Waglan Island	2.72	21/10	20:32	0.58	22/10	09:11

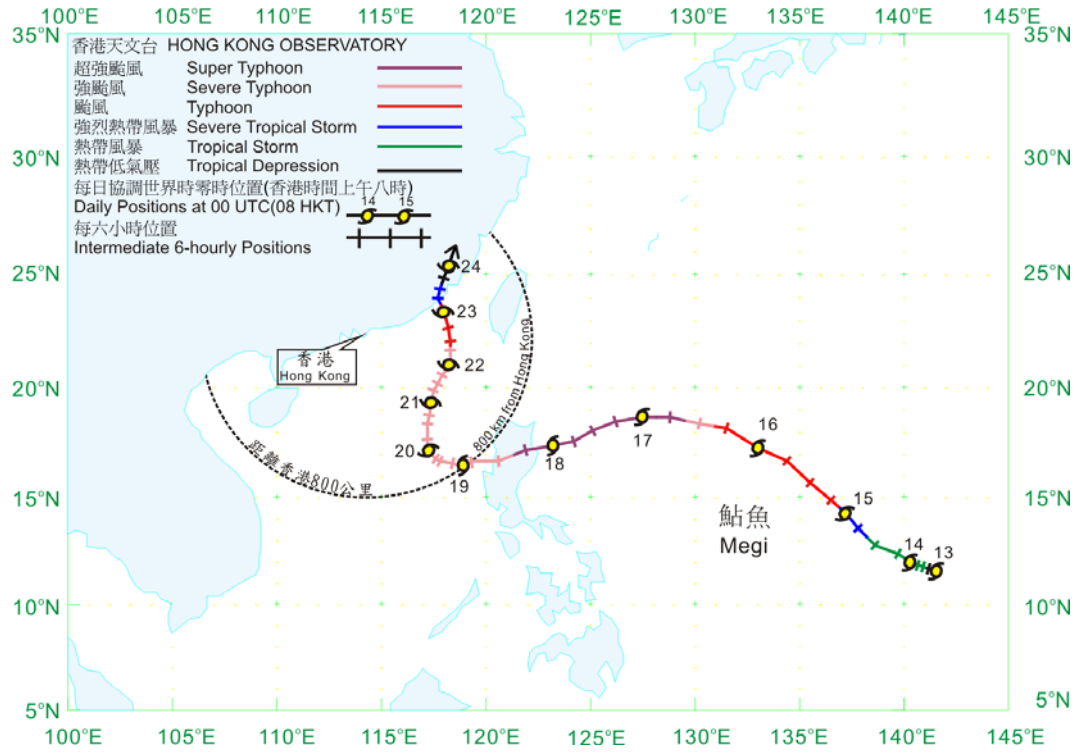


圖 3.5.1 鮎魚 (1013) 在二零一零年十月十三日至二十四日的路徑圖。  
Figure 3.5.1 Track of Megi (1013) on 13 – 24 October 2010.

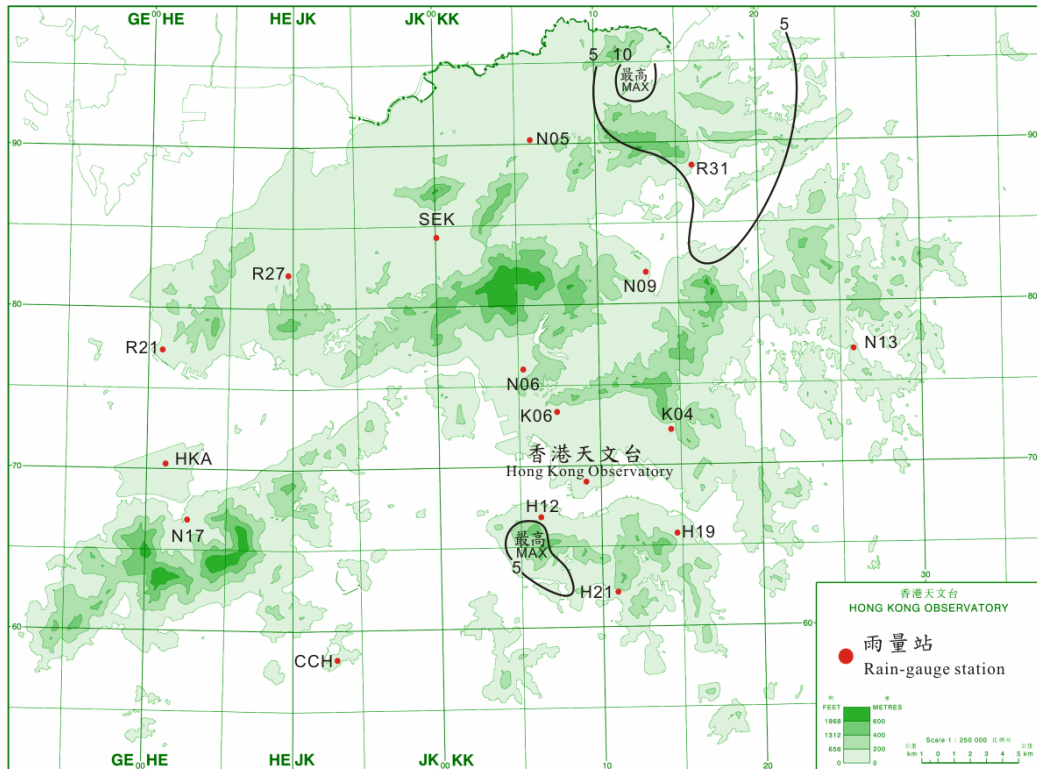


圖 3.5.2 二零一零年十月二十日至二十二日的雨量分佈(等雨量線單位為毫米)。  
Figure 3.5.2 Rainfall distribution on 20 – 22 October 2010 (isohyets are in millimetres).

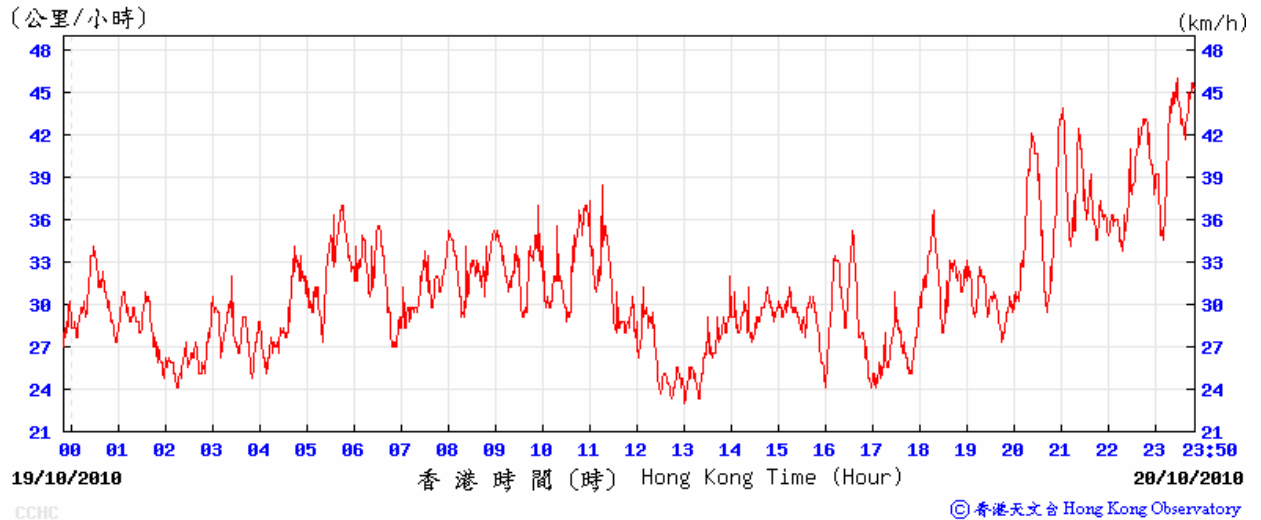


圖 3.5.3 二零一零年十月二十日長洲自動氣象站錄得十分鐘平均風速的時間序列。  
Figure 3.5.3 Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 20 October 2010.

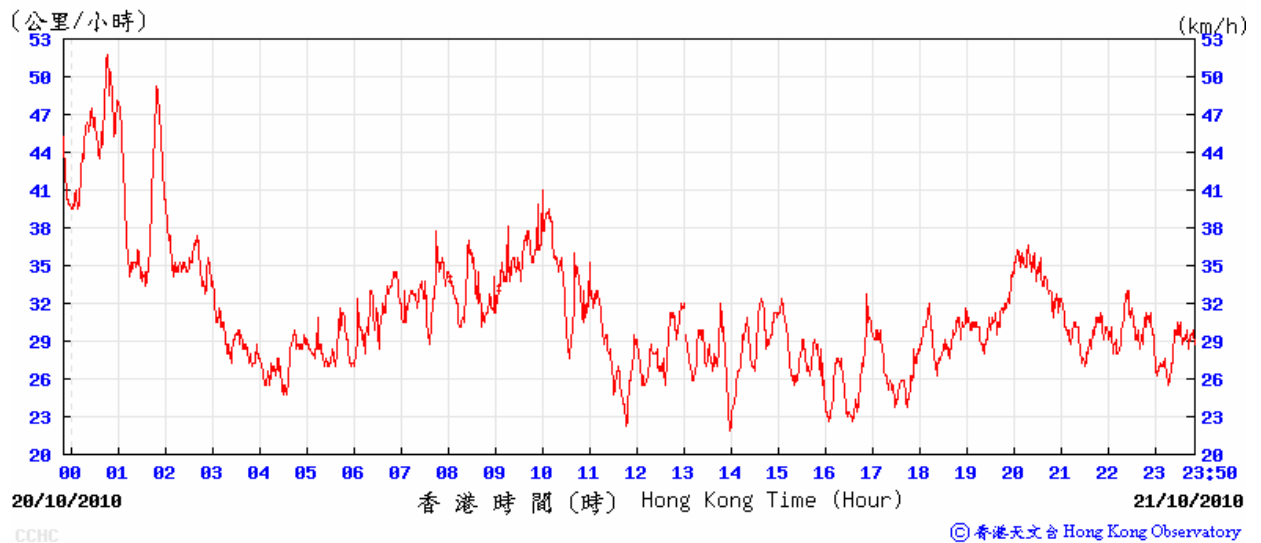


圖 3.5.4 二零一零年十月二十一日長洲自動氣象站錄得十分鐘平均風速的時間序列。  
Figure 3.5.4 Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 21 October 2010.

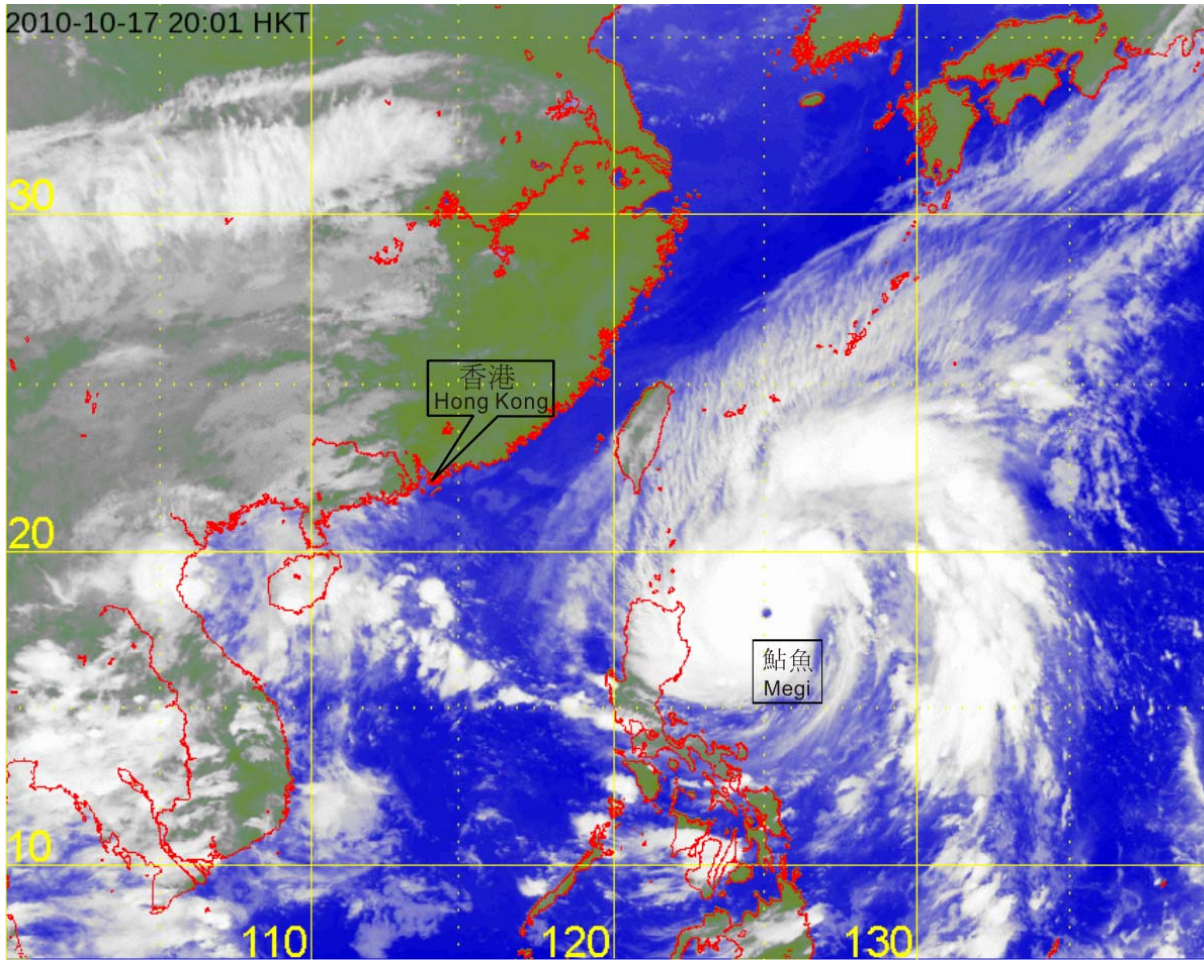


圖 3.5.5 超強颱風鮎魚在二零一零年十月十七日下午 8 時的紅外線衛星圖片，其風眼清晰可見。當時鮎魚達到其最高強度，中心附近估計最高持續風速達到每小時 270 公里。

Figure 3.5.5 Infrared satellite imagery at 8 p.m. on 17 October 2010 of Super Typhoon Megi, with a distinct eye clearly discernible. Megi was at its peak intensity with estimated maximum sustained winds of 270 kilometres per hour near its centre at that time.

[ 此衛星圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2) 。 ]

[The satellite imagery was originally captured by the Multi-functional Transport Satellite-2 (MTSAT-2) of Japan Meteorological Agency (JMA).]

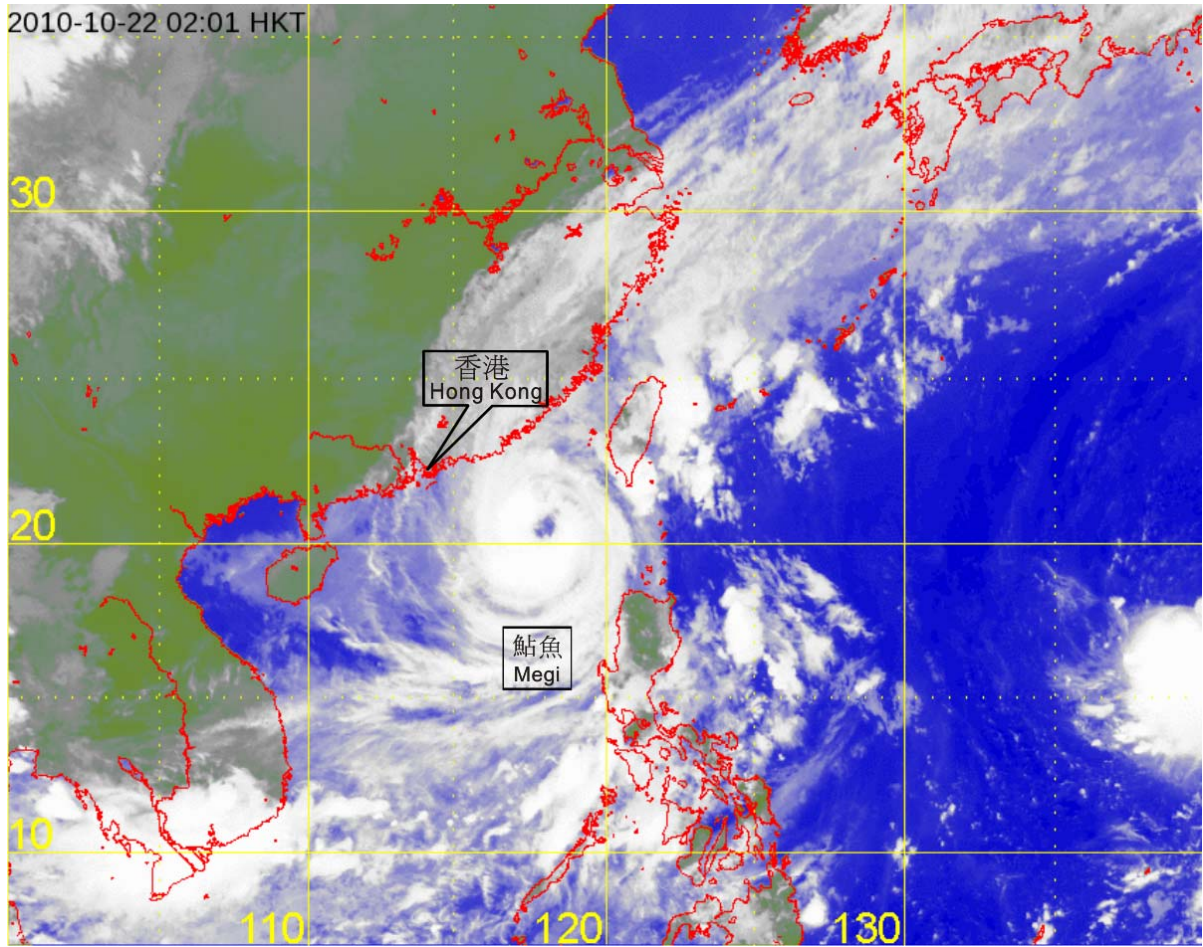


圖 3.5.6 強颱風鮎魚在二零一零年十月二十二日上午 2 時的紅外線衛星圖片，當時鮎魚正在香港東南偏東約 430 公里處掠過，中心附近估計最高持續風速達到每小時 175 公里。

Figure 3.5.6 Infrared satellite imagery at 2 a.m. on 22 October 2010 of Severe Typhoon Megi. Megi was passing about 430 km to the east-southeast of Hong Kong with estimated maximum sustained winds of Megi of 175 kilometres per hour near its centre at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2 (MTSAT-2)。〕  
 [The satellite imagery was originally captured by the Multi-functional Transport Satellite-2 (MTSAT-2) of Japan Meteorological Agency (JMA).]

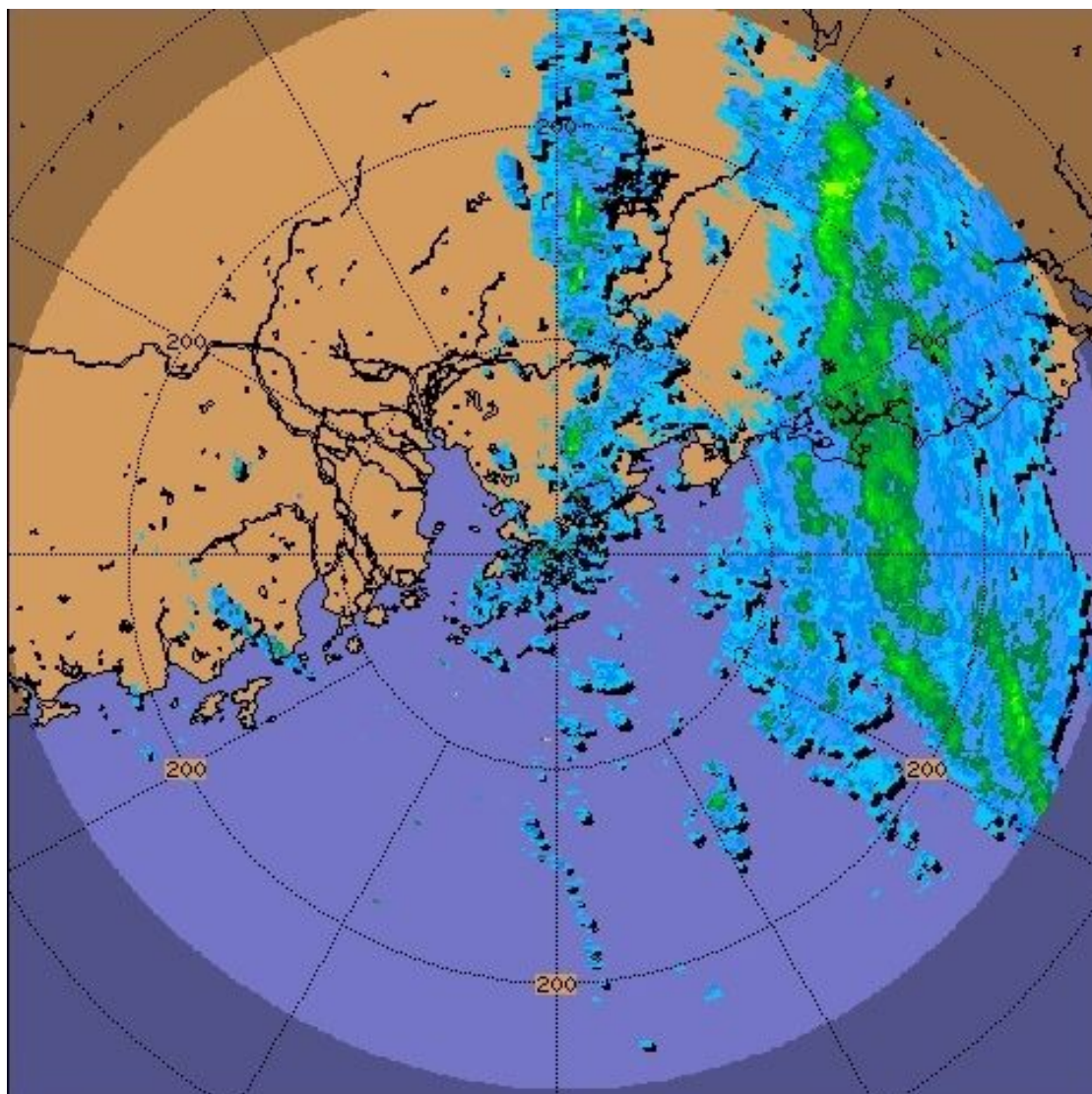


圖 3.5.7 二零一零年十月二十二日上午 8 時的雷達回波圖像，當時鮎魚的外圍雨帶正影響香港及廣東東部。

Figure 3.5.7 Radar imagery at 8:00 a.m. on 22 October 2010. The outer rainbands of Megi was affecting Hong Kong and eastern Guangdong around that time.

## 第四節 熱帶氣旋統計表

表4.1是二零一零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。表內所給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是天文台在二零一零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是二零一零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是一九五六至二零一零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是一九五六至二零一零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是一九五六至二零一零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是二零一零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是二零一零年位於香港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二零一零年間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是自一九四六年以來，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是二零一零年間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及本地報章的報導。

表4.11是一九六零至二零一零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。



## Section 4 TROPICAL CYCLONE STATISTICS AND TABLES

TABLE 4.1 is a list of tropical cyclones in 2010 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 2010, 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 2010. 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 2010 inclusive.

TABLE 4.5 gives the annual number of tropical cyclones in Hong Kong's area of responsibility between 1956 and 2010 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 1956-2010.

TABLE 4.7 is a summary of meteorological information for each tropical cyclone affecting Hong Kong in 2010, 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 2010.

TABLE 4.8.2 highlights the 10 wettest tropical cyclones in Hong Kong for the period 1884-1939 and 1947-2010.

TABLE 4.9 provides some meteorological information for those typhoons requiring the issuing of the Hurricane Signal No. 10 in Hong Kong since 1946. 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 2010. The information is based on reports from various government departments, public utility companies and local newspapers.

TABLE 4.11 presents casualties and damage caused by tropical cyclones in Hong Kong: 1960-2010. The information is based on reports from various government departments, public utility companies and local newspapers.

表 4.1 二零一零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 2010

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 時間 <sup>+</sup>		位置 Position		風力 (公里每小時) Winds (km/h)	氣壓 (百帕斯卡) Pressure (hPa)	日期/月份 時間 <sup>+</sup>		位置 Position		
			Date/Month	Time <sup>+</sup>	北緯 °N	東經 °E			Date/Month	Time <sup>+</sup>	北緯 °N	東經 °E	
熱帶風暴奧麥斯	Tropical Storm Omais	1001	22 / 3	1800	9.2	140.2	65	996	26 / 3	1800	18.7	132.6	DISP
颱風康森	Typhoon Conson	1002	11 / 7	1800	14.0	132.1	120	970	18 / 7	0000	21.2	105.1	DISP
颱風燦都	Typhoon Chanthu	1003	19 / 7	0000	15.0	118.0	120	970	23 / 7	1200	23.8	106.2	DISP
熱帶低氣壓	Tropical Depression	-	19 / 7	0000	26.0	126.0	45	1002	20 / 7	0600	31.2	123.9	DISP
強烈熱帶風暴電母	Severe Tropical Storm Dianmu	1004	7 / 8	1800	21.5	124.9	90	985	12 / 8	1200	39.6	142.7	XT
強烈熱帶風暴蒲公英	Severe Tropical Storm Mindulle	1005	22 / 8	0000	16.3	115.1	105	980	25 / 8	0000	19.4	104.1	DISP
強烈熱帶風暴獅子山	Severe Tropical Storm Lionrock	1006	28 / 8	0600	18.2	117.2	90	982	3 / 9	0600	23.5	113.4	DISP
颱風圓規	Typhoon Kompasu	1007	28 / 8	1800	19.4	137.7	145	955	3 / 9	0000	41.4	137.4	XT
熱帶風暴南川	Tropical Storm Namtheun	1008	30 / 8	0600	26.1	122.7	65	995	31 / 8	1800	24.7	119.3	DISP
熱帶風暴瑪瑙	Tropical Storm Malou	1009	3 / 9	0600	23.0	131.0	85	992	8 / 9	1200	35.3	140.6	XT
強烈熱帶風暴莫蘭蒂	Severe Tropical Storm Meranti	1010	8 / 9	0000	21.0	120.8	110	975	10 / 9	1200	27.8	119.0	DISP
強颱風凡亞比	Severe Typhoon Fanapi	1011	15 / 9	0000	19.9	128.4	165	945	20 / 9	1800	23.6	113.8	DISP
強颱風馬勒卡	Severe Typhoon Malakas	1012	21 / 9	0600	18.2	144.9	155	945	25 / 9	0600	36.9	145.9	XT
熱帶低氣壓	Tropical Depression	-	5 / 10	1200	18.7	108.6	45	1002	6 / 10	1800	19.0	107.9	DISP
超強颱風鮎魚	Super Typhoon Megi	1013	13 / 10	0000	11.7	141.4	270	895	24 / 10	0000	25.4	118.2	DISP
熱帶低氣壓	Tropical Depression	-	21 / 10	0000	19.1	160.1	55	1004	23 / 10	1200	22.7	154.7	DISP
強颱風暹芭	Severe Typhoon Chaba	1014	22 / 10	1200	16.8	137.5	175	940	30 / 10	1200	34.7	141.6	XT
熱帶低氣壓	Tropical Depression	-	19 / 12	0600	21.6	179.4	55	998	20 / 12	0000	20.2	179.9	*

\* 橫過國際換日線，進入北太平洋中部。 \* Turned to move across the International Date Line into the central North Pacific.

<sup>+</sup> 時間為協調世界時。<sup>+</sup> Times are given in UTC.

表 4.2 二零一零年為船舶發出的熱帶氣旋警告  
TABLE 4.2 TROPICAL CYCLONE WARNINGS FOR SHIPPING ISSUED IN 2010

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 <sup>+</sup> Time <sup>+</sup>	日期/月份 Date/Month	時間 <sup>+</sup> Time <sup>+</sup>	
* 颱風康森	* Typhoon Conson	40	13 / 7	0000	17 / 7	1800	114
* 颱風燦都	* Typhoon Chanthu	33	19 / 7	0000	23 / 7	0000	96
熱帶低氣壓	Tropical Depression	4	19 / 7	1800	20 / 7	0300	9
強烈熱帶風暴電母	Severe Tropical Storm Dianmu	8	8 / 8	0000	8 / 8	2100	21
強烈熱帶風暴蒲公英	Severe Tropical Storm Mindulle	24	22 / 8	0000	24 / 8	1800	66
* 強烈熱帶風暴獅子山	* Severe Tropical Storm Lionrock	48	28 / 8	0300	2 / 9	0900	126
熱帶風暴南川	Tropical Storm Namtheun	15	30 / 8	0600	31 / 8	2100	39
強烈熱帶風暴莫蘭蒂	Severe Tropical Storm Meranti	21	8 / 9	0000	10 / 9	1200	60
* 強颱風凡亞比	* Severe Typhoon Fanapi	19	18 / 9	0900	20 / 9	1500	54
熱帶低氣壓	Tropical Depression	14	5 / 10	0900	7 / 10	0000	39
* 超強颱風鮎魚	* Super Typhoon Megi	50	17 / 10	1500	23 / 10	1500	144
	共 Total	276					720

\* 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.

<sup>+</sup> 時間為協調世界時。

<sup>+</sup> Times are given in UTC.

表 4.3 二零一零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 2010

## 摘要 SUMMARY

信號 Signal	次數 No. of occasions	總時段 Total duration	
		時 h	分 min
1	8	149	5
3	3	70	55
8 西北 NW	-	-	-
8 西南 SW	-	-	-
8 東北 NE	-	-	-
8 東南 SE	-	-	-
9	-	-	-
10	-	-	-
共 Total	11	220	0

## 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 *
颱風康森 Typhoon Conson	28	1	15/7	19:20	16/7	21:15
颱風燦都 Typhoon Chanthu	33	1	20/7	12:15	21/7	16:40
		3	21/7	16:40	22/7	11:40
		1	22/7	11:40	22/7	14:40
強烈熱帶風暴獅子山 Severe Tropical Storm Lionrock	35	1	29/8	10:35	30/8	19:10
	21	1	2/9	20:40	3/9	16:40
強颱風凡亞比 Severe Typhoon Fanapi	42	1	19/9	16:35	20/9	16:05
		3	20/9	16:05	21/9	07:35
超強颱風鮎魚 Super Typhoon Megi	55	1	20/10	16:35	21/10	05:40
		3	21/10	05:40	22/10	18:05
		1	22/10	18:05	22/10	20:40

\* 香港時間 (協調世界時加八小時)

\* Hong Kong Time (UTC + 8 hours)

表 4.4 一九五六至二零一零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 : 1956-2010

年份 Year	信號 Signals								總時段 Total duration	
	1	3	8 西北 NW	8 西南 SW	8 東北 NE	8 東南 SE	9	10	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
共 Total	358	305	23	31	58	44	19	12	14665	29
平均 Mean	6.5	5.5	0.4	0.6	1.1	0.8	0.3	0.2	266	39

表 4.5 一九五六至二零一零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 : 1956-2010

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
共 Total	864	328
平均 Mean	15.7	6.0

表 4.6 一九五六至二零一零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 : 1956-2010

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 h	分 min	時 h	分 min	時 h	分 min	時 h	分 min	時 h	分 min	時 h	分 min				
一號或以上 1 or higher	342	42	53	161	0	4	30	266	39	570	15	36	35	(桃麗達Tilda, 1964)	(熱帶低氣壓 T.D., 2000)	(1964)	(1959)
三號或以上 3 or higher	227	29	44	124	15	4	5	122	44	306	35	15	5	(瑪麗Mary, 1960)	(熱帶低氣壓 T.D., 2006)	(1974)	(2004)
八號或以上 8 or higher	80	15	0	66	50	2	40	21	49	100	55	0	0	(瑪麗Mary, 1960)	(雲茵Wynne, 1984)	(1964)	
8 西北 NW	23	5	47	15	45	1	30	2	25	18	0	0	0				
8 西南 SW	31	4	49	10	45	2	0	2	43	16	10	0	0				
8 東北 NE	58	7	49	35	35	2	0	8	15	40	20	0	0				
8 東南 SE	44	7	21	21	45	0	20	5	53	31	15	0	0				
九號或以上 9 or higher	20	7	2	12	25	2	0	2	33	19	25	0	0	(約克York, 1999)	(杜鵑Dujuan, 2003)	(1964)	
10	12	6	34	11	0	2	30	1	26	12	10	0	0	(約克York, 1999)	(愛麗斯Alice, 1961)	(1964)	

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 二零一零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 2010

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
颱風康森 Typhoon Conson	7	15	20	南 S	630	西 W 18	975	7	15	15:42 - 17:42 #	1006.2	0.16	0.25	0.16	0.29	0.27	0.15
									16:00	1006.3							
颱風燦都 Typhoon Chanthu	7	22	05	西南 SW	330	西北 NW 15	970	7	22	05:06 - 05:36 #	1005.2	0.19	0.25	0.15	0.32	0.25	0.09
									05:00	1005.3							
強烈熱帶風暴獅子山 Severe Tropical Storm Lionrock (第一次影響香港期間) (First passage)	8	29	20	東南 SE	290	東北偏北 8 NNE	996	8	30	16:57 - 17:01	1001.6	0.15	0.18	0.10	0.23	0.22	0.02
(第二次影響香港期間) (Second passage)	9	3	14	西北偏北 NNW	150	西南偏西 10 WSW	1000	9	3	03:00 - 03:12	1002.1						
										03:00	1002.1	0.01	0.04	0.07	0.07	0.13	-
強颱風凡亞比 Severe Typhoon Fanapi	9	21	01	北 N	150	西 W 24	996	9	20	15:02 - 15:15	997.2	0.06	0.01	-	0.10	0.44	0.06
									15:00	997.3							
超強颱風鮎魚 Super Typhoon Megi	10	23	14	東南偏東 ESE	410	西北偏北 11 NNW	975	10	21	14:34 - 14:51#	1002.0	0.72	0.44	0.75	0.74	0.79	0.58
									15:00	1002.1							

\* 香港時間 (協調世界時加八小時) \* Hong Kong Time (UTC + 8 hours)  
# 最初及最後錄得的時間 # First and last time recorded  
- 沒有資料 - No data



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
颱風康森 Typhoon Conson	7	東南偏東 ESE 20	東南偏東 ESE 38	東南 SE 41	東南, 東南偏南, 東南偏東 SE, SSE, ESE 23	東南 SE 45	東南 SE 56	東南偏東 ESE 43	東南 SE 65	東南 SE 85
颱風燦都 Typhoon Chanthu	7	東南偏東 ESE 23	東南偏東 ESE 36	東北偏東 ENE 43	東南偏東 ESE 30	東南偏南 SSE 51	東南偏東 ESE 52	東南偏東 ESE 65	東南偏東 ESE 68	東南 SE 67
強烈熱帶風暴獅子山 Severe Tropical Storm Lionrock (第一次影響香港期間) (First passage)	8	北 N 14	西北 NW 23	北 N 23	西 W 16	東南 SE 30	北 N 27	北 N 27	東南偏東 ESE 47	東北 NE 47
(第二次影響香港期間) (Second passage)	9	西南偏西 WSW 13	西北偏北 NNW 34	東南偏南 SSE 47	西 W 14	西北 NW 30	西南偏南 SSW 58	東南偏南 SSE 34	東南 SE 38	西南偏南 SSW 76
強颱風凡亞比 Severe Typhoon Fanapi	9	西南偏南 SSW 25	西南 SW 43	西南 SW 59	西南偏西 WSW 30	西南 SW 54	西南 SW 72	西南偏西 WSW 70	西南偏南 SSW 88	西南 SW 122
超強颱風鮎魚 Super Typhoon Megi	10	北 N 25	北 N 36	東北偏北 NNE 52	北 N 30	北 N 40	北 N 54	東北偏北 NNE 56	北 N 52	東北偏北 NNE 65

表 4.8.1 二零一零年位於香港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 2010

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 <sub>1</sub> → T <sub>2</sub> ) 日期/月份 時間* Date/Month Time*	香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm)				
		(i) 在香港600公里內 within 600 km of Hong Kong (T <sub>1</sub> → T <sub>2</sub> )	(ii) 在 T <sub>2</sub> 之後 的24小時內 24-hour period after T <sub>2</sub>	(iii) 在 T <sub>2</sub> 之後 的48小時內 48-hour period after T <sub>2</sub>	(iv) 在 T <sub>2</sub> 之後 的72小時內 72-hour period after T <sub>2</sub>	(i) + (iv) 共 Total T <sub>1</sub> → (T <sub>2</sub> +72 小時 hours)
颱風燦都 Typhoon Chanthu	(T <sub>1</sub> ) 20 / 7 0800 - (T <sub>2</sub> ) 23 / 7 0600	212.6	14.4	15.1	15.1	227.7
強烈熱帶風暴獅子山 Severe Tropical Storm Lionrock	(T <sub>1</sub> ) 28 / 8 1400 - (T <sub>2</sub> ) 3 / 9 1400	66.0	31.2	36.1	36.1	102.1
熱帶風暴南川 # Tropical Storm Namtheun #	(T <sub>1</sub> ) 1 / 9 0100 - (T <sub>2</sub> ) 1 / 9 0200	0.0	0.0	16.8	63.9	+ 63.9
強烈熱帶風暴莫蘭蒂 # Severe Tropical Storm Meranti #	(T <sub>1</sub> ) 8 / 9 1800 - (T <sub>2</sub> ) 10 / 9 1000	62.1	81.4	98.5	194.4	256.5
強颱風凡亞比 Severe Typhoon Fanapi	(T <sub>1</sub> ) 19 / 9 2000 - (T <sub>2</sub> ) 21 / 9 0200	95.1	150.7	151.5	151.5	246.6
超強颱風鮎魚 Super Typhoon Megi	(T <sub>1</sub> ) 20 / 10 1400 - (T <sub>2</sub> ) 24 / 10 0800	0.2	0.0	微量 Trace	微量 Trace	0.2
					共 Total	833.1

\* 香港時間（協調世界時加八小時）。

T<sub>1</sub> - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T<sub>2</sub> - 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

# 該熱帶氣旋並未導致天文台需要發出熱帶氣旋警告信號。

+ 熱帶風暴南川的雨量與強烈熱帶風暴獅子山的雨量重疊。

\* Hong Kong Time (UTC + 8 hours) .

T<sub>1</sub> - The time when a tropical cyclone was first centred within 600 km of Hong Kong.

T<sub>2</sub> - The time when a tropical cyclone was dissipated within or moved outside 600 km of Hong Kong.

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

+ Rainfall amount of T.S. Namtheun overlaps the rainfall amount of S.T.S. Lionrock.

表 4.8.2 一八八四至一九三九年及一九四七至二零一零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, 1947-2010)

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 <sub>1</sub> →T <sub>2</sub> )	(ii) 在 T <sub>2</sub> 之後的 24 小時內 24-hour period after T <sub>2</sub>	(iii) 在 T <sub>2</sub> 之後的 48 小時內 48-hour period after T <sub>2</sub>	(iv) 在 T <sub>2</sub> 之後的 72 小時內 72-hour period after T <sub>2</sub>	(i) + (iv) 共 Total T <sub>1</sub> → (T <sub>2</sub> +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
1995	8	海倫 Helen	241.4	146.2	235.2	239.5	480.9
1904	8	熱帶氣旋 T.C.	446.5 #	0.0 #	3.7 #	26.7 #	473.2

T<sub>1</sub> - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T<sub>2</sub> - 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。

T<sub>1</sub> - The time when a tropical cyclone was first centred within 600 km of Hong Kong.

T<sub>2</sub> - 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.

表 4.9 一九四六至二零一零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 1946-2010

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	啓德機場 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	啓德機場 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	-	-	-			

\* 估計，超出風速記錄圖的上限。  
estimated, exceeding upper limit of anemogram

表 4.10 二零一零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 2010

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\$)					共Total
		農業 Agriculture	公用建設 Public works facilities	公用業務 Public utilities	物業單位 Property	山泥傾瀉及 斜坡倒塌 Landslip and collapse of slope	農業 Agriculture	公用建設 Public works facilities	公用業務 Public utilities	私人物業 Private property	其他 Others	
颱風燦都 Typhoon Chanthu	7	農地 Farmland: 155 公頃 hectares 農作物 Crops: 964 噸 tons	道路 Road: 5 處 sites 河堤 River embankment: 2 處 sites 小徑及通道 Footpath & access road: 21 處 sites 空曠地區 Open space: 8 處 sites 建築工地 Construction site: 3 處 sites 其他 Others: 2 處 sites	墓地 Cemetery: 3 處 sites	306 個 units	53 宗 cases	15.60					15.60
強烈熱帶風暴獅子山 Severe Tropical Storm Lionrock	8 - 9		空曠地區 Open space: 1 處 site			1 宗 case						
強颱風凡亞比 Severe Typhoon Fanapi	9		道路 Road: 2 處 sites 小徑及通道 Footpath & access road: 1 處 site 建築工地 Construction site: 1 處 site		3 個 units	6 宗 cases						
超強颱風鮎魚 Super Typhoon Megi	10				1 個 unit	1 宗 case						

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。

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.

表 4.11 一九六零至二零一零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 : 1960-2010

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

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
1980	5 / 7 - 12 / 7	S.T.S. Ida	艾黛	0	0	0	1	0	0
	18 / 7 - 23 / 7	T. Joe	喬伊	2	1	59	4	0	1
	20 / 7 - 28 / 7	T. Kim	甘茵	0	0	0	0	2	1
	29 / 10 - 2 / 11	T.S. Cary	卡里	0	0	0	0	0	2
1981	3 / 7 - 7 / 7	S.T.S. Lynn	林茵	0	0	32	0	0	3
1982	27 / 6 - 2 / 7	T.S. Tess	戴絲	0	0	16	0	1	0
	22 / 7 - 30 / 7	T. Andy	安迪	0	0	0	0	0	1
	5 / 9 - 16 / 9	T. Irving	伊文	0	0	0	0	0	2
1983	12 / 7 - 19 / 7	T. Vera	維娜	0	0	0	0	1	0
	29 / 8 - 9 / 9	T. Ellen	愛倫	10	12	333	44	135	225
	10 / 10 - 14 / 10	T. Joe	喬伊	0	0	58	2	0	3
	20 / 10 - 26 / 10	S.T.S. Lex	力士	0	0	0	0	0	1
1984	27 / 8 - 7 / 9	T. Ike	艾克	0	0	1	0	0	0
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 <sup>+</sup>	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

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
1994	23 / 6 - 25 / 6	T.S. Sharon	莎朗	0	0	5	0	1	1
	25 / 8 - 29 / 8	S.T.S. Harry	夏里	1	0	2	0	0	2
1995	7 / 8 - 12 / 8	S.T.S. Helen	海倫	3	0	35	0	0	0
	25 / 8 - 1 / 9	T. Kent	肯特	0	0	5	0	0	0
	28 / 9 - 4 / 10	T. Sibyl	斯寶	0	0	14	0	0	0
1996	5 / 9 - 10 / 9	T. Sally	莎莉	2	0	4	0	0	0
	18 / 9 - 23 / 9	S.T.S. Willie	威利	0	1	0	0	0	0
1997	31 / 7 - 3 / 8	T. Victor	維克托	1	0	58	0	0	0
	20 / 8 - 23 / 8	T. Zita	思蒂	0	0	3	0	0	0
1998	7 / 8 - 11 / 8	S.T.S. Penny	彭妮	1	0	1	0	0	0
	12 / 9 - 14 / 9	T.D. -	-	0	0	10	0	0	0
	15 / 10 - 27 / 10	T. Babs	寶絲	0	0	14	0	0	0
1999	28 / 4 - 2 / 5	T. Leo	利奧	0	0	14	0	0	0
	2 / 6 - 8 / 6	T. Maggie	瑪姬	0	0	5	0	2	0
	25 / 7 - 28 / 7	T.S. -	-	0	0	18	0	0	0
	19 / 8 - 23 / 8	T. Sam	森姆	4	0	328	0	0	0
	12 / 9 - 17 / 9	T. York	約克	2	0	500	3	*	*
	24 / 9 - 26 / 9	S.T.S. Cam	錦雯	1	0	23	0	0	0
2000	15 / 7 - 16 / 7	T.D. -	-	0	1	6	0	0	0
	27 / 8 - 1 / 9	S.T.S. Maria	瑪莉亞	2	0	0	0	0	0
	5 / 9 - 10 / 9	T. Wukong	悟空	0	0	1	0	0	1
2001	30 / 6 - 3 / 7	T. Durian	榴槤	0	0	1	0	0	0
	1 / 7 - 8 / 7	T. Utor	尤特	1	0	1	0	1	0
	23 / 7 - 26 / 7	T. Yutu	玉兔	0	0	10	0	0	0
	28 / 8 - 1 / 9	T.S. Fitow	菲特	2	0	0	0	0	0
2002	15 / 8 - 20 / 8	S.T.S. Vongfong	黃蜂	0	0	2	0	0	1
	10 / 9 - 13 / 9	S.T.S. Hagupit	黑格比	0	0	32	0	0	3
2003	16 / 7 - 23 / 7	S.T.S. Koni	天鵝	0	0	15	0	0	0
	17 / 7 - 25 / 7	T. Imbudo	伊布都	1	0	45	0	2	8
	17 / 8 - 26 / 8	T. Krovanh	科羅旺	0	0	11	0	0	2
	29 / 8 - 3 / 9	T. Dujan	杜鵑	0	4	24	0	1	4
2004	14 / 7 - 16 / 7	T.S. Kompas	圓規	0	0	12	0	0	0
2005	10 / 8 - 14 / 8	S.T.S. Sanvu	珊瑚	0	0	0	0	0	1
	16 / 9 - 19 / 9	T.S. Vicente	韋森特	2	0	0	0	0	0
	21 / 9 - 28 / 9	T. Damrey	達維	0	0	5	0	0	1
2006	9 / 5 - 18 / 5	T. Chanchu	珍珠	0	0	6	0	1	0
	27 / 6 - 29 / 6	T.S. Jelawat	杰拉華	1	0	0	0	0	0
	31 / 7 - 4 / 8	T. Prapiroon	派比安	0	0	8	0	1	4
	6 / 8 - 10 / 8	S.T.S. Bopha	寶霞	0	0	0	0	0	1
	23 / 8 - 25 / 8	T.D. -	-	0	0	0	0	0	1
	12 / 9 - 13 / 9	T.D. -	-	0	0	1	0	0	0
	27 / 10 - 6 / 11	T. Cimaron	西馬倫	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

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。

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.

\* 缺乏數據 Data unavailable.

+ 被雷電擊中 Struck by lightning.



## 第五節 二零一零年熱帶氣旋的位置及強度數據

以下是二零一零年位於北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋。其每六小時之位置及強度刊於本節。

熱帶氣旋名稱	頁
熱帶風暴奧麥斯(1001)	106
颱風康森(1002)	107
颱風燦都(1003)	108
熱帶低氣壓由七月十九日至二十日	108
強烈熱帶風暴電母(1004)	109
強烈熱帶風暴蒲公英(1005)	109
強烈熱帶風暴獅子山(1006)	110
颱風圓規(1007)	111
熱帶風暴南川(1008)	112
熱帶風暴瑪瑙(1009)	112
強烈熱帶風暴莫蘭蒂(1010)	113
強颱風凡亞比(1011)	113
強颱風馬勒卡(1012)	114
熱帶低氣壓由十月五日至七日	114
超強颱風鮎魚(1013)	115
熱帶低氣壓由十月二十一日至二十三日	116
超強颱風暹芭(1014)	116
熱帶低氣壓由十二月十九日至二十日	117

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) SuperT.: - 超強颱風

## Section 5 TROPICAL CYCLONE POSITION AND INTENSITY DATA, 2010

Six-hourly position and intensity data are tabulated in this section for the following tropical cyclones in 2009 over the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°).

Name of tropical cyclone	Page
Tropical Storm Omais (1001)	106
Typhoon Conson (1002)	107
Typhoon Chanthu (1003)	108
Tropical Depression of 19 – 20 July	108
Severe Tropical Storm Dianmu (1004)	109
Severe Tropical Storm Mindulle (1005)	109
Severe Tropical Storm Lionrock (1006)	110
Typhoon Kompas (1007)	111
Tropical Storm Kompas (1008)	112
Tropical Storm Malou (1009)	112
Severe Tropical Storm Meranti (1010)	113
Severe Typhoon (1011)	113
Severe Typhoon Malakas (1012)	114
Tropical Depression of 5 – 7 October	114
Super Typhoon Megi (1013)	115
Tropical Depression of 21 – 23 October	116
Severe Typhoon Chaba (1014)	116
Tropical Depression of 19 – 20 December	117

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) SuperT. : - super typhoon

熱帶風暴奧麥斯(1001)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TROPICAL STORM OMAIS (1001)**

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
三月 Mar	22	1800	T.D.	1000	13	9.2	140.2
		23	0000	T.D.	1000	13	9.4
	24	0600	T.D.	998	16	9.7	138.4
		1200	T.D.	998	16	10.4	137.3
		1800	T.D.	998	16	10.8	136.4
		0000	T.D.	998	16	11.5	135.5
		0600	T.D.	998	16	12.5	134.7
		1200	T.S.	996	18	13.3	133.5
	25	1800	T.S.	996	18	14.1	132.7
		0000	T.S.	996	18	14.8	132.3
		0600	T.S.	996	18	15.6	131.9
		1200	T.S.	996	18	16.3	132.0
		1800	T.S.	996	18	16.9	132.0
		0000	T.S.	998	18	17.5	132.0
	26	0600	T.S.	998	18	18.1	132.0
		1200	T.D.	1000	16	18.5	132.2
		1800	T.D.	1000	16	18.7	132.6

消散  
Dissipated

颱風康森(1002)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TYPHOON CONSON (1002)**

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 July	11	1800	T.D.	1006	13	14.0	132.1
	12	0000	T.D.	1004	16	14.2	130.5
		0600	T.S.	995	21	14.2	129.1
		1200	S.T.S.	985	25	14.2	127.7
		1800	S.T.S.	975	31	14.2	126.5
	13	0000	S.T.S.	975	31	14.3	124.8
		0600	S.T.S.	975	31	14.3	123.5
		1200	S.T.S.	980	28	14.4	122.3
		1800	S.T.S.	980	28	14.5	121.3
	14	0000	S.T.S.	980	28	14.8	119.8
		0600	S.T.S.	985	25	15.4	118.6
		1200	S.T.S.	985	25	16.0	117.7
		1800	S.T.S.	985	25	16.4	116.4
	15	0000	S.T.S.	985	25	16.5	115.2
		0600	S.T.S.	980	28	16.5	113.9
		1200	S.T.S.	975	31	16.7	113.0
		1800	S.T.S.	975	31	16.8	111.9
	16	0000	S.T.S.	975	31	17.0	110.9
		0600	T.	970	33	17.6	110.2
		1200	T.	970	33	18.1	109.5
		1800	T.	970	33	18.5	108.7
	17	0000	S.T.S.	975	31	19.0	107.8
		0600	S.T.S.	980	28	19.9	107.2
		1200	S.T.S.	985	25	20.5	106.6
1800		T.S.	990	21	21.0	105.5	
18	0000	T.D.	1000	13	21.2	105.1	

消散  
Dissipated

**颱風燦都(1003)的每六小時位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON CHANTHU (1003)**

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	19	0000	T.D.	1002	13	15.0	118.0
		0600	T.D.	1002	13	15.1	117.3
		1200	T.D.	998	16	15.5	116.5
		1800	T.S.	995	18	16.1	116.3
	20	0000	T.S.	995	18	17.2	115.9
		0600	T.S.	990	21	17.8	115.2
		1200	T.S.	990	21	18.4	114.5
		1800	T.S.	985	23	18.2	113.6
	21	0000	S.T.S.	982	25	18.2	113.3
		0600	S.T.S.	980	28	18.7	112.9
		1200	S.T.S.	975	31	19.2	112.6
		1800	T.	970	33	19.9	112.1
	22	0000	T.	970	33	20.5	111.5
		0600	T.	970	33	21.4	110.5
		1200	S.T.S.	975	31	21.7	109.8
		1800	S.T.S.	985	25	22.2	109.1
	23	0000	T.S.	990	18	22.9	108.0
		0600	T.S.	990	18	23.6	106.8
1200		T.D.	1000	16	23.8	106.2	

消散  
Dissipated

**熱帶低氣壓由七月十九日至二十日的每六小時位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TROPICAL DEPRESSION OF 19 - 20 JULY**

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	19	0000	T.D.	1006	13	26.0	126.0
		0600	T.D.	1006	13	26.4	125.7
		1200	T.D.	1004	13	27.0	125.3
		1800	T.D.	1004	13	27.7	124.9
	20	0000	T.D.	1002	13	29.5	124.5
		0600	T.D.	1004	13	31.2	123.9

消散  
Dissipated

強烈熱帶風暴電母(1004)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TROPICAL STORM DIANMU (1004)**

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	7	1800	T.D.	998	13	21.5	124.9
		8	T.D.	998	13	22.3	124.7
	9	0600	T.D.	997	16	22.8	124.9
		1200	T.D.	996	16	23.6	125.0
		1800	T.S.	992	21	24.3	125.2
		0000	T.S.	990	21	25.3	125.3
		0600	T.S.	988	23	27.1	125.6
		1200	S.T.S.	985	25	28.7	125.3
	10	1800	S.T.S.	985	25	29.7	125.2
		0000	S.T.S.	985	25	31.0	125.1
		0600	S.T.S.	985	25	31.9	125.2
		1200	S.T.S.	985	25	32.9	125.7
		1800	S.T.S.	985	25	33.7	126.7
		0000	T.S.	988	23	34.8	128.2
	11	0600	T.S.	990	23	35.8	130.0
		1200	T.S.	990	23	36.4	131.7
		1800	T.S.	992	21	37.1	133.7
		0000	T.S.	992	21	38.2	136.0
		0600	T.S.	992	21	39.2	139.0
		1200	T.S.	994	18	39.6	142.7

變為溫帶氣旋  
 Became Extratropical

強烈熱帶風暴蒲公英(1005)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TROPICAL STORM MINDULLE (1005)**

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	22	0000	T.D.	998	13	16.3	115.1
		0600	T.D.	996	16	16.2	114.4
		1200	T.D.	996	16	16.1	113.4
		1800	T.D.	996	16	16.1	112.1
	23	0000	T.S.	995	18	16.2	111.3
		0600	T.S.	988	23	16.3	110.0
		1200	T.S.	988	23	16.7	109.1
		1800	S.T.S.	984	25	17.4	108.2
	24	0000	S.T.S.	980	28	18.2	107.1
		0600	S.T.S.	980	28	18.6	106.2
		1200	S.T.S.	985	25	19.0	105.5
		1800	T.S.	990	21	19.3	104.6
	25	0000	T.D.	998	16	19.4	104.1

消散  
 Dissipated

強烈熱帶風暴獅子山(1006)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TROPICAL STORM LIONROCK (1006)**

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	28	0600	T.D.	1002	13	18.2	117.2
		1200	T.D.	1002	13	18.7	116.8
		1800	T.D.	998	16	19.2	116.3
	29	0000	T.S.	996	18	19.6	116.1
		0600	T.S.	996	18	20.2	116.1
		1200	T.S.	996	18	20.6	116.3
	30	1800	T.S.	996	18	20.7	116.4
		0000	T.S.	992	18	20.8	116.5
		0600	T.S.	988	23	20.8	116.8
	31	1200	S.T.S.	982	25	20.7	116.9
		1800	S.T.S.	982	25	20.6	117.1
		0000	S.T.S.	982	25	20.4	117.6
		0600	S.T.S.	982	25	20.4	118.0
		1200	S.T.S.	982	25	20.7	118.9
		1800	S.T.S.	982	25	21.4	119.4
九月 Sep	1	0000	S.T.S.	982	25	22.3	119.5
		0600	S.T.S.	982	25	22.8	119.2
		1200	S.T.S.	982	25	23.1	118.9
		1800	S.T.S.	982	25	23.5	118.3
	2	0000	T.S.	988	21	23.9	117.3
		0600	T.S.	995	18	24.1	116.2
		1200	T.S.	995	18	24.0	115.1
		1800	T.D.	998	16	23.9	114.4
	3	0000	T.D.	998	16	23.6	113.6
		0600	T.D.	1000	13	23.5	113.4

消散  
Dissipated

颱風圓規(1007)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TYPHOON KOMPASU (1007)**

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	28	1800	T.D.	1006	13	19.4	137.7
		29	0000	T.D.	1004	13	20.4
	30	0600	T.D.	1004	13	21.1	135.3
		1200	T.D.	1002	16	21.6	134.3
		1800	T.S.	998	18	22.2	133.4
		0000	T.S.	992	21	22.9	132.4
		0600	T.S.	988	23	23.4	131.8
		1200	S.T.S.	980	28	23.8	131.2
	31	1800	T.	970	33	24.6	130.2
		0000	T.	960	39	25.2	129.4
		0600	T.	960	39	26.2	128.5
		1200	T.	955	41	27.4	127.4
		1800	T.	955	41	28.8	126.2
		0000	T.	955	41	30.4	125.1
九月 Sep	1	0600	T.	960	39	32.3	124.6
		1200	T.	965	36	34.3	124.7
		1800	S.T.S.	980	31	36.5	125.2
		0000	S.T.S.	990	25	38.3	127.2
	2	0600	T.S.	994	23	39.3	129.7
		1200	T.S.	998	18	40.0	132.4
		1800	T.D.	1002	16	40.7	134.8
	3	0000	T.D.	1004	16	41.4	137.4

變為溫帶氣旋  
 Became Extratropical



熱帶風暴南川(1008)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TROPICAL STORM NAMTHEUN (1008)**

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	30	0600	T.D.	998	13	26.1	122.7		
		1200	T.S.	995	18	25.9	122.0		
		1800	T.S.	995	18	25.7	121.4		
	31	0000	T.S.	995	18	25.5	120.6		
		0600	T.S.	995	18	25.3	120.1		
		1200	T.D.	998	16	25.0	119.7		
		1800	T.D.	998	13	24.7	119.3		
		消散 Dissipated							

熱帶風暴瑪瑙(1009)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TROPICAL STORM MALOU (1009)**

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	0600	T.D.	1004	13	23.0	131.0	
		1200	T.D.	1002	16	23.6	129.7	
		1800	T.D.	1002	16	23.9	128.9	
	4	0000	T.S.	998	18	24.3	128.1	
		0600	T.S.	998	18	25.2	127.4	
		1200	T.S.	998	18	26.5	126.9	
		1800	T.S.	994	21	27.5	126.5	
		5	0000	T.S.	994	21	28.7	126.2
			0600	T.S.	994	21	29.5	126.1
	1200		T.S.	994	21	30.5	126.2	
	6	1800	T.S.	992	23	31.4	126.5	
		0000	T.S.	992	23	31.9	126.7	
		0600	T.S.	992	23	32.3	127.0	
		1200	T.S.	992	23	32.7	127.4	
		1800	T.S.	994	21	33.3	128.0	
		7	0000	T.S.	994	21	33.9	128.6
	0600		T.S.	994	21	34.9	130.3	
	1200		T.S.	994	21	35.6	132.0	
	1800		T.S.	996	21	35.8	133.7	
	8		0000	T.S.	1000	18	35.8	135.6
			0600	T.D.	1002	16	35.4	138.7
		1200	T.D.	1002	13	35.3	140.6	

變為溫帶氣旋  
 Became Extratropical

強烈熱帶風暴莫蘭蒂(1010)的每六小時位置及強度  
SIX-HOURLY POSITION AND INTENSITY DATA OF  
SEVERE TROPICAL STORM MERANTI (1010)

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	8	0000	T.D.	998	16	21.0	120.8
		0600	T.D.	998	16	20.8	120.1
		1200	T.D.	998	16	20.7	119.4
		1800	T.D.	998	16	20.7	119.0
	9	0000	T.S.	995	18	21.1	119.3
		0600	T.S.	988	23	22.2	119.1
		1200	S.T.S.	985	25	23.1	119.0
		1800	S.T.S.	975	31	24.4	118.8
	10	0000	S.T.S.	980	28	25.4	118.6
		0600	T.S.	990	23	26.8	118.6
		1200	T.D.	998	16	27.8	119.0
				消散 Dissipated			

強颱風凡亞比(1011)的每六小時位置及強度  
SIX-HOURLY POSITION AND INTENSITY DATA OF  
SEVERE TYPHOON FANAPI (1011)

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	19.9	128.4
		0600	T.D.	1000	16	20.4	127.8
		1200	T.S.	995	18	20.8	127.6
		1800	T.S.	990	21	21.0	127.6
	16	0000	S.T.S.	982	25	21.3	127.6
		0600	S.T.S.	980	28	21.6	128.0
		1200	S.T.S.	975	31	21.9	128.4
		1800	T.	970	33	22.2	128.4
	17	0000	T.	965	36	22.3	128.4
		0600	T.	965	36	22.8	128.1
		1200	T.	955	41	23.1	127.7
		1800	T.	955	41	23.3	126.8
	18	0000	S.T.	950	43	23.4	126.2
		0600	S.T.	945	46	23.7	125.3
		1200	S.T.	945	46	23.9	124.2
		1800	S.T.	945	46	24.0	123.1
	19	0000	S.T.	945	46	23.7	121.7
		0600	T.	955	41	23.2	120.7
		1200	T.	965	36	23.3	119.8
		1800	T.	970	33	23.4	119.0
	20	0000	T.	970	33	23.7	117.6
		0600	S.T.S.	980	28	23.4	116.3
		1200	T.S.	992	21	23.5	115.2
		1800	T.S.	996	18	23.6	113.8
		消散 Dissipated					

強颱風馬勒卡(1012)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TYPHOON MALAKAS (1012)**

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	21	0600	T.D.	1004	13	18.2	144.9	
		1200	T.D.	1002	16	18.8	144.2	
		1800	T.S.	998	18	19.2	143.4	
	22	0000	T.S.	998	18	19.4	142.9	
		0600	T.S.	995	21	19.5	142.4	
		1200	T.S.	990	23	19.5	142.0	
	23	1800	S.T.S.	988	25	19.6	141.5	
		0000	S.T.S.	988	25	20.0	141.0	
		0600	S.T.S.	975	31	20.6	141.0	
		1200	S.T.S.	975	31	21.3	140.9	
		1800	T.	970	33	22.8	140.9	
		0000	T.	965	36	24.2	140.9	
	24	0600	T.	960	39	26.2	141.2	
		1200	T.	955	41	28.5	141.7	
		1800	S.T.	945	43	30.9	142.8	
		25	0000	T.	950	41	34.2	144.4
			0600	T.	955	39	36.9	145.9

變為溫帶氣旋  
 Became Extratropical

熱帶低氣壓由十月五日至七日的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TROPICAL DEPRESSION OF 5 - 7 OCTOBER**

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	1200	T.D.	1002	13	18.7	108.6
		1800	T.D.	1002	13	18.8	108.5
	6	0000	T.D.	1002	13	18.9	108.2
		0600	T.D.	1002	13	19.0	108.0
		1200	T.D.	1004	13	19.0	107.9
		1800	T.D.	1004	13	19.0	107.9

消散  
 Dissipated

超強颱風鮎魚(1013)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SUPER TYPHOON MEGI (1013)**

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	13	0000	T.D.	1006	13	11.7	141.4
		0600	T.D.	1004	16	11.7	141.1
		1200	T.S.	1002	18	11.8	140.9
		1800	T.S.	1002	18	11.9	140.6
	14	0000	T.S.	998	21	12.0	140.3
		0600	T.S.	995	21	12.4	139.7
		1200	T.S.	988	23	12.8	138.6
		1800	S.T.S.	982	25	13.6	137.8
	15	0000	S.T.S.	975	31	14.3	137.2
		0600	T.	970	33	14.9	136.5
		1200	T.	965	36	15.7	135.5
		1800	T.	960	39	16.7	134.4
	16	0000	T.	960	39	17.3	133.0
		0600	T.	955	41	18.2	131.5
		1200	S.T.	945	46	18.4	130.2
		1800	SuperT.	935	52	18.7	128.8
	17	0000	SuperT.	915	59	18.7	127.5
		0600	SuperT.	905	64	18.5	126.2
		1200	SuperT.	895	75	18.1	125.1
		1800	SuperT.	895	75	17.6	124.2
	18	0000	SuperT.	900	72	17.4	123.2
		0600	SuperT.	915	59	17.2	121.9
		1200	S.T.	935	49	16.7	120.6
		1800	S.T.	945	46	16.7	119.3
	19	0000	S.T.	945	46	16.4	118.9
		0600	S.T.	945	46	16.6	118.4
		1200	S.T.	945	46	16.7	117.8
		1800	S.T.	940	49	16.8	117.6
	20	0000	S.T.	940	49	17.2	117.2
		0600	S.T.	940	49	17.7	117.2
		1200	S.T.	940	49	18.4	117.2
		1800	S.T.	940	49	18.8	117.3
	21	0000	S.T.	940	49	19.4	117.4
		0600	S.T.	940	49	19.9	117.5
		1200	S.T.	940	49	20.2	117.7
		1800	S.T.	940	49	20.6	117.9
	22	0000	S.T.	945	46	21.0	118.3
		0600	S.T.	950	43	21.7	118.3
		1200	T.	965	36	22.1	118.3
		1800	T.	965	36	22.7	118.2
	23	0000	T.	970	33	23.4	118.0
		0600	S.T.S.	975	31	24.0	117.7
		1200	S.T.S.	985	25	24.4	117.8
		1800	T.D.	998	16	24.9	118.0
	24	0000	T.D.	1002	13	25.4	118.2

消散  
Dissipated

熱帶低氣壓由十月二十一日至二十三日的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TROPICAL DEPRESSION OF 21 - 23 OCTOBER**

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	21	0000	T.D.	1008	13	19.1	160.1
		0600	T.D.	1008	13	19.9	158.6
		1200	T.D.	1006	13	20.4	157.2
		1800	T.D.	1006	13	20.9	156.1
	22	0000	T.D.	1006	13	21.2	155.4
		0600	T.D.	1006	13	21.7	154.8
		1200	T.D.	1006	13	22.1	154.1
		1800	T.D.	1004	16	22.0	153.0
	23	0000	T.D.	1006	13	22.1	153.7
		0600	T.D.	1006	13	22.3	154.1
		1200	T.D.	1006	13	22.7	154.7

消散  
Dissipated

強颱風暹芭(1014)的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TYPHOON CHABA (1014)**

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	22	1200	T.D.	1002	13	16.8	137.5
		1800	T.D.	1002	13	17.0	136.5
	23	0000	T.D.	1002	13	16.3	135.3
		0600	T.D.	1002	13	15.7	134.9
		1200	T.D.	1002	13	15.2	134.3
	24	1800	T.D.	1000	16	15.0	133.6
		0000	T.D.	1000	16	15.1	133.1
		0600	T.D.	998	16	15.5	132.6
		1200	T.D.	998	16	15.8	131.9
		1800	T.S.	995	18	16.4	131.4
	25	0000	T.S.	992	21	17.0	131.1
		0600	T.S.	988	23	17.4	130.5
		1200	S.T.S.	980	28	17.9	130.0
		1800	S.T.S.	975	31	18.6	129.5
	26	0000	T.	970	33	19.3	129.1
		0600	T.	970	33	19.9	128.6
		1200	T.	965	36	20.2	128.2
		1800	T.	965	36	20.5	127.9
	27	0000	T.	960	39	20.8	127.9
		0600	S.T.	950	43	21.7	127.8
		1200	S.T.	945	46	22.4	128.0
1800		S.T.	945	46	23.3	128.3	

強颱風暹芭(1014)的每六小時位置及強度 (續)  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TYPHOON CHABA (1014) (CONT'D)**

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	28	0000	S.T.	945	46	24.2	128.6	
		0600	S.T.	940	49	24.8	129.2	
		1200	S.T.	945	46	25.6	130.0	
	29	1800	T.	950	41	26.4	130.8	
		0000	T.	955	39	27.2	131.6	
		0600	T.	965	33	28.2	132.8	
	30	1200	T.	965	33	29.1	134.1	
		1800	S.T.S.	970	31	30.6	135.6	
		0000	S.T.S.	975	31	31.9	137.2	
			0600	S.T.S.	975	31	33.5	139.1
			1200	S.T.S.	985	28	34.7	141.6

變為溫帶氣旋  
 Became Extratropical

熱帶低氣壓由十二月十九日至二十日的每六小時位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TROPICAL DEPRESSION OF 19 - 20 DECEMBER**

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	19	0600	T.D.	1000	13	21.6	179.4
		1200	T.D.	998	16	21.2	179.3
		1800	T.D.	998	16	20.5	179.2
	20	0000	T.D.	998	16	20.2	179.9

橫過國際換日線，進入北太平洋中部。  
 Turned to move across the International Date Line into the central North Pacific.