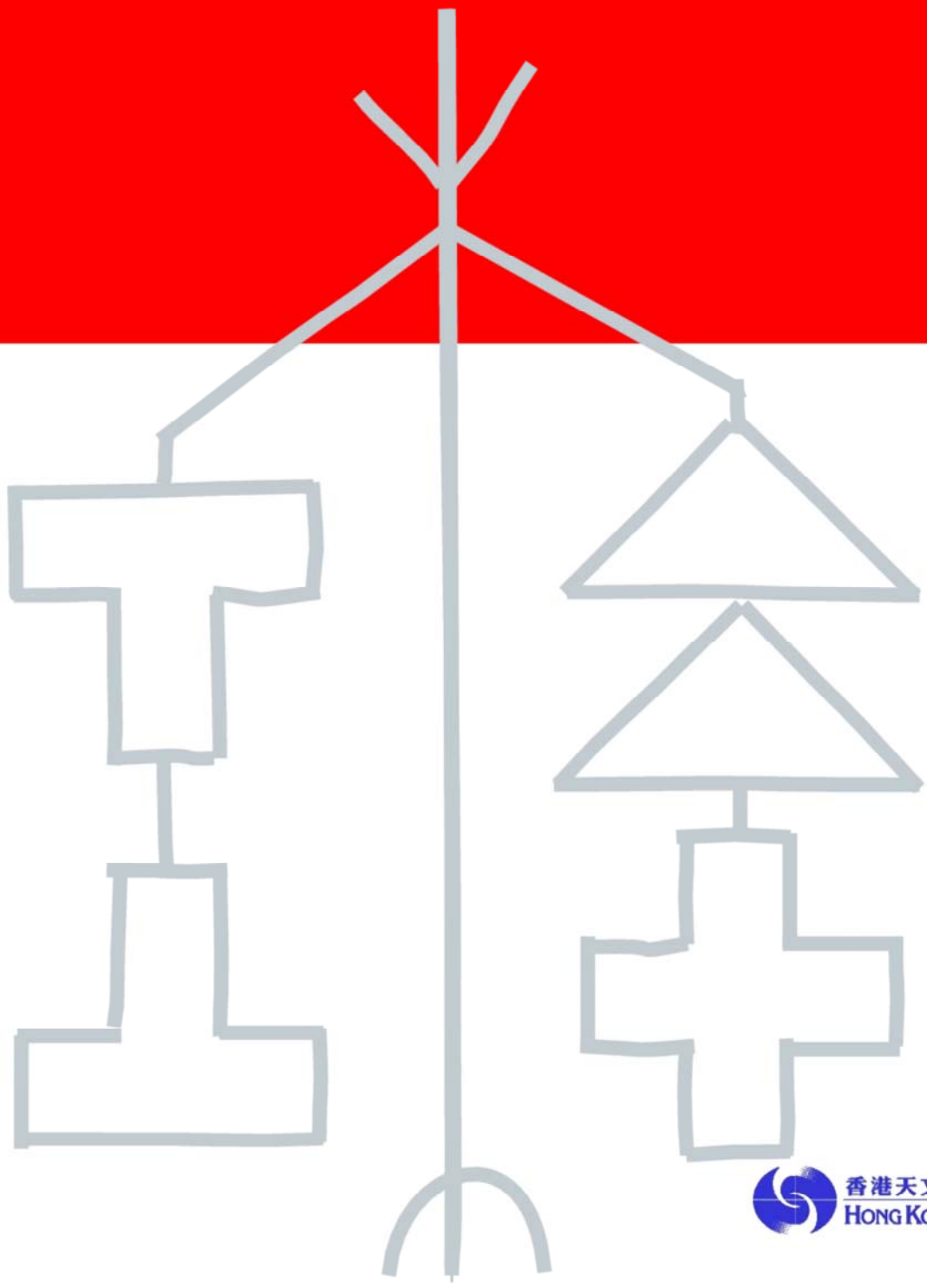
二零零九
熱帶氣旋
TROPICAL CYCLONES IN 2009



香港天文台
HONG KONG OBSERVATORY

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二零零九年的熱帶氣旋路徑圖
TRACKS OF TROPICAL CYCLONES IN 2009

每日協調世界時零時位置(香港時間上午八時),
符號中央數目字代表該月的日子

Daily Positions at 00 UTC(08 HKT),
the number in the symbol represents
the date of the month

每六小時位置
Intermediate 6-hourly Positions

超強颱風 Super Typhoon

強颱風 Severe Typhoon

颱風 Typhoon

強烈熱帶風暴 Severe Tropical Storm

熱帶風暴 Tropical Storm

熱帶低氣壓 Tropical Depression

環高
VAMCO
八月AUG

杜鵑
DUJUAN
九月SEP

科羅旺
KROVANH
九月SEP

茉莉(0918)
MELOR
十月OCT

彩雲
CHOI-WAN
九月SEP

艾濤
ETAU
八月AUG

盧碧
LUPIT
十月OCT

尼伯特
NEPARTAK
十月OCT

鯨魚
KUJIRA
五月MAY

莫拉克
MORAKOT
八月AUG

蓮花
LINFA
六月JUN

熱帶低氣壓
T.D.
七月JUL

燦鴻
CHAN-HOM
五月MAY

巨爵
KOPPU
九月SEP

莫拉菲
MOLAVE
七月JUL

浪卡
NANGKA
六月JUN

蘇迪羅
SOUDELOR
七月JUL

芭瑪
PARMA
十月OCT

彩虹
MUJIGAE
九月SEP

天鵝
GONI
八月AUG

凱薩娜
KETSANA
九月SEP

銀河
MIRINAE
十一月NOV

妮姐
NIDA
十二月DEC

艾濤(0909)
ETAU
八月AUG

莫拉克(0908)
MORAKOT
八月AUG

科羅旺(0911)
KROVANH
八月AUG

尼伯特(0919)
NEPARTAK
十月OCT

彩雲(0914)
CHOI-WAN
九月SEP

環高(0910)
VAMCO
八月AUG

茉莉(0918)
MELOR
九月SEP

盧碧(0920)
LUPIT
十月OCT

銀河(0921)
MIRINAE
十月OCT

妮姐(0922)
NIDA
十一月NOV

芭瑪(0917)
PARMA
九月SEP

蘇迪羅(0905)
SOUDELOR
七月JUL

巨爵(0915)
KOPPU
九月SEP

杜鵑(0912)
DUJUAN
九月SEP

天鵝(0907)
GONI
七月JUL

莫拉菲(0906)
MOLAVE
七月JUL

凱薩娜(0916)
KETSANA
九月SEP

蓮花(0903)
LINFA
六月JUN

彩虹(0913)
MUJIGAE
九月SEP

鯨魚(0901)
KUJIRA
五月MAY

浪卡(0904)
NANGKA
六月JUN

燦鴻(0902)
CHAN-HOM
五月MAY

熱帶低氣壓
T.D.
十月OCT

熱帶低氣壓
T.D.
十一月NOV

熱帶低氣壓
T.D.
八月AUG

熱帶低氣壓
T.D.
九月SEP

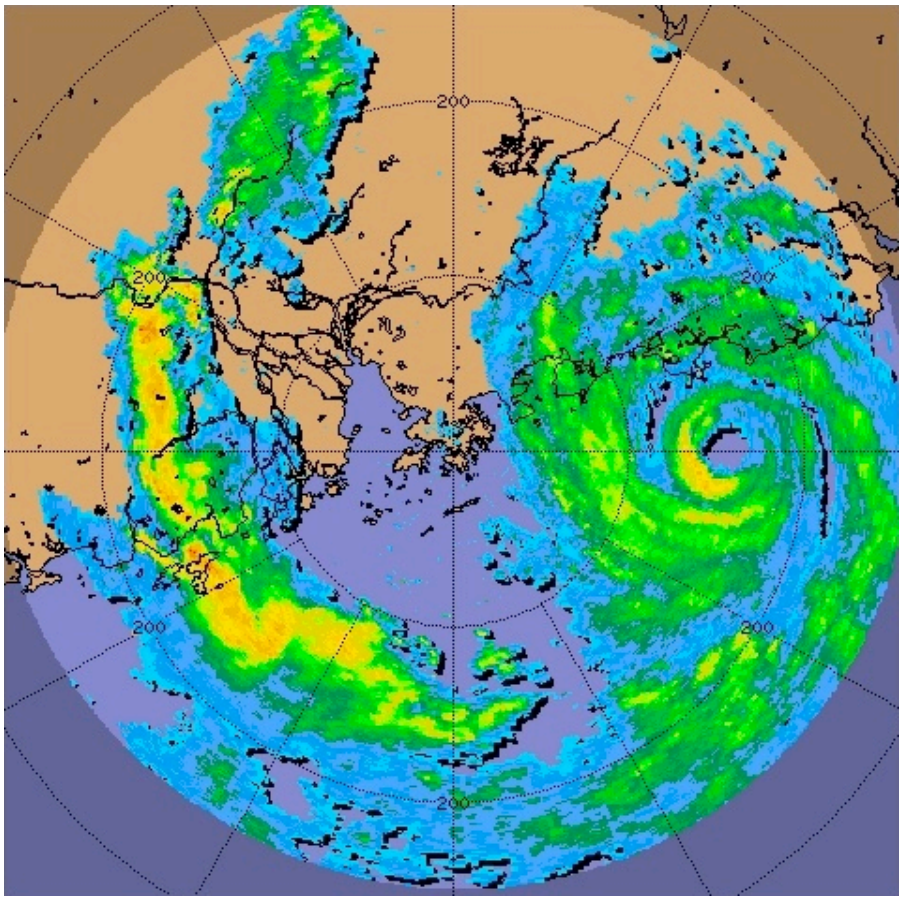
90°E 95°E 100°E 105°E 110°E 115°E 120°E 125°E 130°E 135°E 140°E 145°E 150°E 155°E 160°E 165°E 170°E 175°E 180°

45°N 40°N 35°N 30°N 25°N 20°N 15°N 10°N 5°N 0°

香港天文台
HONG KONG OBSERVATORY

二零零九年熱帶氣旋

TROPICAL CYCLONES IN 2009



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封面
颱風莫拉菲於二零零九年七月十八日下午九時的雷達回波圖像。
Cover
Radar imagery of Typhoon Molave captured at 9 p.m. on 18 July 2009.

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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。在一九六一年以前，熱帶氣旋的路徑只顯示每日位置。在較早期的刊物內，熱帶氣旋的每日定位時間在某程度上還未統一。但到了一九四四年以後，則一直維持以每日協調世界時（UTC）零時作定位。此項改變的資料詳載於天文台出版的《技術記錄第十一號第一冊》內。由一九六一年開始，所有熱帶氣旋的路徑圖都顯示每六小時的位置。

為了能盡早滿足傳媒、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，天文台為所有引致天文台發出熱帶氣旋警告信號的熱帶氣旋編寫臨時報告。

1.2 熱帶氣旋等級

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

（i） 熱帶低氣壓（T.D.）的最高持續風速為每小時63公里以下。
（ii） 熱帶風暴（T.S.）的最高持續風速為每小時63至87公里。
（iii） 強烈熱帶風暴（S.T.S.）的最高持續風速為每小時88至117公里。
（iv） 颱風（T.）的最高持續風速為每小時118至149公里。

（v） 強颱風* (S.T.)的最高持續風速為每小時150至184公里。
（vi） 超強颱風* (SuperT.) 的最高持續風速為每小時185公里或以上。

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"0901"代表在二零零九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，例如颱風鯨魚(0901)。

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。

1.5 年報內容

本年報第二節是二零零九年所有影響北太平洋西部及南海區域的熱帶氣旋的概述。

而本年報第三節是二零零九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。

* 二零零九年新增等級

有關熱帶氣旋的各種資料及統計表載於本年報第四節內。

二零零九年每個熱帶氣旋的每六小時位置，連同當時的最低中心氣壓及最高持續風速，則表列於本年報的第五節內。

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. Before 1961, only daily positions were plotted on the tracks. The time of the daily positions varied to some extent in the older publications 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 (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 2009 was assigned the code "0901". In this publication, the appropriate code immediately follows the name of the tropical cyclone in bracket, e.g. Typhoon Kujira (0901).

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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* 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 2009 is presented.

The reports in Section 3 are individual accounts of the life history of tropical cyclones affecting Hong Kong in 2009. 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 Dujuan	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	蘇迪羅 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) Elevation of barometer above M.S.L. (m)
		北緯 Latitude N	東經 Longitude E	
香港天文台總部	Hong Kong Observatory Headquarters	22°18’07”	114°10’27”	40
沙田	Sha Tin	22°24'09"	114°12'36"	13
打鼓嶺	Ta Kwu Ling	22°31’43	114°09’24	14
橫瀾島	Waglan Island	22°10’56	114°18’12	60

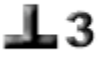
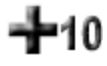
表 1.3　　本年報內各風速表的位置及海拔高度
TABLE 1.3　Positions and elevations of various anemometers mentioned in this publication

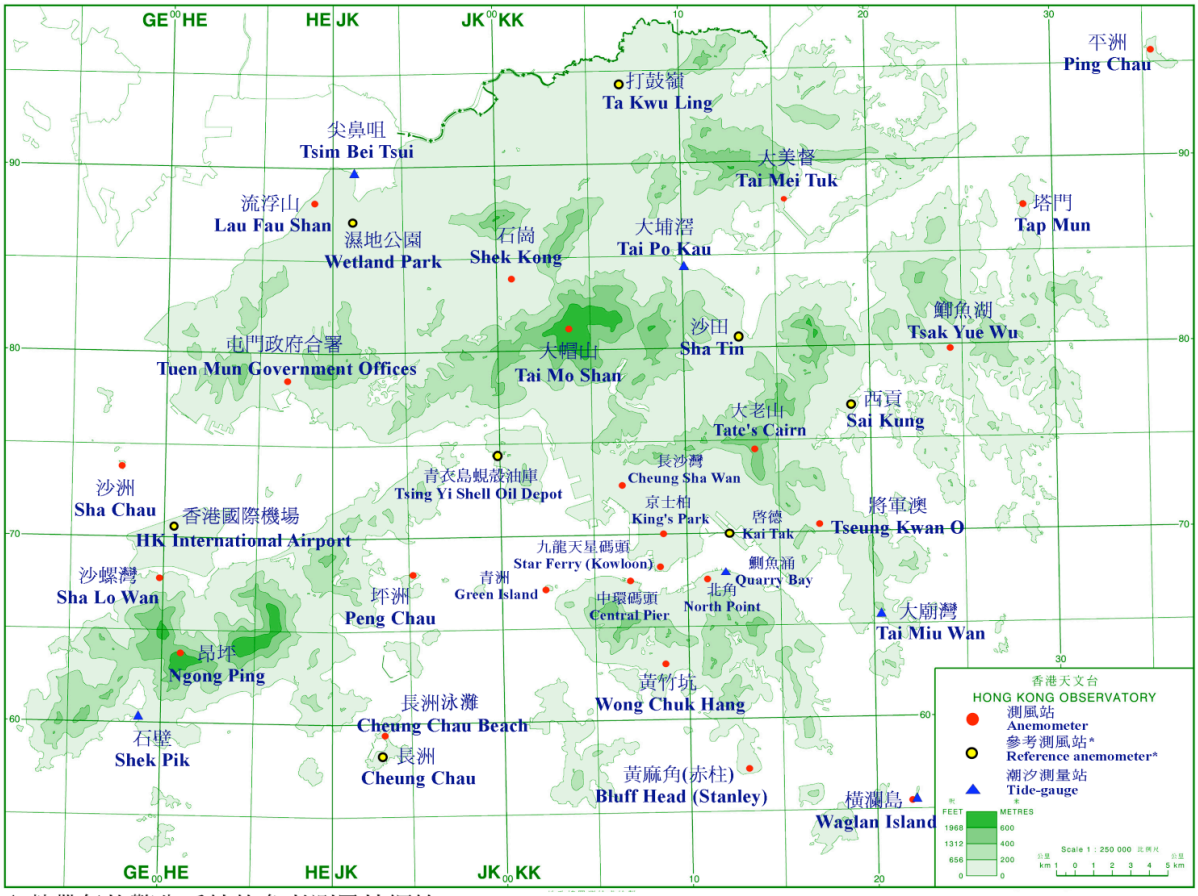
站 Station		位置 Position		風速表的海拔高度(米) Elevation of anemometer above M.S.L. (m)
		北緯 Latitude N	東經 Longitude E	
黃麻角(赤柱)	Bluff Head (Stanley)	22°11’51”	114°12’43”	103
中環碼頭	Central Pier	22°17’20”	114°09’21”	30
長洲	Cheung Chau	22°12’04”	114°01’36”	99
長洲泳灘	Cheung Chau Beach	22°12’39”	114°01’45”	27
長沙灣	Cheung 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。
Refer to the wind sensor at the middle of the north runway.

表 1.4　　二零零九年香港熱帶氣旋警告信號的意義

TABLE 1.4　MEANING OF TROPICAL CYCLONE WARNING SIGNALS IN HONG KONG IN 2009

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



* 熱帶氣旋警告系統的參考測風站網絡
Network of reference anemometers in the tropical cyclone warning system

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　二零零九年熱帶氣旋概述

2.1　二零零九年的熱帶氣旋回顧

2.1.1　北太平洋西部（包括南海區域）的熱帶氣旋

二零零九年共有30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），接近1971-2000年30年平均數的29.6個。全年有13個熱帶氣旋達到颱風或以上強度，比正常數目少兩個，其中五個熱帶氣旋更在北太平洋西部上達到超強颱風強度(中心附近最高持續風速達到每小時185公里或以上)。這五個熱帶氣旋爲彩雲(0914)、芭瑪(0917)、茉莉(0918)、盧碧(0920)、及妮妲(0922)。

本年首個熱帶氣旋在五月形成，最後一個則在十一月形成。圖2.1是二零零九年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈。

二零零九年內有十一個熱帶氣旋吹襲中國，兩個橫過台灣，四個影響日本，六個橫過或在菲律賓附近掠過，五個登陸越南。

二零零九年風力最強的熱帶氣旋是超強颱風彩雲(0914) 及妮妲（0922）。兩股超強颱風最高持續風速估計約爲每小時210公里，而最低中心氣壓則約爲910百帕斯卡 ，當時彩雲及妮妲分別位於關島以北約520公里(圖2.3)及關島以西約370公里的北太平洋西部上(圖2.4）。

九月底在太平洋上形成的超強颱風芭瑪(0917)持續了接近16天，是一九九四年颱風維恩以來本區域生命史最長的熱帶氣旋，而當時維恩維持了約16天。

強烈熱帶風暴天鵝(0907) 及超強颱風芭瑪(0917) 是二零零九年路徑最特別的熱帶氣旋。受到北太平洋西部上另一股熱帶氣旋莫拉克(0908) 的影響，天鵝在廣東西部登陸後，向西南移動，掠過海南島西部（圖2.5），然後轉向東移動，橫過南海及消散。芭瑪的移動路徑則受到太平洋上超強颱風茉莉(0918)的影響（圖2.6），在呂宋北部附近徘徊了四天後向西北偏西移動橫過南海北部。

2.1.2　香港責任範圍內的熱帶氣旋

在二零零九年的30個熱帶氣旋中，有17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個多（表2.1）。這17個熱帶氣旋中，有九個在香港責任範圍內形成。在二零零九年，香港天文台總共發出523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

二零零九年共有13個熱帶氣旋影響南海區域（即北緯10至25度、東經105至120度），當中有五個在南海上形成，其餘八個從北太平洋西部進入南海。

2.1.4 影響香港的熱帶氣旋

二零零九年香港的颱風季節於六月二十日開始，當時強烈熱帶風暴蓮花(0903)靠近華南沿岸，天文台發出一號戒備信號。隨着颱風凱薩娜遠離，颱風季節於九月二十八日結束。

年內共有八個熱帶氣旋影響香港（圖2.2），比平均的6.5個(表2.2) 為多。這八個熱帶氣旋分別為六月的強烈熱帶風暴蓮花(0903) 及熱帶風暴浪卡(0904)、七月的熱帶風暴蘇迪羅(0905) 及颱風莫拉菲(0906)、八月的強烈熱帶風暴天鵝(0907)、九月的熱帶風暴彩虹(0913) 、颱風巨爵(0915) 及颱風凱薩娜(0916)。其中三個熱帶氣旋，莫拉菲、天鵝及巨爵引致天文台發出八號或以上的信號，比正常的一至兩個為多。颱風莫拉菲於七月在天文台總部東北偏北約40公里掠過，天文台發出九號烈風或暴風增強信號，是年內發出最高的熱帶氣旋警告信號。浪卡、蘇迪羅及彩虹影響香港時，天文台發出三號強風信號，而蓮花及凱薩娜則引致天文台發出一號戒備信號。

巨爵影響香港期間，受到其帶來的風暴潮及漲潮的共同影響，香港東北部大埔滘錄得的最高潮位為3.43米，是過去十年間最高潮位之一。

2.1.5 熱帶氣旋的雨量

二零零九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822.4毫米（表4.8.1），約佔該年總雨量2182.3毫米的百分之38，比正常的745.5毫米多約10%。

九月十三日至十五日影響香港的颱風巨爵為天文台總部帶來273.0毫米的雨量，是二零零九年為香港帶來最多雨量的熱帶氣旋。

2.2 每月概述

這一節逐月介紹二零零九年北太平洋西部及南海區域的熱帶氣旋概況。影響香港的各熱帶氣旋則詳述於第三節。

一月至四月

二零零九年一月至四月並無熱帶氣旋影響北太平洋西部及南海區域。

五月

熱帶低氣壓鯨魚(0901)於五月二日在馬尼拉東南偏東約390公里的北太平洋西部上形成，並大致向東北移動。它於五月三日早上增強為熱帶風暴，傍晚再增強為強烈熱帶風暴。根據報章報導，與鯨魚相連的雨帶在菲律賓東北部觸發山泥傾瀉及淹沒農田，引致最少有11人死亡，九人失蹤。鯨魚於五月四日進一步增強為颱風，並繼續向東北移動橫過北太平洋西部。它於五月七日早上減弱為強烈熱帶風暴，下午再減弱為熱帶風暴，並於當晚在小笠原群島東北的北太平洋西部上變成溫帶氣旋。

熱帶低氣壓燦鴻(0902)於五月三日在南沙西南偏西約320公里的南海中部上形成，並緩慢向東北移動，當日傍晚增強為熱帶風暴。燦鴻於五月四日緩慢向北移動，翌日增強為強烈熱帶風暴，但於五月六日轉向東北偏東移動。它於五月七日增強為颱風，當晚橫過菲律賓北部。根據報章報導，燦鴻為菲律賓北部帶來暴雨，並引致多宗房屋倒塌和山體滑波事故，造成超過25人死亡、另3人失蹤、約有4 000多人受到影響。燦鴻於五月八日向東移動，進入北太平洋西部。當日凌晨燦鴻減弱為強烈熱帶風暴，下午再減弱為熱帶風暴。燦鴻於五月九日進一步減弱為熱帶低氣壓，並於隨後三天大致向西北偏北移動。它於五月十二日在琉球群島附近減弱為一低壓區。

六月

熱帶低氣壓蓮花(0903)於六月十七日在香港東南偏南約520公里的南海北部上形成，並移動緩慢，翌日增強為熱帶風暴。蓮花於六月十九日開始向偏北移動，當晚增強為強烈熱帶風暴。它於六月二十日向東北偏北移動，橫過南海東北部，翌日下午減弱為熱帶風暴，黃昏在福建登陸。蓮花於六月二十二日向東北移動掠過福建沿岸地區後進入東海，黃昏減弱為熱帶低氣壓，六月二十三日在東海進一步減弱為一低壓區。

熱帶低氣壓浪卡(0904)於六月二十三日在馬尼拉東南偏東約860公里的北太平洋西部上形成，並向西北偏西移動，下午增強為熱帶風暴。浪卡於翌日橫過菲律賓中部，黃昏進入南海。浪卡於六月二十五日大致轉向西北移動，橫過南海，翌日向西北偏北移動，移近廣東東部沿岸，黃昏減弱為熱帶低氣壓。浪卡於六月二十七日凌晨在大亞灣沿岸一帶登陸，同日早上進一步移入內陸，並在廣東減弱為一低壓區。

七月

熱帶低氣壓蘇迪羅(0905)於七月十日在香港東南偏東約700公里的南海上形成，並向西北偏西移動，橫過南海北部。蘇迪羅於七月十一日下午增強為熱帶風暴。它於七月十二日早上橫過雷州半島南端，下午進入北部灣，黃昏在越南北部沿岸登陸，並減弱為熱帶低氣壓。蘇迪羅於當晚在越南北部進一步減弱為一低壓區。

一股熱帶低氣壓於七月十三日早上在高雄東南偏東約230公里的北太平洋西部上形成，並大致向西北移動，下午在台灣東南部沿岸登陸及橫過台灣南部。該熱帶低氣壓於當晚進入台灣海峽，七月十四日早上在福建沿岸地區登陸及減弱為一低壓區。

熱帶低氣壓莫拉菲(0906)於七月十五日在馬尼拉以東約670公里的北太平西部上形成，並大致向西北移動，翌日增強為熱帶風暴。莫拉菲於七月十七日橫過呂宋海峽，下午增強為強烈熱帶風暴，當晚進入南海及轉向西北偏西移動。它於七月十八日早上增強為颱風。莫拉菲於七月十九日凌晨在深圳大鵬半島登陸及減弱為強烈熱帶風暴，當日早上橫過廣東西部及減弱為熱帶風暴，下午進一步減弱為熱帶低氣壓，當晚在廣西減弱為一低壓區。

八月

熱帶低氣壓天鵝(0907)於八月一日在馬尼拉東北偏東約720公里的北太平洋西部上形成，並向西北偏西移動，同日晚上橫過呂宋北部，翌日早上進入南海。天鵝於八月三日減慢移動速度，其途徑亦變得不規則，但大致移向廣東沿岸。當日黃昏天鵝增強為熱帶風暴，於八月四日下午較後時間進一步增強為強烈熱帶風暴。天鵝於八月五日在廣東西部登陸，並減弱為熱帶風暴。八月六日天鵝轉向西或西南偏西移動，橫過廣東西部沿岸地區，並減弱為熱帶低氣壓。它於八月七日向西南移動，橫過雷州半島後進入北部灣，八月八日再次增強為熱帶風暴，當晚轉向偏東移動，八月九日橫過南海北部，並於當日下午減弱為一低壓區。

熱帶低氣壓莫拉克(0908)於八月四日在冲繩島東南偏東約1 010公里的北太平洋西部上形成，並向西北偏西移動，日間增強為熱帶風暴。它於八月五日增強為強烈熱帶風暴，其後進一步增強為颱風，翌日向西移動，移向台灣。八月七日莫拉克減慢移動速度，翌日向西北移動，橫過台灣，然後於八月九日橫過台灣海峽及在福建省霞浦縣附近登陸，並減弱為強烈熱帶風暴。它於八月十日進一步減弱為熱帶風暴及向北移動，橫過華東，翌日轉向東北偏北移動及減弱為熱帶低氣壓，八月十二日在黃海變成溫帶氣旋。根據報章報導，莫拉克為台灣帶來豪雨及觸發水浸及泥石流，所帶來的災害是接近50年來最嚴重的，超過460人死亡、190人失蹤及40人受傷，其中台灣南部小林村估計有數以百計村民被泥石流活埋。台灣農業損失超過新台幣158億元，超過18 000公頃農田被淹沒。此外，福建、浙江、江西及安徽省最少有六人死亡、三人失蹤、超過6 000間房屋倒塌，直接經濟損失估計超過90億元人民幣。

熱帶低氣壓艾濤(0909)於八月八日在硫黃島西南偏西約260公里的北太平洋西部上形成，並向西北移動，翌日增強為熱帶風暴。艾濤於八月十日大致轉向東北移動。它於八月十一日向東移動，掠過日本南部沿岸海域。根據報章報導，艾濤為日本帶來暴雨，引致水浸及山泥傾瀉，一個小鎮被淹沒，航空及鐵路中斷，最少有14人死亡、18人受傷。八月十三日艾濤首先減弱為熱帶低氣壓，然後在日本以東的北太平洋西部上變成溫帶氣旋。

一熱帶低氣壓在北太平洋中部形成後於八月十三日越過國際換日線進入北太平洋西部，並向西移動，八月十五日轉向西北移動，翌日再轉向東北移動。該熱帶低氣壓於八月十七日再次向西移動，並在威克島東南偏東的北太平洋西部上減弱為一低壓區。

熱帶低氣壓環高(0910)於八月十七日在關島以東約1 540公里的北太平洋西部上形成，大致向西北偏北移動。環高於八月十八日首先增強為熱帶風暴，後再增強為強烈熱帶風暴，翌日增強為颱風。環高於八月二十日進一步增強為強颱風，但於八月二十二日減弱為颱風。它於八月二十三日向北移動，翌日向東北偏北移動。環高於八月二十五日減弱為強烈熱帶風暴，翌日在日本北海道東北偏東的北太平洋西部上變成溫帶氣旋。

熱帶低氣壓科羅旺(0911)於八月二十八日在硫黃島東南偏東約880公里的北太平洋西部上形成，並向西北偏北移動，黃昏時增強為熱帶風暴。科羅旺於翌日向西北移動，八月三十日增強為強烈熱帶風暴。八月三十一日科羅旺轉向東北偏北移動，掠過日本東部沿岸。科羅旺於九月一日減弱為熱帶風暴，黃昏時在北海道以東變為温帶氣旋。

一熱帶低氣壓在北太平洋中部形成後於八月三十日越過國際換日線進入北太平洋西部，並向西北偏西移動。該熱帶低氣壓於九月一日在威克島東南偏南的北太平洋西部上消散。

九月

熱帶低氣壓杜鵑(0912)於九月三日在沖繩島東南偏南約940公里的北太平洋西部上形成，初時緩慢移動。它於九月四日增強為熱帶風暴，並開始大致向東北移動，橫過北太平洋西部。杜鵑於九月五日增強為強烈熱帶風暴及轉向東北偏北移動，九月八日採取東北偏東的路徑，橫過日本以南的北太平洋西部及減弱為熱帶風暴。杜鵑於九月十日在日本以東的太平洋上變為温帶氣旋。

熱帶低氣壓彩虹(0913)於九月九日早上在香港東南約790公里的南海中部上形成。它初時向西北移動，下午轉為採取西北偏西的路徑，橫過南海北部。彩虹於九月十日在香港東南偏南的南海北部上增強為熱帶風暴，晚上轉向西移動。它於九月十一日橫過海南島北部及進入北部灣。九月十二日早上彩虹在越南北部登陸，並減弱為熱帶低氣壓，下午在越南北部進一步減弱為一低壓區。

熱帶低氣壓彩雲(0914)於九月十二日在關島以東約940公里的北太平洋西部上形成，並向西北偏西移動，翌日逐漸增強為強烈熱帶風暴。彩雲於九月十四日在關島東北偏東約430公里的太平洋上增強為颱風，當日黃昏增強為強颱風。它於九月十五日進一步增強為超強颱風。彩雲於九月十八日減弱為強颱風及轉向西北偏北移動，黃昏在硫黃島以西減弱為颱風。彩雲於九月十九日轉向東北移動，九月二十日減弱為強烈熱帶風暴，黃昏時在日本以東變為温帶氣旋。

熱帶低氣壓巨爵(0915)於九月十二日在馬尼拉東北約490公里的北太平洋西部上形成，並向西北偏西移動，晚上橫過呂宋海峽。它於九月十三日早上向西移動，進入南海北部，黃昏時增強為熱帶風暴。巨爵於九月十四日早上增強為強烈熱帶風暴及轉向西北移動，下午在香港東南偏南約190公里附近增強為颱風，晚上向西北偏西移動。它於九月十五日早上在廣東西部登陸，並減弱為強烈熱帶風暴，下午再減弱為熱帶風暴。巨爵於九月十六日凌晨減弱為熱帶低氣壓，隨後在廣西消散。

凱薩娜(0916)於九月二十五日在馬尼拉以東約810公里的北太平洋西部上形成，並向西移動。它於九月二十六日增強為熱帶風暴，並橫過菲律賓，黃昏時進入南海中部。凱薩娜於九月二十七日增強為強烈熱帶風暴，翌日在西沙附近的南海中部上進一步增強為颱風。它於九月二十九日在越南中部登陸，並減弱為強烈熱帶風暴，九月三十日凱薩娜首先減弱為熱帶風暴，後再減弱為熱帶低氣壓，晚上在老撾和泰國邊境附近消散。

熱帶低氣壓芭瑪(0917)於九月二十九日在雅浦島東南約260公里的北太平洋西部上形成，並向西移動，黃昏時增強為熱帶風暴。芭瑪於九月三十日首先增強為強烈熱帶風暴，後在雅浦島以西約300公里的太平洋上再增強為颱風，並向西北偏西移動。它於十月一日早上增強為強颱風，下午進一步增強為超強颱風。十月二日芭瑪逐漸減弱為颱風，並轉向西北移動。芭瑪於十月三日橫過呂宋北部，隨後四天在呂宋北部附近徘徊。期間芭瑪的緩慢及不規則移動路徑亦受到當時太平洋上另一熱帶氣旋茉莉的影響。十月五日芭瑪減弱為強烈熱帶風暴，然後在十月七日逐漸減弱為熱帶低氣壓。芭瑪於十月八日再次向西移動，橫過呂宋及增強為熱帶風暴，於十月九日進入南海。隨後三天芭瑪向西至西北偏西移動，橫

過南海北部。芭瑪於十月十二日下午在海南島東南部登陸，但於翌日在北部灣增強為強烈熱帶風暴。它於十月十四日首先減弱為熱帶風暴，下午在越南北部登陸，隨後減弱為熱帶低氣壓。芭瑪於十月十五日凌晨在越南北部消散。根據報章報導，與芭瑪相連的暴雨在菲律賓觸發嚴重水浸及山泥傾瀉，引致約200人死亡。海南島有540 000公頃農作物受損，直接損失達5 170萬元人民幣。海南島海域及南海有三艘漁船沉沒，四名漁民死亡及八人失蹤。越南海域有62艘漁船沉沒，但沒有傷亡報告。

熱帶低氣壓茉莉(0918)於九月二十九日在關島東南偏東約1 660公里的北太平洋西部上形成，並向西北偏西移動。它於九月三十日增強為熱帶風暴。茉莉於十月一日在關島以東約910公里處逐漸增強為颱風。它於十月二日增強為強颱風，兩天後再增強為超強颱風。茉莉於十月六日在冲繩島東南的太平洋上轉向西北移動，翌日在日本九州以南的太平洋上轉向東北偏北移動及減弱為強颱風。茉莉於十月八日減弱為颱風，黎明左右在本州南部登陸，下午減弱為強烈熱帶風暴及橫過本州東部，黃昏時在本州以東的太平洋上變成温帶氣旋。茉莉肆虐日本期間，導致四人死亡及超過100人受傷。

十月

尼伯特(0919)於十月八日在關島西北偏北約390公里的北太平洋西部上形成，並向西北偏北移動。它於翌日增強為熱帶風暴。尼伯特於十月十日減慢移動速度，十月十一日轉向東北移動，並在琉黃島東南掠過。十月十二日尼伯特加速向東北移動，十月十四日在日本以東的太平洋上變成温帶氣旋。

盧碧(0920)於十月十五日在關島東南約320公里的北太平洋西部上形成為一熱帶低氣壓，並向西北偏西移動，黃昏時增強為熱帶風暴。它於十月十六日增強為強烈熱帶風暴。盧碧於十月十七日減慢移動速度及轉向北移動，並在雅浦島西北的太平洋上增強為颱風，黃昏時進一步增強為強颱風。盧碧於十月十八日緩慢向東北移動，並增強為超強颱風。它於十月十九日再次大致向偏西移動，隨後兩天逐漸減弱為颱風。盧碧於十月二十二日在呂宋東北的海域上再次轉為移動緩慢，但於翌日轉向東北偏北移動及減弱為強烈熱帶風暴，十月二十五日在冲繩島東南的太平洋上進一步減弱為熱帶風暴。盧碧於十月二十六日橫過日本東南的海域，十月二十七日在日本以東的太平洋上變為温帶氣旋。

一股熱帶低氣壓於十月十九日在峴港東北偏東約250公里的南海上形成，並緩慢向北移動。該熱帶低氣壓於翌日轉向西北偏西移動，並在海南島以南的海域上消散。

銀河(0921)於十月二十六日在關島以東約400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，十月二十八日在馬尼拉以東的太平洋上逐漸增強為颱風，並轉向西移動。銀河於十月三十一日凌晨橫過呂宋及減弱為強烈熱帶風暴，隨後於早上進入南海中部。銀河吹襲菲律賓期間，最少有20人死亡、四人失蹤，馬尼拉部份地區一度停電。銀河於十一月一日早上在南海中部減弱為熱帶風暴，翌日黃昏在越南中部登陸，十一月三日早上在越南南部消散。根據報章報導，銀河在越南中部觸發嚴重水浸，引致最少90人死亡、22人失蹤、超過13 000間房屋受損、約5 000公頃農作物受災。

十一月

一股熱帶低氣壓於十一月二日在馬尼拉東北偏東約580公里的北太平洋西部上形成，並向西移動。該熱帶低氣壓於翌日早上向西南移動，並在呂宋以東的海域上消散。

另一股熱帶低氣壓於十一月七日在威克島以西約1 180公里的北太平洋西部上形成，並大致向東移動。它於十一月十日在西北太平洋上消散。

妮妲(0922)於十一月二十二日在關島東南偏南約820公里的北太平洋西部上形成，初時移動緩慢。它於十一月二十三日增強為熱帶風暴並大致向西北移動，翌日再增強為強烈熱帶風暴。妮妲於十一月二十五日早上在關島西南偏南約350公里處增強為颱風，日間繼續增強，黃昏時成為超強颱風。它於十一月二十八日及二十九日在硫黃島西南偏南處再度移動緩慢。十一月二十九日妮妲逐步減弱為強颱風，翌日再減弱為颱風，並向西北偏西移動。妮妲於十二月二日逐漸減弱為熱帶風暴。它於十二月三日進一步減弱為熱帶低氣壓，黃昏時在硫黃島西南偏西約770公里的北太平洋西部上消散。

一股熱帶低氣壓於十一月二十四日在馬尼拉東南約870公里的北太平洋西部上形成，並移動緩慢。該熱帶低氣壓於十一月二十五日在該海域上消散。

另一股熱帶低氣壓於十一月二十四日在胡志明市東南偏南約570公里的南海南部上形成，並大致向東北偏東移動。該熱帶低氣壓於十一月二十六日在南海南部上消散。

十二月

二零零九年十二月並無熱帶氣旋在北太平洋西部及南海區域上形成。

備註：人命傷亡及財物損毀數據是根據報章報導輯錄而成。

Section 2 TROPICAL CYCLONE OVERVIEW FOR 2009

2.1 Review of tropical cyclones in 2009

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

In 2009, a total of 30 tropical cyclones affected the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°), close to the 30-year (1971-2000) average of 29.6. During the year, 13 tropical cyclones attained typhoon intensity or above, about two below the normal figure. Five of them, namely Choi-Wan (0914), Parma (0917), Melor (0918), Lupit (0920) and Nida (0922) attained super typhoon intensity (maximum 10-minute wind speed of 185 km/h or above near the centre) over the western North Pacific.

The first tropical cyclone of the year formed in May and the last one in November. Figure 2.1 shows the monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2009.

During the year, eleven tropical cyclones hit Mainland China, two crossed over Taiwan, four affected Japan, six traversed or passed close to the Philippines and five made landfall over Vietnam.

The most intense tropical cyclones in 2009 were super typhoons Choi-Wan (0914) and Nida (0922). Both super typhoons had a maximum sustained wind speed of about 210 km/h and a minimum sea-level pressure of about 910 hPa (Table 4.1) when they were located over the western North Pacific about 520 km north of Guam (Fig. 2.3) and 370 km west of Guam respectively (Fig. 2.4).

Super Typhoon Parma (0917), which formed over the western North Pacific in late September, persisted for almost 16 days and was the tropical cyclone with the longest life span in the region since Typhoon Verne in 1994. Verne persisted for about 16 days.

The tracks of Severe Tropical Storm Goni (0907) and Super Typhoon Parma (0917) were the most peculiar in 2009. Under the influence of another tropical cyclone Morakot (0908) over the western North Pacific, Goni moved southwestwards skirting the western part of Hainan Island after making landfall over the western part of Guangdong (Fig. 2.5). It then turned to move eastwards to cross the South China Sea before dissipation. The track of Parma was affected by Super Typhoon Melor (0918) over the western North Pacific (Fig. 2.6). It lingered near northern Luzon for four days before moving west-northwestwards across the northern part of the South China Sea.

2.1.2 Tropical cyclones in Hong Kong's area of responsibility

Amongst the 30 tropical cyclones in 2009, 17 occurred inside Hong Kong's area of responsibility (i.e. the area bounded by 10°N, 30°N, 105°E and 125°E), more than the 30-year (1971-2000) annual average of 15.4 (Table 2.1). Nine of these 17 tropical cyclones developed within Hong Kong's area of responsibility. Altogether, 523 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory in 2009 (Table 4.2).

2.1.3 Tropical cyclones over the South China Sea

Thirteen tropical cyclones affected the South China Sea (i.e. the area bounded by 10°N, 25°N, 105°E and 120°E) in 2009. Five of them formed over the area. Eight moved into the area from the western North Pacific.

2.1.4 Tropical cyclones affecting Hong Kong

In 2009, the typhoon season in Hong Kong started on 20 June when Severe Tropical Storm Linfa (0903) moved towards the south China coast and and necessitated the issuance of the Standby Signal No.1. The typhoon season ended on 28 September as Typhoon Ketsana moved away.

Eight tropical cyclones affected Hong Kong (Figure 2.2), more than the average number of 6.5 (Table 2.2). These eight tropical cyclones were Severe Tropical Storm Linfa (0903) and Tropical Storm Nangka (0904) in June, Tropical Storm Soudelor (0905) and Typhoon Molave (0906) in July, Severe Tropical Storm Goni (0907) in August, Tropical Storm Mujigae (0913), Typhoon Koppu (0915) and Typhoon Ketsana (0916) in September. Three of them, Molave, Goni and Koppu necessitated the issuance of the No. 8 Gale or Storm Signal or higher signals in Hong Kong, also more than the normal of one to two per year. Typhoon Molave passed about 40 km to the north-northeast of the Hong Kong Observatory Headquarters and necessitated the issuance of the Increasing Gale or Storm Signal No. 9, the highest tropical cyclone warning signal in 2009. The Strong Wind Signal No. 3 was issued during the passages of Nangka, Soudelor and Mujigae while Linfa and Ketsana necessitated the issuance of the Standby Signal No. 1 in Hong Kong.

During the passage of Koppu, the combined effect of storm surge and high tide raised the sea level to a maximum of 3.43 metres at Tai Po Kau in the northeastern part of Hong Kong, one of the highest sea levels recorded in the past decade.

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 2009 was 822.4 mm (Table 4.8.1). This was 10% above the normal of 745.5 mm and accounted for some 38% of the year's total rainfall of 2182.3 mm.

Typhoon Koppu, which affected Hong Kong on 13-15 September, brought 273.0 mm of rainfall to the Hong Kong Observatory Headquarters, and was the wettest tropical cyclone in 2009.

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 APRIL

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

MAY

Kujira (0901) formed as a tropical depression over the western North Pacific about 390 km east-southeast of Manila on 2 May and moved generally northeastwards. It intensified into a tropical storm on the morning of 3 May and then a severe tropical storm that evening. According to press reports, rainbands associated with Kujira set off landslides and swamped farmlands in the northeastern Philippines, leaving at least 11 people dead and nine others missing. Kujira intensified further into a typhoon on 4 May and continued to move in a northeasterly direction across the western North Pacific. It weakened into a severe tropical storm on the morning of 7 May and then a tropical storm that afternoon. Kujira became an extra-tropical cyclone over the western North Pacific to the northeast of Ogasawara Islands that night.

Chan-hom (0902) formed as a tropical depression over the central part of the South China Sea about 320 km west-southwest of Nansha on 3 May. Moving slowly northeastwards, it intensified into a tropical storm that evening. Chan-hom moved northwards slowly on 4 May and intensified into a severe tropical storm the next day, but turned to move east-northeastwards on 6 May. Chan-hom intensified into a typhoon on 7 May and crossed northern Philippines that night. According to press reports, Chan-hom brought heavy rain to the northern Philippines. There were many incidents of collapsed houses and landslides. Over 25 people were killed and three others missing. Some 4 000 people were affected. Chan-hom moved eastwards into the western North Pacific on 8 May. It weakened into a severe tropical storm in the early hours of that day and then a tropical storm that afternoon. Chan-hom weakened further into a tropical depression on 9 May and moved generally north-northwestwards for the following three days. It weakened into an area of low pressure near the Rykuyu Islands on 12 May.

JUNE

Tropical Depression Linfa (0903) formed over the northern part of the South China Sea about 520 km south-southeast of Hong Kong on 17 June and moved slowly. It intensified into a tropical storm the next day. Linfa started to move northwards on 19 June and intensified into a severe tropical storm that night. Linfa moved north-northeastwards across the northeastern part of the South China Sea on 20 June. It weakened into a tropical storm in the afternoon of 21 June and made landfall in Fujian that evening. After moving northeastwards across the coast of Fujian on 22 June, Linfa entered the East China Sea and weakened into a tropical depression that evening. It further weakened into an area of low pressure over the East China Sea on 23 June.

Tropical Depression Nangka (0904) formed over the western North Pacific about 860 km east-southeast of Manila on 23 June. Moving west-northwestwards, it intensified into a tropical storm that afternoon. Nangka crossed the central Philippines the next day and entered the South China Sea in the evening. Nangka turned to move generally northwestwards across the South China Sea on 25 June. It moved generally north-northwestwards on 26 June approaching the coast of eastern Guangdong and weakened into a tropical depression that evening. Nangka made landfall over the coastal areas of Daya Bay in the small hours of 27 June. Nangka moved further inland and weakened into an area of low pressure over Guangdong that morning.

JULY

Tropical Depression Soudelor (0905) formed over the South China Sea about 700 km east-southeast of Hong Kong on 10 July and moved west-northwestwards across the northern part of the South China Sea. It intensified into a tropical storm on the afternoon of 11 July. Soudelor crossed the southern tip of the Leizhou Peninsula on the morning of 12 July and entered Beibu Wan that afternoon. It made landfall over the coast of northern Vietnam and weakened into a tropical depression that evening. Soudelor further weakened into an area of low pressure over northern Vietnam that night.

A tropical depression formed over the western North Pacific about 230 km east-southeast of Gaoxiong on the morning of 13 July and moved generally northwestwards. It made landfall over the coast of southeastern Taiwan and moved across southern Taiwan that afternoon. The tropical depression entered the Taiwan Strait that night. It made landfall over the coastal areas of Fujian and weakened into an area of low pressure on the morning of 14 July.

Tropical Depression Molave (0906) formed over the western North Pacific about 670 km east of Manila on 15 July and moved generally northwestwards. It intensified into a tropical storm the next day. While crossing the Luzon Strait on 17 July, Molave intensified into a severe tropical storm in the afternoon. It entered the South China Sea and turned to move west-northwestwards that night. Molave intensified into a typhoon on the morning of 18 July. On the early hours of 19 July, Molave made landfall over Dapeng Peninsula, Shenzhen and weakened into a severe tropical storm. It moved across western Guangdong and weakened into a tropical storm in the morning. Molave weakened into a tropical depression that afternoon and subsequently into an area of low pressure over Guangxi at night.

AUGUST

Goni (0907) developed into a tropical depression over the western North Pacific about 720 km east-northeast of Manila on 1 August. Tracking west-northwestwards, it crossed northern Luzon that night and entered the South China Sea the next morning. On 3 August, Goni slowed down and its track became erratic but generally moved towards the coast of Guangdong. Goni intensified into a tropical storm that evening and further into a severe tropical storm on 4 August. It made landfall over western Guangdong on 5 August and weakened into a tropical storm. Goni turned to move west or west-southwestwards across the coastal areas of western Guangdong and weakened into a tropical depression on 6 August. It then moved southwestwards to cross Leizhou Peninsula and entered Beibu Wan on the next day. It intensified into a tropical storm again on 8 August and turned to move eastwards that night. Goni crossed the northern part of the South China Sea on 9 August and weakened into an area of low pressure over the northern part of the South China Sea that afternoon.

Morakot (0908) formed as a tropical depression over the western North Pacific about 1 010 km east-southeast of Okinawa on 4 August. Moving west-northwestwards, it intensified into a tropical storm that day. Morakot intensified first into a severe tropical storm and further into a typhoon on 5 August, and turned to move westwards towards Taiwan on the following day. It slowed down on 7 August and crossed Taiwan on a northwesterly track the next day. Morakot crossed the Taiwan Strait on 9 August and made landfall near Xiapu, Fujian and weakened into a severe tropical storm. It weakened further into a tropical storm on 10 August and moved northwards across eastern China. Morakot turned to move north-northeastwards on the next day and weakened into a tropical depression. It became an extra-tropical cyclone over the Yellow Sea on 12 August. According to press reports, Morakot brought torrential rain to Taiwan, triggering floods and unlashing mudslides, and caused the most severe damage there in

about 50 years. More than 460 people were killed, 190 missing and 40 people injured in Taiwan, of which hundreds were buried beneath the rubble in the village of Hsiaolin in southern Taiwan. The agricultural losses in Taiwan exceeded NT15.8 billion, with more than 18 000 hectares of farmland flooded. Moreover, at least six people were killed, three people missing and over 6 000 houses collapsed in Fujian, Zhejiang, Jiangxi and Anhui. The direct economic loss was estimated to be over 9 billion RMB.

Etau (0909) formed as a tropical depression over the western North Pacific about 260 km west-southwest of Iwo Jima on 8 August and moved northwestwards. It intensified into a tropical storm the next day. Etau turned to move generally northeastwards on 10 August. It moved eastwards on 11 August, skirting the coastal waters of southern Japan. According to press reports, Etau brought heavy rain to Japan causing floods and landslides, inundated a town, and disrupted air and rail links. At least 14 people were killed and 18 people injured. On 13 August, Etau weakened first into a tropical depression and subsequently became an extra-tropical cyclone over the western North Pacific to the east of Japan.

Having formed over the central part of the North Pacific, a tropical depression crossed the International Date Line and entered the western North Pacific on 13 August on a westward track. It turned to move northwestwards on 15 August, and turned further to the northeast the next day. The tropical depression took up a westerly track again and weakened into an area of low pressure over the western North Pacific to the east-southeast of Wake Island on 17 August.

Vamco (0910) formed as a tropical depression over the western North Pacific about 1 540 km east of Guam on 17 August and moved generally north-northwestwards. Vamco intensified first into a tropical storm and then a severe tropical storm on 18 August, and into a typhoon the next day. Vamco intensified further into a severe typhoon on 20 August, but weakened into a typhoon two days later. It turned to move northwards on 23 August and north-northeastwards the next day. Vamco weakened into a severe tropical storm on 25 August and became an extra-tropical cyclone over the western North Pacific to the east-northeast of Hokkaido, Japan the next day.

Krovanh (0911) formed as a tropical depression about 880 km east-southeast of Iwo Jima on 28 August and moved north-northwestwards. It intensified into a tropical storm that evening. Krovanh moved northwestwards the next day and intensified into a severe tropical storm on 30 August. It turned to move north-northeastwards skirting the eastern coast of Japan on 31 August. Krovanh weakened into a tropical storm on 1 September and became an extra-tropical cyclone to the east of Hokkaido that evening.

Having formed over the central part of the North Pacific, a tropical depression crossed the International Date Line and entered the western North Pacific on 30 August on a west-northwestward track. The tropical depression dissipated over the western North Pacific to the south-southeast of Wake Island on 1 September.

SEPTEMBER

Dujuan (0912) formed as a tropical depression over the western North Pacific about 940 km south-southeast of Okinawa on 3 September and moved slowly at first. It intensified into a tropical storm on 4 September and started to move generally northeastwards across the western North Pacific. Dujuan intensified into a severe tropical storm on 5 September and moved north-northeastwards. It moved east-northeastwards across the western North Pacific to the south of Japan on 8 September and weakened into a tropical storm. Dujuan became an extra-tropical cyclone over the western North Pacific to the east of Japan on 10 September.

Mujigae (0913) developed into a tropical depression over the central part of the South China Sea about 790 km southeast of Hong Kong on the morning of 9 September. It moved northwestwards at first but took on a west-northwesterly track across the northern part of the South China Sea that afternoon. Mujigae intensified into a tropical storm on 10 September over the northern part of the South China Sea to the south-southeast of Hong Kong and turned to move westwards at night. It moved across the northern part of Hainan Island and entered Beibu Wan on 11 September. It made landfall over northern Vietnam on the morning of 12 September and weakened into a tropical depression. Mujigae weakened further into an area of low pressure over northern Vietnam that afternoon.

Choi-Wan (0914) formed as a tropical depression over the western North Pacific about 940 km east of Guam on 12 September. It moved west-northwestwards and intensified gradually into a severe tropical storm the next day. On 14 September, Choi-Wan became a typhoon over the Pacific about 430 km east-northeast of Guam and a severe typhoon that evening. It continued to intensify further into super typhoon on 15 September. Choi-Wan weakened into a severe typhoon on 18 September as it turned to move north-northwestwards. It weakened into a typhoon to the west of Iwo Jima that evening. Choi-Wan turned to move northeast on 19 September. It weakened into a severe tropical storm on 20 September and became an extra-tropical cyclone to the east of Japan that evening.

Koppu (0915) developed into a tropical depression over the western North Pacific about 490 km northeast of Manila on 12 September. Moving west-northwestwards, it crossed the Luzon Strait that night. Koppu entered the northern part of the South China Sea on a westerly track on the morning of 13 September and intensified into a tropical storm that evening. Koppu became a severe tropical storm on the morning of 14 September and turned to move northwestwards. It intensified into a typhoon about 190 km south-southeast of Hong Kong that afternoon, and took up a west-northwesterly track at night. Koppu made landfall over western Guangdong on the morning of 15 September and weakened into a severe tropical storm. It weakened further into a tropical storm that afternoon. Koppu weakened into a tropical depression on the small hours of 16 September and dissipated over Guangxi thereafter.

Ketsana (0916)formed as a tropical depression over the western North Pacific about 810 km east of Manila on 25 September and moved westwards. Ketsana intensified into a tropical storm and moved across the Philippines on 26 September, entering the South China Sea that evening. Ketsana intensified into a severe tropical storm on 27 September and further into a typhoon over the central part of the South China Sea near Xisha the next day. Ketsana made landfall over the central part of Vietnam on 29 September and weakened into a severe tropical storm. It weakened first into a tropical storm and further into a tropical depression on 30 September. Ketsana dissipated near the border between Laos and Thailand that night.

Parma (0917) developed as a tropical depression over the western North Pacific about 260 km southeast of Yap on 29 September and moved westwards. It intensified into a tropical storm that evening. Moving west-northwestwards, Parma intensified first into a severe tropical storm and became a typhoon over the Pacific about 300 km west of Yap on 30 September. Parma intensified into a severe typhoon on the morning of 1 October and further into a super typhoon that afternoon. It gradually weakened into a typhoon on 2 October and turned to move northwestwards. Parma crossed the northern part of Luzon on 3 October and lingered near northern Luzon in the following four days. Its slow and erratic movement during the period was due to another tropical cyclone, Melor, over the Pacific during that time. Parma weakened into a severe tropical storm on 5 October and gradually weakened into a tropical depression on 7 October. It resumed a westward movement across Luzon on 8 October and re-intensified into a tropical storm. Palma entered the South China Sea on 9 October and moved west to

west-northwestwards across the northern part of the South China Sea for the following three days. Parma made landfall over the southeastern part of Hainan Island during the afternoon of 12 October, but intensified into a severe tropical storm over Beibu Wan on the following day. It weakened first into a tropical storm on 14 October, made landfall over northern Vietnam that afternoon and weakened further into a tropical depression. Parma dissipated over northern Vietnam during the early hours of 15 October. According to press reports, rainstorms associated with Parma triggering severe flooding and landslides in the Philippines where around 200 people were killed. In Hainan Island, around 540 000 hectares of crops were damaged and the direct economic losses amounted to 51.70 million RMB. Three fishing boats sank in the waters of Hainan Island and the South China Sea, killing four fishermen with eight others missing. A total of 62 fishing boats sank in the seas of Vietnam but no casualties were reported.

Melor (0918) formed as tropical depression over the western North Pacific about 1 660 km east-southeast of Guam on 29 September and moved west-northwestwards. It became a tropical storm on 30 September. Melor gradually intensified into a typhoon about 910 km east of Guam on 1 October. It intensified into a severe typhoon on 2 October and became a super typhoon two days later. Melor turned to move northwestwards over the Pacific to the southeast of Okinawa on 6 October. It turned to move north-northeastwards over the Pacific to the south of Kyushu, Japan on 7 October and weakened into a severe typhoon. Melor weakened further into a typhoon on 8 October and made landfall over the southern part of Honshu around daybreak. It further weakened into a severe tropical storm and moved across the eastern part of Honshu that afternoon. Melor became an extra-tropical cyclone over the Pacific to the east of Honshu that evening . In the fury of Melor, four people were killed and more than 100 injured in Japan.

OCTOBER

Nepartak (0919) formed as a tropical depression over the western North Pacific about 390 km north-northwest of Guam on 8 October and moved north-northwestwards. It intensified into a tropical storm the next day. Nepartak slowed down on 10 October and turned to move northeastwards on 11 October, passing to the southeast of Iwo Jima. It speeded up towards the northeast on 12 October and became an extra-tropical cyclone over the Pacific to the east of Japan on 14 October.

Lupit (0920) formed as a tropical depression over the western North Pacific about 320 km southeast of Guam on 15 October and moved west-northwestwards, intensifying into a tropical storm that evening. It intensified into a severe tropical storm on 16 October. Lupit slowed down and turned to move northwards on 17 October. It intensified into a typhoon over the Pacific to the northwest of Yap that day and further into a severe typhoon that evening. Lupit moved slowly northeastwards and became a super typhoon on 18 October. It resumed a mainly westerly track on 19 October, and weakened gradually into a typhoon in the following two days. Lupit became slow moving again over the waters to the northeast of Luzon on 22 October, but turned to move north-northeastwards and weakened into a severe tropical storm on 23 October. It weakened further into a tropical storm on 25 October over the Pacific to the southeast of Okinawa. Lupit moved across the seas to the southeast of Japan on 26 October. It became an extra-tropical cyclone over the Pacific to the east of Japan on 27 October.

A tropical depression formed over the South China Sea about 250 km east-northeast of Da Nang on 19 October and moved slowly northwards. The tropical depression turned to move west-northwestwards and dissipated over the waters south of Hainan the following day.

Mirinae (0921) formed as a tropical depression over the western North Pacific about 400 km east of Guam on 26 October and moved west-northwestwards. It intensified into a tropical storm the next day and gradually into a typhoon over the Pacific to the east of Manila on 28 October

and turned to move westwards. Mirinae crossed Luzon and weakened into a severe tropical storm during the small hours of 31 October, and subsequently entered the central part of the South China Sea during the morning. During the passage of Mirinae, at least 20 people were killed and four others injured in the Philippines. Electricity supply to parts of Manila was disrupted. Mirinae weakened into a tropical storm over the central part of the South China Sea on the morning of 1 November. It made landfall over the central part of Vietnam on the evening of 2 November and dissipated over southern Vietnam the following morning. According to press reports, Mirinae triggered severe flooding in central Vietnam where at least 90 people were killed and 22 others missing. More than 13 000 houses were damaged and some 5 000 hectares of farmland were affected.

NOVEMBER

A tropical depression formed over the western North Pacific about 580 km east-northeast of Manila on 2 November and moved westwards. The tropical depression turned to move southwestwards and dissipated over the waters to the east of Luzon the following morning.

Another tropical depression formed over the western North Pacific about 1 180 km west of Wake Island on 7 November and moved generally eastwards. It dissipated over the western North Pacific on 10 November.

Nida (0922) formed as a tropical depression over the western North Pacific about 820 km south-southeast of Guam on 22 November and was slow-moving initially. Nida intensified into a tropical storm on 23 November and moved generally northwestwards. It intensified into a severe tropical storm the next day. Nida intensified into a typhoon about 350 km south-southwest of Guam on the morning of 25 November. It continued to strengthen further during the day and became a super typhoon that evening. Nida became slow-moving again on 28 and 29 November to the south-southwest of Iwo Jima. It weakened into a severe typhoon on 29 November and a typhoon on 30 November and moved west-northwestwards. Nida weakened gradually into a tropical storm on 2 December and further into a tropical depression on 3 December. It dissipated over the western North Pacific about 770 km west-southwest of Iwo Jima that evening.

A tropical depression formed over the western North Pacific about 870 km southeast of Manila on 24 November and moved slowly. The tropical depression dissipated over the waters on 25 November.

Another tropical depression formed over the southern part of the South China Sea about 570 km south-southeast of Ho Chi Minh City on 24 November and moved generally east-northeastwards. The tropical depression dissipated over the southern part of the South China Sea on 26 November.

DECEMBER

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

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

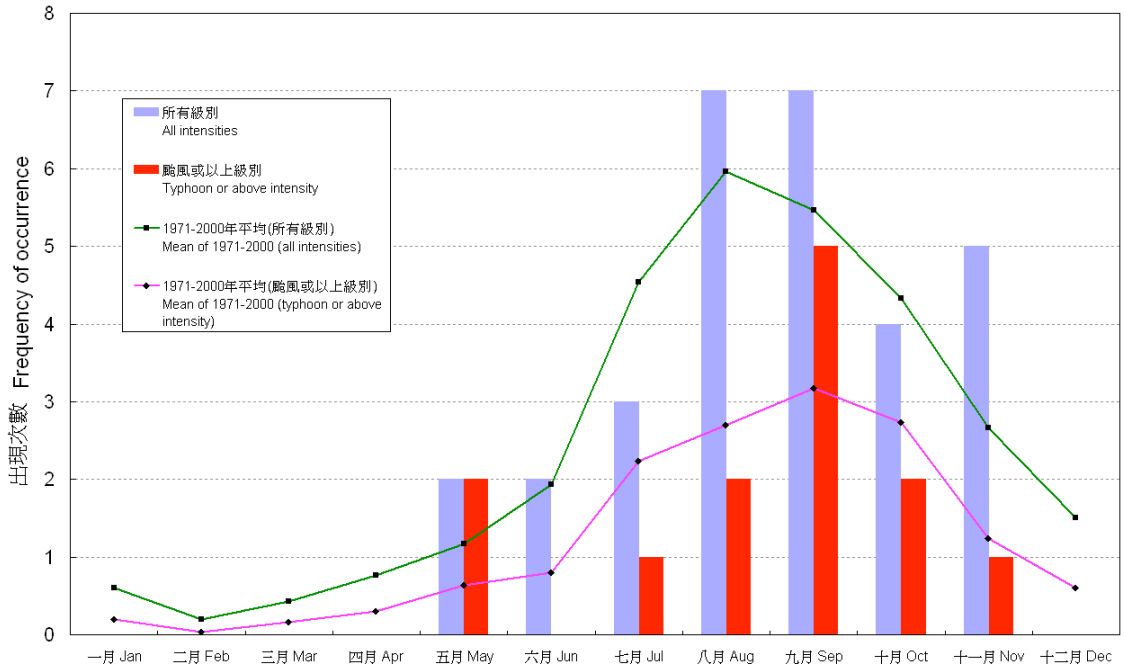


圖 2.1　二零零九年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈 (以熱帶氣旋在該月初次出現為準)。

Figure 2.1 Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2009 (based on the first occurrence of the tropical cyclone in the month).

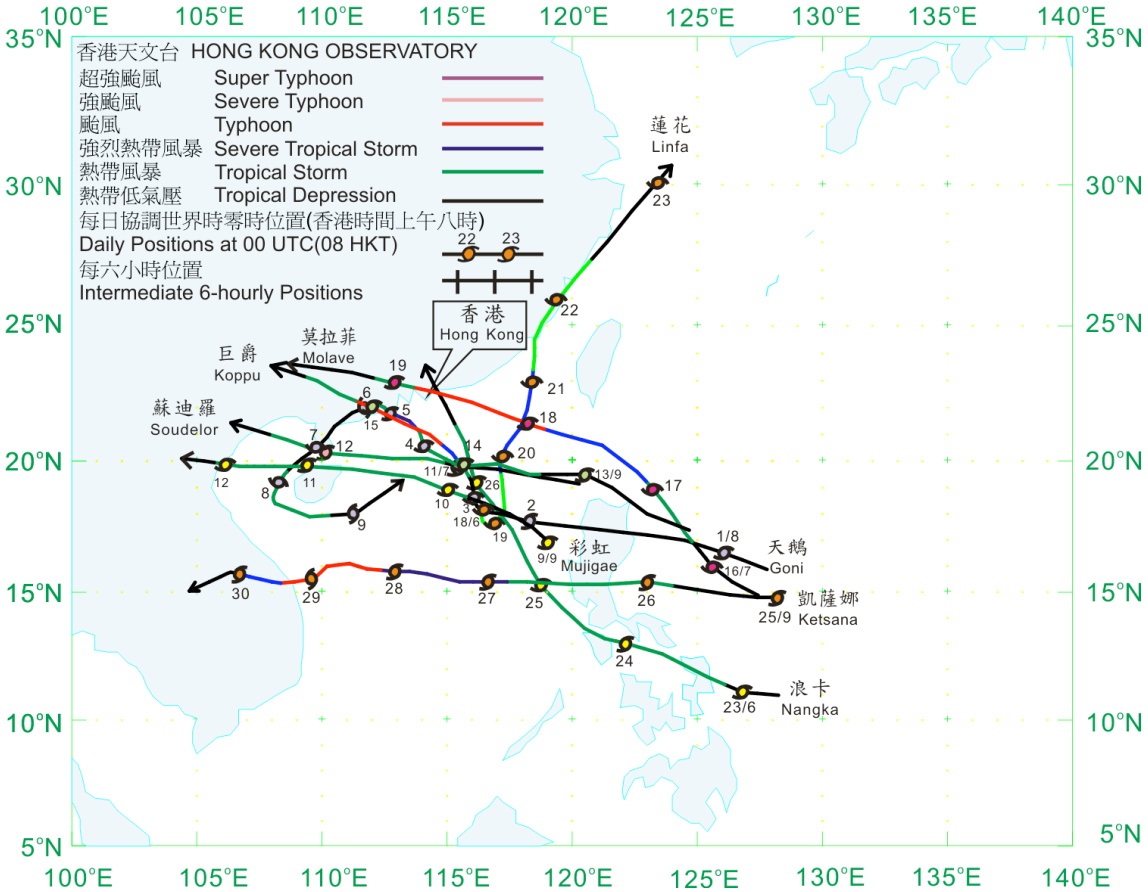


圖 2.2　二零零九年八個影響香港的熱帶氣旋的路徑圖。

Figure 2.2 Tracks of the eight tropical cyclones affecting Hong Kong in 2009.

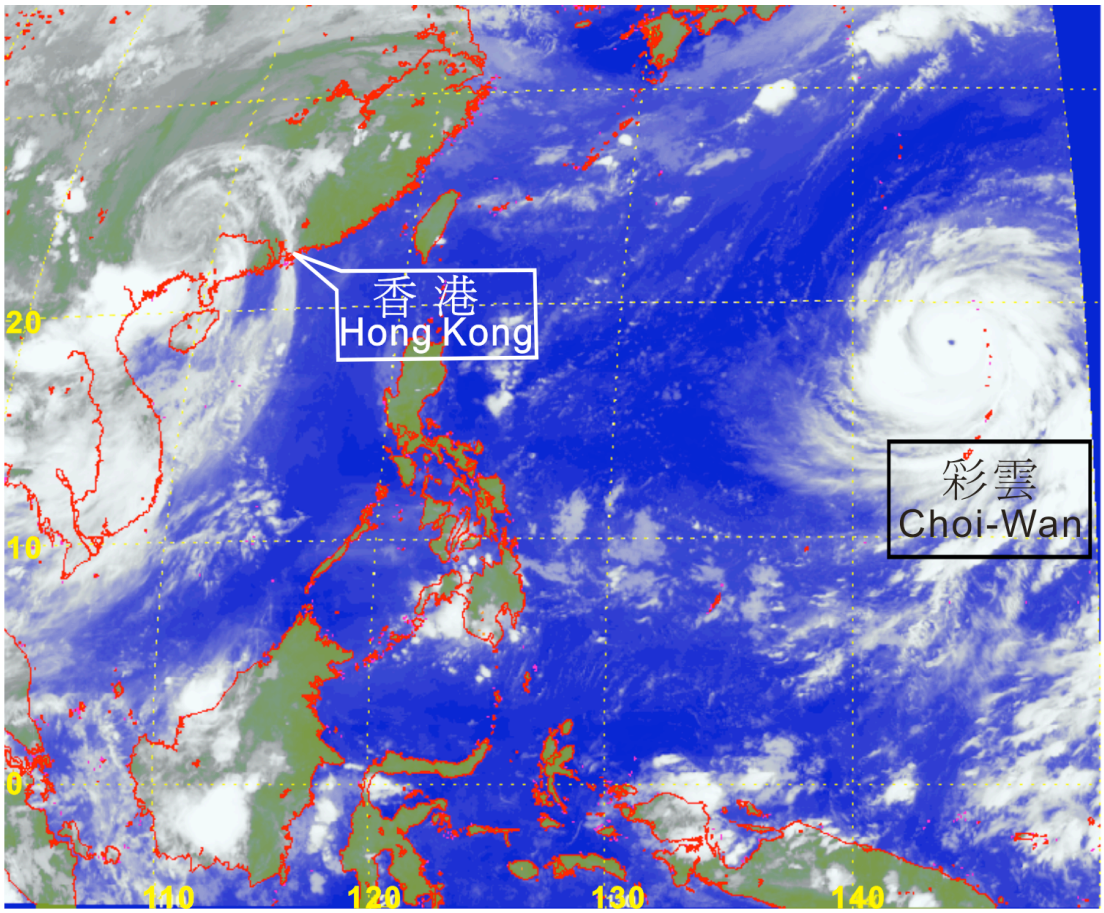


圖 2.3　超強颱風彩雲(0914)在二零零九年九月十六日上午2時的紅外線衛星圖片。 當時彩雲位於關島以北約520公里的北太平洋西部上，最高風速估計約為每小時210公里，而最低中心氣壓則約為910百帕斯卡，是2009年風力最強的熱帶氣旋之一。

Figure 2.3　Infra-red satellite imagery at 2 a.m. on 16 September 2009 of Super Typhoon Choi-Wan (0914) at peak intensity. Choi-Wan, one of the most intense tropical cyclone in 2009, was centred over the western North Pacific about 520 km north of Guam with a maximum sustained winds of about 210 km/h and a minimum sea-level pressure of about 910 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-1R。〕

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

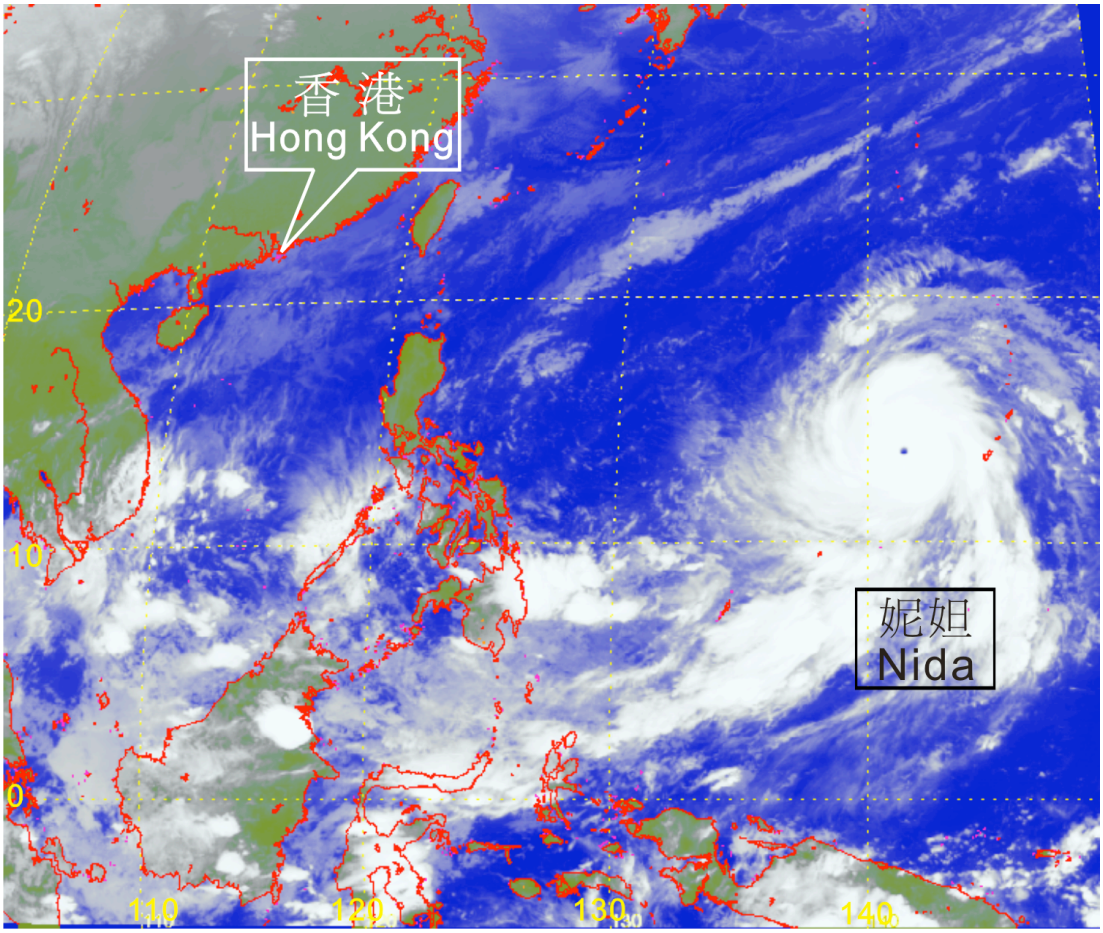


圖 2.4　超強颱風妮妲(0922)在二零零九年十一月二十六日上午2時的紅外線衛星圖片。 當時妮妲位於關島以西約370公里的北太平洋西部上，最高風速估計約為每小時210公里，而最低中心氣壓則約為910百帕斯卡，是2009年風力最強的熱帶氣旋之一。

Figure 2.4　Infra-red satellite imagery at 2 a.m. on 26 November 2009 of Super Typhoon Nida (0922) at peak intensity. Nida, one of the most intense tropical cyclone in 2009, was centred over the western North Pacific about 370 km west of Guam with a maximum sustained winds of about 210 km/h and a minimum sea-level pressure of about 910 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-1R。〕

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

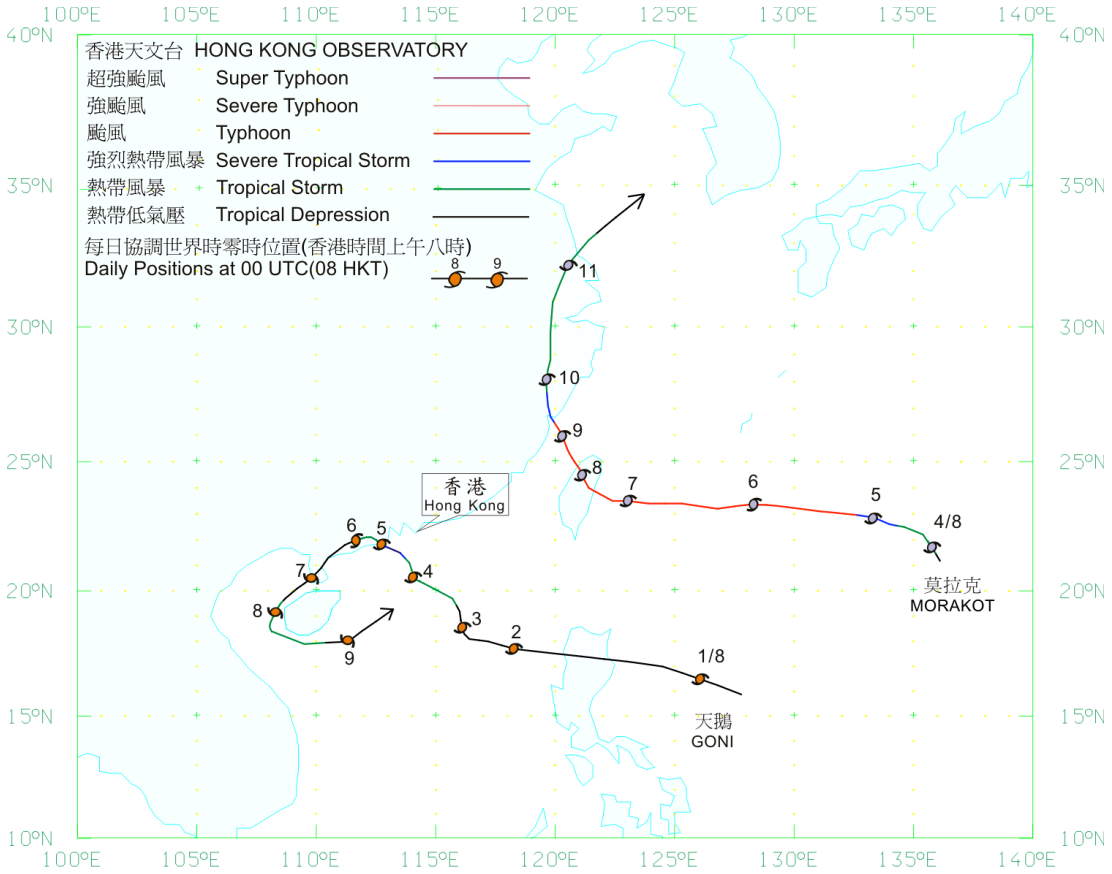


圖 2.5　　天鵝 (0907)及 莫拉克(0908)路徑圖。

Figure 2.5　　Track of Goni (0907) and Morakot (0908).

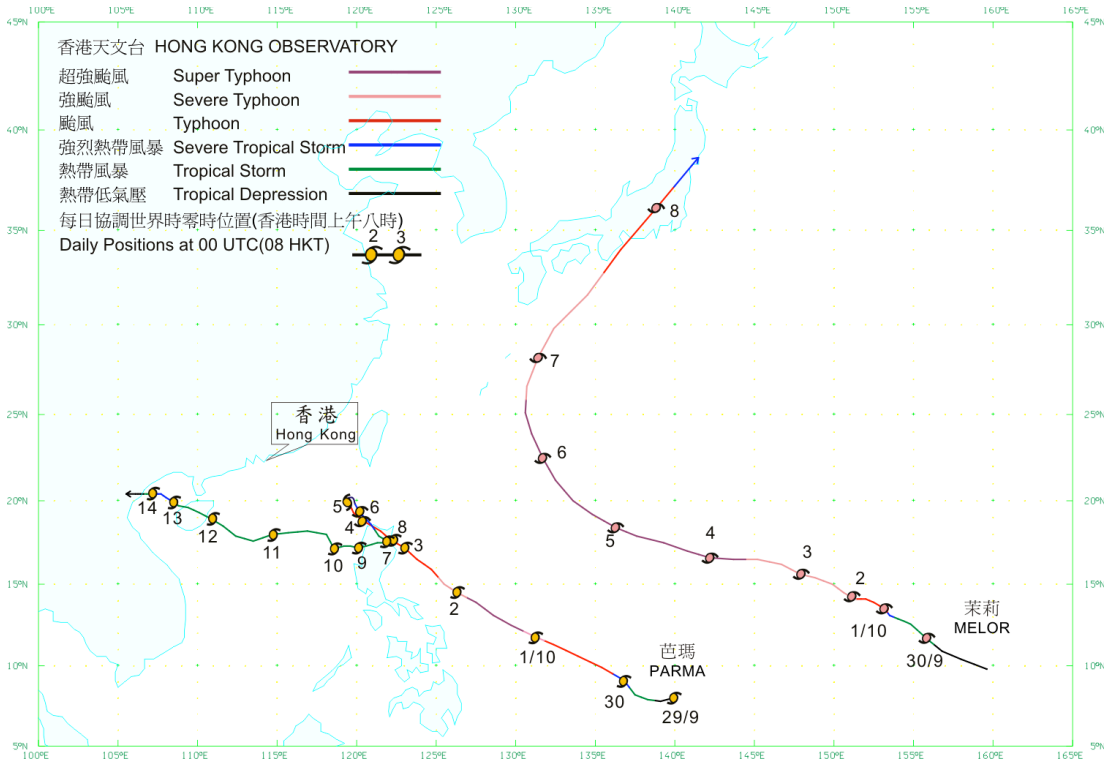


圖 2.6　　芭瑪(0917)及茉莉(0918)的路徑圖。

Figure 2.6　　Track of Parma (0917) and Melor(0918).

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
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 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					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
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　二零零九年影響香港的熱帶氣旋

3.1 強烈熱帶風暴蓮花(0903)： 二零零九年六月十七日至二十三日

蓮花是香港在二零零九年首個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓蓮花於六月十七日在香港東南偏南約520公里的南海北部上形成，並移動緩慢，翌日增強為熱帶風暴。蓮花於六月十九日開始向偏北移動，橫過南海，當晚增強為強烈熱帶風暴。它於六月二十日日間向東北偏北移動，黃昏時達到其強度的頂峯，中心附近最高風速估計達每小時110公里。蓮花於六月二十一日移近中國東南部沿岸，下午減弱為熱帶風暴，黃昏在福建晉江東石鎮附近登陸。蓮花於六月二十二日向東北移動掠過福建沿岸地區後進入東海，黃昏時減弱為熱帶低氣壓，翌日在東海進一步減弱為一低壓區。根據報章報導，福建有一人失蹤，20多萬人受災、32 000公頃農作物受損、直接經濟損失達3.36億元人民幣。廣東受到蓮花引致的水災影響，有五人死亡，直接經濟損失達3.33億元人民幣。一艘駁船在浙江海域遇險，船上五名船員獲救。台灣最少有五人受傷、一人被溺斃、澎湖及金門島超過3 300戶居民停電。一艘貨輪在台灣南端海域觸礁，全船九人獲救。

六月二十日初時，蓮花靠近華南沿岸，對本港構成威脅，香港天文台於上午10時40分發出一號戒備信號，當時蓮花位於香港東南約390公里。香港吹微風，主要為西至西北風。蓮花於當日下午二時左右最接近香港，位於香港東南偏東約380公里。香港天文台總部於同日下午5時08分至14分錄得最低瞬時海平面氣壓為999.7百帕斯卡，當時蓮花位於香港東南偏東約400公里。隨着蓮花逐漸遠離本港，天文台於六月二十一日上午5時45分取消所有熱帶氣旋警告信號。當日早上本港吹輕微至和緩西風。蓮花影響香港期間各站錄得的最高風速可參考表3.1.1。

香港於六月二十日天氣炎熱及部分時間有陽光，但黃昏時新界局部地區有驟雨。翌日大致多雲，局部地區有雷雨，梅窩地區錄得超過100毫米的雨量。

表3.1.2及3.1.3 分別是蓮花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 分別為蓮花的路徑圖、本港的雨量分佈圖、蓮花的衛星圖像及相關的雷達圖像。

Section 3 TROPICAL CYCLONES AFFECTING HONG KONG IN 2009

3.1 Severe Tropical Storm Linfa (0903): 17 – 23 June 2009

Linfa was the first tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009.

Tropical Depession Linfa formed over the northern part of the South China Sea about 520 km south-southeast of Hong Kong on 17 June and moved slowly. It intensified into a tropical storm the next day. Linfa started to move northwards across the South China Sea on 19 June and intensified into a severe tropical storm that night. It moved north-northeastwards during the day on 20 June and reached its peak intensity in the evening with estimated maximum winds of 110 km/h near its centre. Linfa approached the coast of southeast China on 21 June and weakened into a tropical storm that afternoon. It made landfall near Dongshi Town, Jinjiang City, Fujian Province in the evening. After moving northeastwards across the coast of Fujian on 22 June, Linfa entered the East China Sea and weakened into a tropical depression that evening. It further weakened into an area of low pressure over the East China Sea the next day. According to press reports, at least one person was missing in Fujian, some 200 000 people were affected, 32 000 hectares of farmland were damaged and the direct economic losses amounted to RMB$336 million. Linfa caused flooding in Guandong, resulting in five deaths and direct economic losses amounted to RMB$333 million. A barge ran into difficulties in the waters of Zhejiang and five seamen on board were rescued. In Taiwan, at least five people were injured and one person was drowned. The electricity supply to over 3 300 households was interrupted on the islands of Penghua and Kinmen. A freighter wrecked near the southern tip of Taiwan and nine seamen on board were rescued.

Early on 20 June, Linfa moved closer to the south China coast and posed a threat to Hong Kong. The Standby Signal No. 1 was issued at 10:40 a.m. when Linfa was about 390 km southeast of Hong Kong. Local winds were light, mainly from the west to northwest on that day. Linfa was closest to Hong Kong at around 2 p.m. on that day when it was about 380 km to the east-southeast. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 999.7 hPa was recorded between 5:08 p.m. and 5:14 p.m. on the same day, when Linfa was about 400 km to the east-southeast. All tropical cyclone warning signals were cancelled at 5:45 a.m. on 21 June as Linfa gradually moved away from Hong Kong. Light to moderate westerlies prevailed in Hong Kong that morning. The maximum winds recorded at various stations during the passage of Linfa are given in Table 3.1.1.

The weather in Hong Kong was hot with sunny periods on 20 June, but there were isolated showers in the New Territories that evening. It was mainly cloudy with isolated thundery showers on the next day with over 100 millimetres of rainfall recorded in Mui Wo.

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

表 3.1.1　在蓮花影響下，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 tropical cyclone warning signal for Linfa were in force

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	西	W	38	21/6	05:29	西	W	16	21/6	05:00
中環碼頭	Central Pier	西北偏西	WNW	36	20/6	13:35	西	W	14	20/6	14:00
長洲	Cheung Chau	東南	SE	31	21/6	05:25	西南偏西	WSW	19	20/6	17:00
		東南	SE	31	21/6	05:30					
		東南	SE	31	21/6	05:35					
香港國際機場	Hong Kong International Airport	西南	SW	30	21/6	03:57	西南	SW	19	21/6	05:00
		西南	SW	30	21/6	04:32					
啟德	Kai Tak	西北偏西	WNW	27	21/6	05:41	西南	SW	12	20/6	15:00
京士柏	King's Park	西	W	40	21/6	05:09	西	W	13	20/6	16:00
流浮山	Lau Fau Shan	西南偏西	WSW	31	20/6	16:24	西南偏西	WSW	23	20/6	17:00
昂坪	Ngong Ping	西	W	51	21/6	04:49	西	W	31	21/6	05:00
北角	North Point	西南偏西	WSW	31	21/6	05:41	西	W	13	20/6	15:00
坪洲	Peng Chau	西南偏西	WSW	27	21/6	05:41	西南	SW	7	20/6	15:00
平洲	Ping Chau	南	S	22	20/6	15:48	西南	SW	9	20/6	14:00
西貢	Sai Kung	西南偏西	WSW	25	21/6	05:45	南	S	16	20/6	15:00
沙洲	Sha Chau	西南偏南	SSW	27	20/6	21:07	西南偏南	SSW	20	20/6	21:00
沙螺灣	Sha Lo Wan	西南	SW	27	21/6	04:36	西南	SW	13	21/6	05:00
沙田	Sha Tin	西南偏南	SSW	27	21/6	05:44	西南偏南	SSW	14	20/6	16:00
石崗	Shek Kong	西北偏西	WNW	20	20/6	14:03	西北	NW	7	20/6	15:00
九龍天星碼頭	Star Ferry (Kowloon)	西北偏西	WNW	31	21/6	05:30	西北偏西	WNW	16	20/6	14:00
		西北偏西	WNW	31	21/6	05:31					
打鼓嶺	Ta Kwu Ling	西南偏西	WSW	22	20/6	14:18	西南偏西	WSW	9	20/6	15:00
大美督	Tai Mei Tuk	西	W	31	20/6	16:47	南	S	13	20/6	17:00
大帽山	Tai Mo Shan	西	W	31	20/6	16:54	西	W	22	20/6	17:00
塔門	Tap Mun	東南	SE	20	20/6	15:07	西南偏南	SSW	9	20/6	16:00
大老山	Tate's Cairn	西	W	45	21/6	05:23	西南	SW	22	21/6	05:00
		西南偏西	WSW	45	21/6	05:24					
鯽魚湖	Tsak Yue Wu	西南	SW	16	20/6	15:49	北	N	7	20/6	11:00
							西南	SW	7	20/6	17:00
將軍澳	Tseung Kwan O	西北偏西	WNW	23	21/6	05:41	東北偏東	ENE	9	20/6	11:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西	W	23	21/6	05:05	南	S	9	20/6	15:00
屯門政府合署	Tuen Mun Government Offices	西	W	27	20/6	15:24	西北偏西	WNW	12	20/6	16:00
橫瀾島	Waglan Island	西南偏西	WSW	47	21/6	05:37	西南	SW	22	21/6	05:00
濕地公園	Wetland Park	西北偏西	WNW	25	20/6	15:51	西	W	9	20/6	17:00
黃竹坑	Wong Chuk Hang	西北	NW	23	21/6	05:05	東南	SE	12	20/6	14:00

表 3.1.2　　蓮花影響香港期間，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 Linfa

站 (參閱圖 3.1.2) Station (See Fig. 3.1.2)	六月二十日 20 Jun	六月二十一日 21 Jun	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory	0.0	0.0	0.0
長洲 Cheung Chau (CCH)	0.0	28.5	28.5
香港國際機場 Hong Kong International Airport (HKA)	0.0	0.6	0.6
N05 粉嶺 Fanling	0.0	1.5	1.5
N13 糧船灣 High Island	1.0	0.0	1.0
K04 佐敦谷 Jordan Valley	0.0	0.5	0.5
N06 葵涌 Kwai Chung	0.0	0.0	0.0
H12 半山區 Mid Levels	0.0	0.0	0.0
H21 淺水灣 Repulse Bay	0.0	2.0	2.0
SHA 沙田 Sha Tin	0.0	0.0	0.0
H19 筲箕灣 Shau Kei Wan	0.0	0.0	0.0
SEK 石崗 Shek Kong	0.0	0.0	0.0
K06 蘇屋邨 So Uk Estate	0.0	0.0	0.0
PLC 大美督 Tai Mei Tuk	[1.0]	[0.0]	[1.0]
R21 踏石角 Tap Shek Kok	0.0	4.5	4.5
N17 東涌 Tung Chung	0.0	36.5	36.5
R27 元朗 Yuen Long	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 3.1.3　　蓮花影響香港期間，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 Linfa

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	2.46	21/6	05:43	0.30	20/6	22:37
石壁	Shek Pik	2.47	21/6	05:43	0.29	20/6	22:42
大廟灣	Tai Miu Wan	2.39	21/6	05:41	0.27	20/6	20:23
大埔滘	Tai Po Kau	2.27	21/6	05:22	0.29	20/6	10:41
尖鼻咀	Tsim Bei Tsui	2.26	21/6	05:45	0.24	21/6	00:45
橫瀾島	Waglan Island	2.45	21/6	05:43	0.21	20/6	21:21

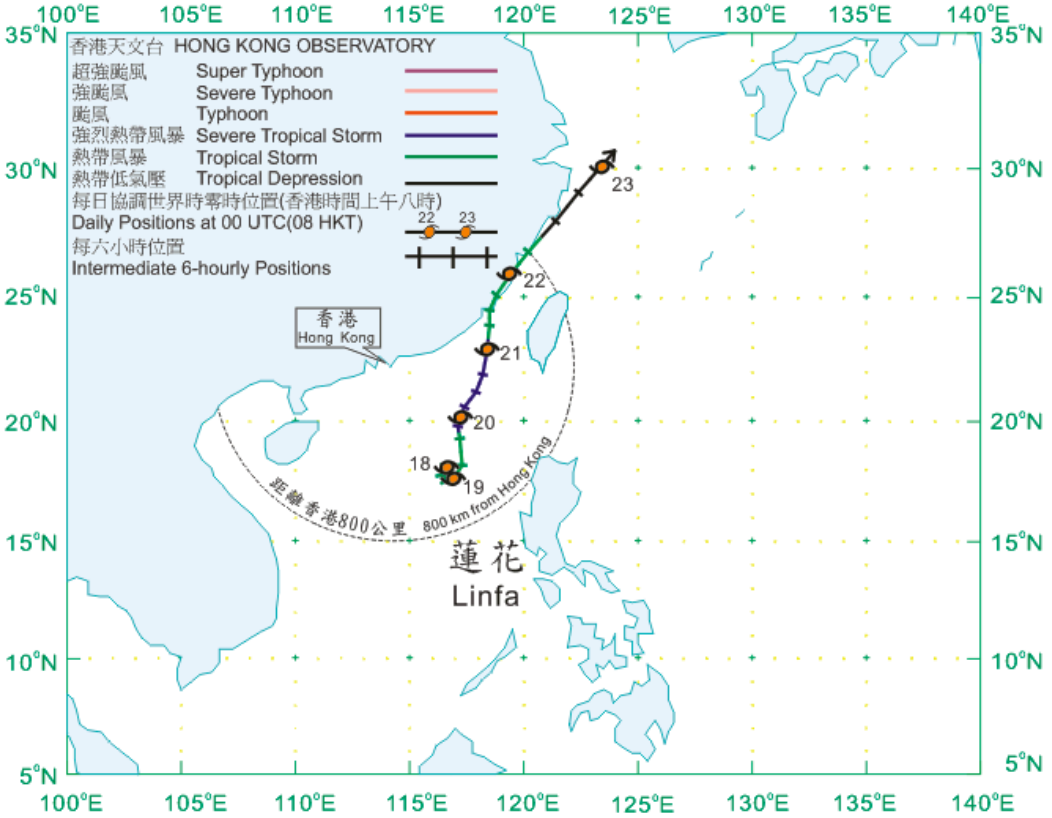


圖 3.1.1 蓮花（0903）在二零零九年六月十七日至二十三日的路徑圖。

Figure 3.1.1 Track of Linfa (0903) on 17 – 23 June 2009.

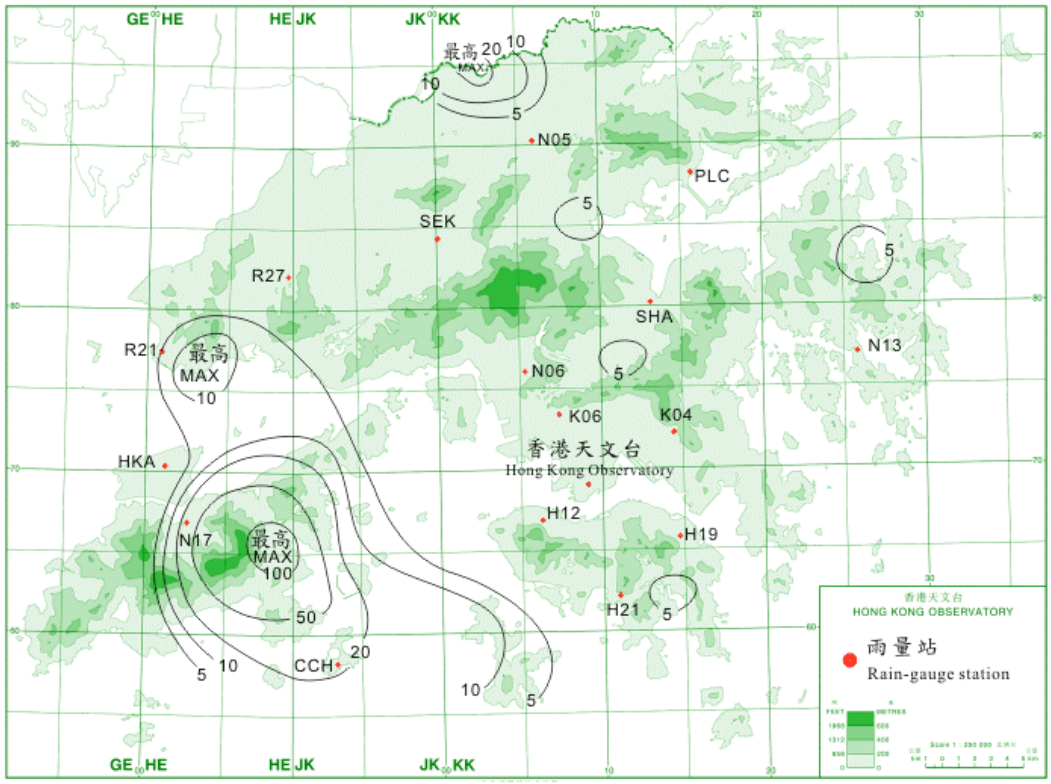


圖 3.1.2 二零零九年六月二十日至二十一日的雨量分佈(等雨量線單位為毫米)。

Figure 3.1.2 Rainfall distribution on 20 – 21 June 2009 (isohyets are in millimetres).

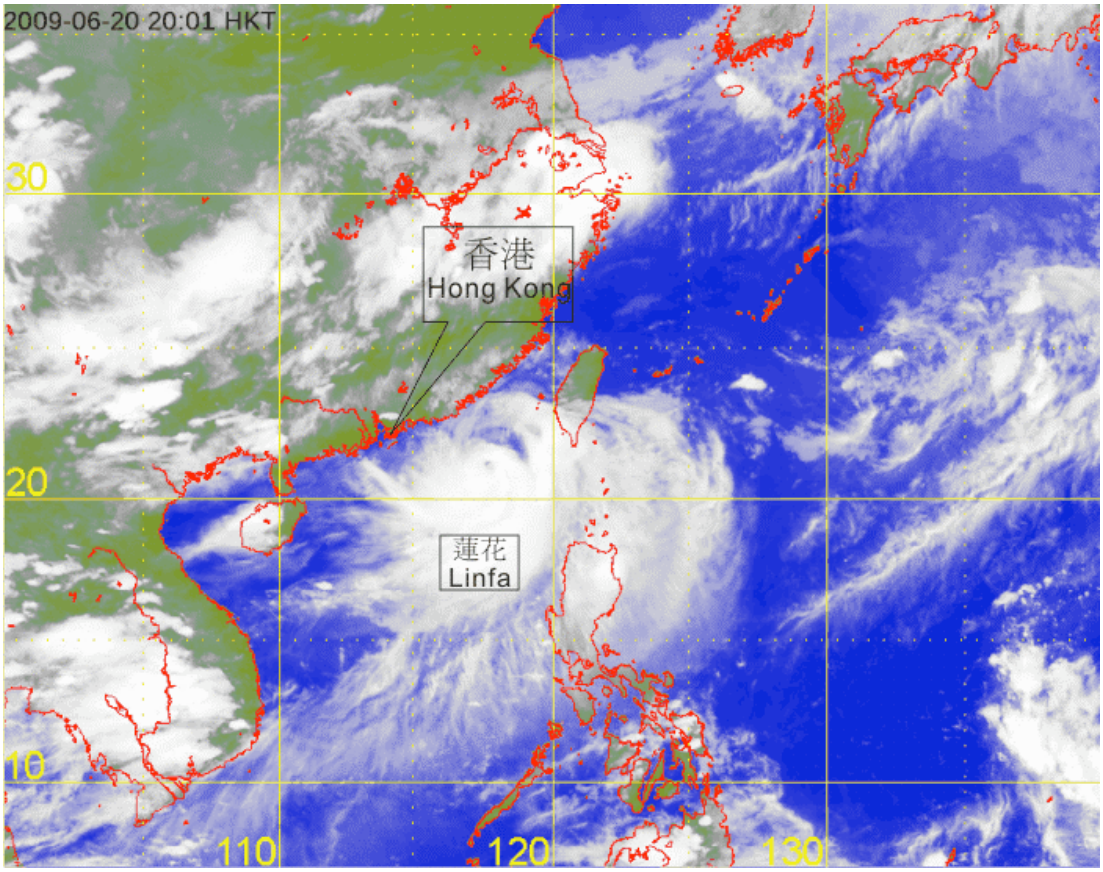


圖 3.1.3　強烈熱帶風暴蓮花在二零零九年六月二十日下午8時的紅外線衛星圖片。當時蓮花達到其強度的頂峯，中心附近估計最高風速達到每小時110公里。

Figure 3.1.3　Infra-red satellite imagery at 8 p.m. on 20 June 2009 of Severe Tropical Storm Linfa at its peak intensity with estimated maximum winds of 110 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-1R。〕

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

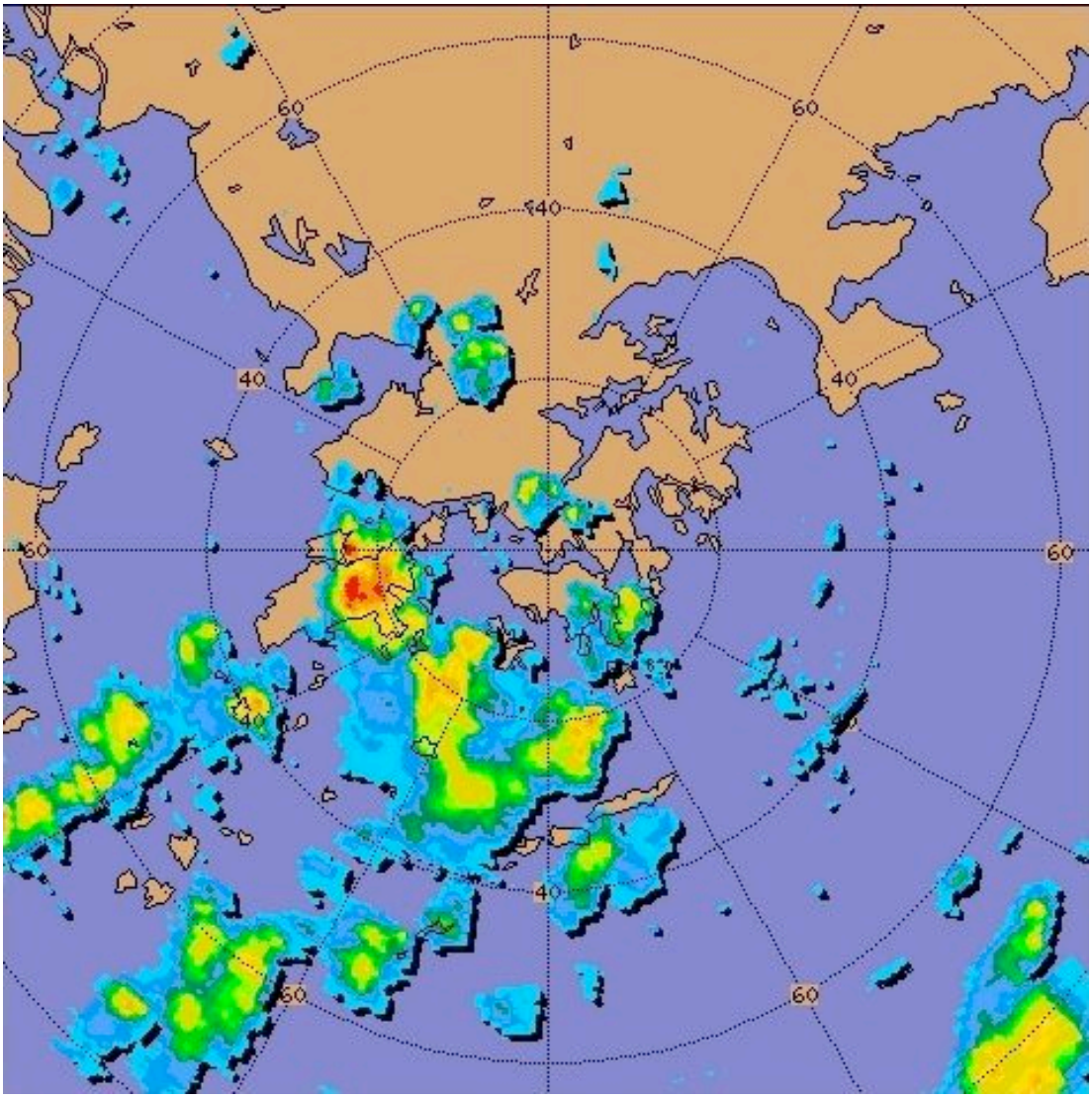


圖 3.1.4　二零零九年六月二十一日上午5時18分的雷達回波圖像，顯示本港局部地區正受雷雨影響。

Figure 3.1.4　Radar echoes captured at 5:18 a.m. on 21 June 2009. Isolated thundery showers were affecting Hong Kong around that time.

3.2 熱帶風暴浪卡 (0904): 二零零九年六月二十三日至二十七日

浪卡是香港在二零零九年第二個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓浪卡於六月二十三日在馬尼拉東南偏東約860公里的北太平洋西部上形成，並向西北偏西移動，下午增強為熱帶風暴。浪卡於翌日橫過菲律賓中部，黃昏進入南海。它於六月二十五日大致轉向西北移動，橫過南海，早上時達到其強度的頂峯，中心附近最高風速估計達每小時85公里，但於下午及晚間稍為減弱。浪卡於六月二十六日大致向西北偏北移動，移近廣東東部沿岸，黃昏時減弱為熱帶低氣壓。它於六月二十七日凌晨在大亞灣沿岸附近登陸，同日早上進一步移入內陸並減弱為一低壓區。根據報章報導，浪卡在菲律賓引起山泥傾瀉及導致漁船翻側，至少有八人死亡、11人失蹤。 此外，菲律賓中部馬克丹島海域亦有一艘客輪翻側，船上13名船員全部獲救。

熱帶風暴浪卡在進入南海後雖然稍為減弱，但繼續移近華南沿岸，對本港構成威脅。香港天文台於六月二十六日上午7時15分發出一號戒備信號，當時浪卡位於香港東南偏南約410公里。由於預料浪卡會進一步移近香港，天文台於下午3時40分發出三號強風信號，當時浪卡移至香港東南約190公里處。本港當日吹和緩至清勁東風，下午風勢增強，離岸及高地間中吹強風，晚間逐漸轉吹西北風。浪卡於下午11時至翌日上午1時左右最接近香港，並在天文台東北約60公里處掠過。期間，香港天文台總部於六月二十六日下午11時03分錄得最低瞬時海平面氣壓1000.1百帕斯卡。浪卡登陸後在廣東減弱，本港風勢緩和，天文台於六月二十七日上午5時25分取消所有熱帶氣旋警告信號。浪卡影響香港期間各站錄得的最高風速可參考表3.2.1。

六月二十六日香港初時多雲，日間開始有狂風驟雨。六月二十七日間中有大雨及幾陣狂風雷暴。

表3.2.2及3.2.3 分別是浪卡影響香港期間本港的日雨量及最高潮位資料。圖3.2.1-3.2.4 分別為浪卡的路徑圖、本港的雨量分佈圖、浪卡的衛星及雷達圖像。

3.2 Tropical Storm Nangka (0904): 23 – 27 June 2009

Nangka was the second tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009.

Tropical Depression Nangka formed over the western North Pacific about 860 km east-southeast of Manila on 23 June. Moving west-northwestwards, it intensified into a tropical storm that afternoon. Nangka crossed the central Philippines the next day and entered the South China Sea in the evening. It turned to move generally northwestwards across the South China Sea on 25 June and reached its peak intensity in the same morning with estimated maximum winds of 85 km/h near its centre, but weakened slightly in the afternoon and at night. Nangka moved generally north-northwestwards on 26 June approaching the coast of eastern Guangdong and weakened into a tropical depression that evening. It made landfall over the coastal areas of Daya Bay in the small hours of 27 June. Nangka moved further inland and weakened into an area of low pressure that morning. According to press reports, Nangka triggered landslides and overturned fishing boats in the Philippines where at least eight people were killed and 11 others missing. A passenger boat was also overturned off Mactan Island in the central Philippines but all 13 people on board were rescued.

Tropical Storm Nangka weakened slightly after it entered the South China Sea but continued to move closer to the south China coast, posing a threat to Hong Kong. The Standby Signal No. 1 was issued at 7:15 a.m. on 26 June when Nangka was about 410 km south-southeast of Hong Kong. As Nangka was expected to continue to move closer to Hong Kong, the Strong Wind Signal No. 3 was issued at 3:40 p.m. that day when Nangka was about 190 km to the southeast. Local winds were moderate to fresh easterlies at first that day and strengthened in the afternoon to become occasionally strong offshore and on high grounds. The winds gradually turned to the northwest at night. Nangka was closest to Hong Kong between about 11 p.m. and 1 a.m. the next day when it passed about 60 km to the northeast of the Hong Kong Observatory. During the period, the Hong Kong Observatory Headquarters recorded the lowest instantaneous mean sea-level pressure of 1000.1 hPa at 11:03 p.m. on 26 June. Local winds subsided as Nangka made landfall and weakened over Guangdong, and all tropical cyclone warning signals were cancelled at 5:25 a.m. on 27 June. The maximum winds recorded at various stations during the passage of Nangka are given in Table 3.2.1.

The weather in Hong Kong was cloudy at first with squally showers developing during the day on 26 June. There was occasional heavy rain and a few squally thunderstorms on 27 June.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Nangka is given in Tables 3.2.2 and 3.2.3 respectively. Figures 3.2.1 - 3.2.4 show respectively the track of Nangka, the rainfall distribution for Hong Kong, a satellite and radar imagery of Nangka.

表 3.2.1　在浪卡影響下，本港各站在熱帶氣旋警告信號生效時所錄得的最高陣風、最高每小時平均風速及風向

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

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東北偏東	ENE	62	26/6	14:16	東	E	30	26/6	15:00
中環碼頭	Central Pier	東	E	56	26/6	11:41	東	E	30	26/6	16:00
長洲	Cheung Chau	東	E	58	26/6	12:03	東	E	31	26/6	15:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	51	26/6	14:48	西北	NW	31	27/6	00:00
啟德	Kai Tak	東北	NE	62	26/6	12:00	西	W	25	26/6	23:00
京士柏	King's Park	東南偏東	ESE	47	26/6	12:17	東北偏東	ENE	16	26/6	18:00
流浮山	Lau Fau Shan	西北偏西	WNW	49	27/6	02:08	西北偏西	WNW	31	27/6	02:00
							西北偏西	WNW	31	27/6	03:00
昂坪	Ngong Ping	東	E	83	26/6	15:38	東	E	59	26/6	13:00
北角	North Point	東	E	63	26/6	18:01	東	E	27	26/6	15:00
							西	W	27	27/6	01:00
							西	W	27	27/6	02:00
坪洲	Peng Chau	東	E	63	26/6	12:29	西北	NW	38	27/6	00:00
平洲	Ping Chau	東	E	68	26/6	14:43	西	W	31	27/6	02:00
西貢	Sai Kung	東北偏東	ENE	65	26/6	17:55	東北偏東	ENE	30	26/6	12:00
							東北	NE	30	26/6	17:00
沙洲	Sha Chau	東北偏東	ENE	56	26/6	12:43	北	N	25	26/6	21:00
沙螺灣	Sha Lo Wan	東	E	56	26/6	12:47	東	E	30	26/6	13:00
沙田	Sha Tin	東	E	47	26/6	16:09	東北	NE	19	26/6	16:00
石崗	Shek Kong	東	E	49	26/6	12:22	東	E	19	26/6	15:00
九龍天星碼頭	Star Ferry (Kowloon)	東南	SE	56	26/6	12:15	西北偏西	WNW	30	27/6	00:00
打鼓嶺	Ta Kwu Ling	東	E	49	26/6	15:39	東	E	19	26/6	16:00
大美督	Tai Mei Tuk	東	E	79	26/6	18:05	東北	NE	38	26/6	19:00
大帽山	Tai Mo Shan	東	E	77	26/6	15:19	西	W	54	27/6	03:00
塔門	Tap Mun	西北偏西	WNW	70	26/6	22:55	西	W	40	27/6	00:00
大老山	Tate's Cairn	東	E	83	26/6	16:37	東	E	51	26/6	17:00
鯽魚湖	Tsak Yue Wu	東北	NE	41	26/6	14:50	北	N	14	26/6	21:00
將軍澳	Tseung Kwan O	東北	NE	43	26/6	17:54	東北偏北	NNE	16	26/6	18:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南偏東	ESE	38	26/6	12:08	西北偏北	NNW	14	26/6	22:00
							西北	NW	14	26/6	23:00
							西北	NW	14	27/6	00:00
屯門政府合署	Tuen Mun Government Offices	西北偏西	WNW	49	27/6	03:21	西北偏西	WNW	14	27/6	04:00
橫瀾島	Waglan Island	東北偏東	ENE	75	26/6	12:15	東北偏東	ENE	52	26/6	18:00
濕地公園	Wetland Park	西北偏西	WNW	36	26/6	23:57	西北	NW	19	26/6	23:00
黃竹坑	Wong Chuk Hang	東南	SE	54	26/6	15:02	東	E	23	26/6	15:00

表 3.2.2　　浪卡影響香港期間，香港天文台總部及其他各站所錄得的日雨量

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

站 (參閱圖 3.2.2) Station (See Fig. 3.2.2)	六月二十六日 26 Jun	六月二十七日 27 Jun	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory	17.7	46.9	64.6
長洲 Cheung Chau (CCH)	3.5	38.0	41.5
香港國際機場 Hong Kong International Airport (HKA)	5.9	14.7	20.6
N05 粉嶺 Fanling	7.5	32.0	39.5
N13 糧船灣 High Island	26.0	71.0	97.0
K04 佐敦谷 Jordan Valley	20.0	45.5	65.5
N06 葵涌 Kwai Chung	16.5	51.0	67.5
H12 半山區 Mid Levels	18.0	43.5	61.5
H21 淺水灣 Repulse Bay	32.5	51.5	84.0
N09 沙田 Sha Tin	16.0	51.0	67.0
H19 筲箕灣 Shau Kei Wan	20.5	51.5	72.0
SEK 石崗 Shek Kong	11.5	23.5	35.0
K06 蘇屋邨 So Uk Estate	19.5	60.5	80.0
PLC 大美督 Tai Mei Tuk	16.5	[42.5]	[59.0]
R21 踏石角 Tap Shek Kok	4.5	7.0	11.5
N17 東涌 Tung Chung	4.0	[34.0]	[38.0]
R27 元朗 Yuen Long	6.5	14.5	21.0

註：　[　] 基於不齊全的每小時雨量數據。

Note :　[　] based on incomplete hourly data.

表 3.2.3　　浪卡影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

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

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	2.58	26/6	10:53	0.34	26/6	16:59
石壁	Shek Pik	2.71	26/6	10:54	0.30	26/6	15:49
大廟灣	Tai Miu Wan	2.55	26/6	12:06	0.37	26/6	16:50
大埔滘	Tai Po Kau	2.59	26/6	13:09	0.50	26/6	16:03
尖鼻咀	Tsim Bei Tsui	3.05	26/6	11:52	0.30	26/6	11:52
橫瀾島	Waglan Island	2.58	26/6	11:50	0.24	26/6	17:52

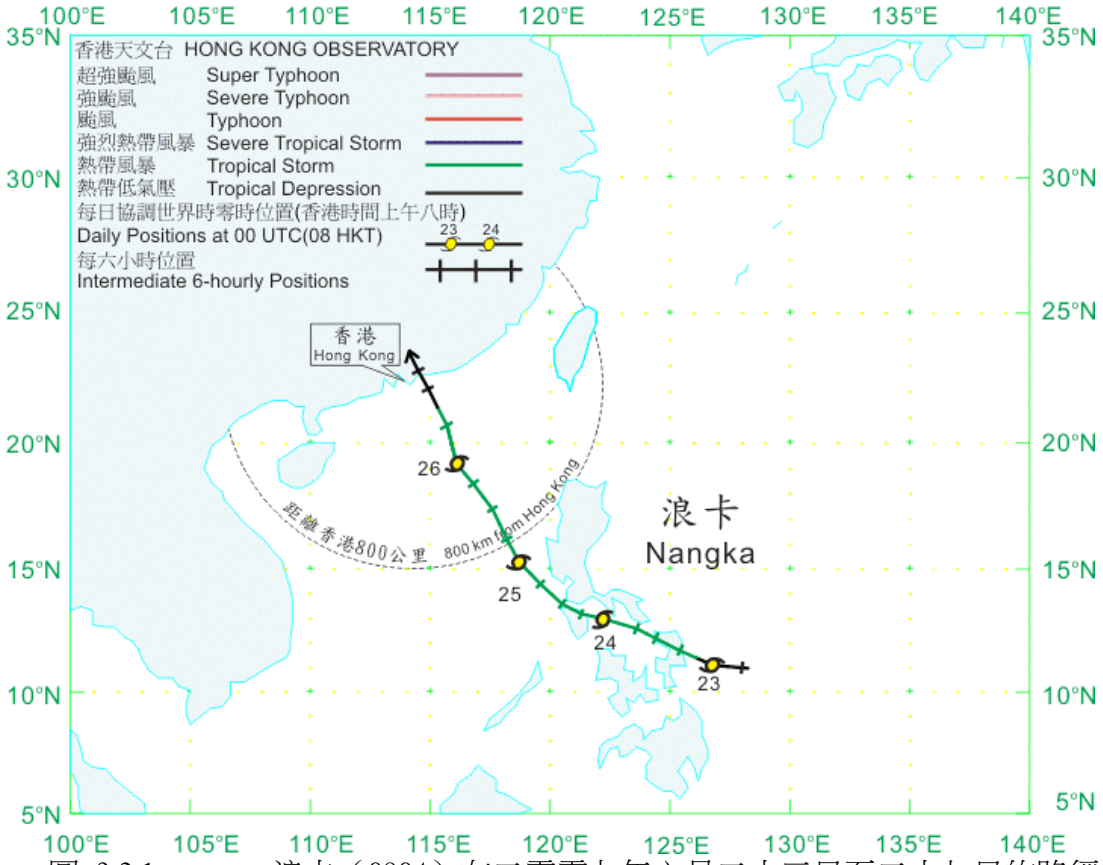


圖 3.2.1a 浪卡（0904）在二零零九年六月二十三日至二十七日的路徑圖。

Figure 3.2.1a Track of Nangka (0904) on 23 – 27 June 2009.

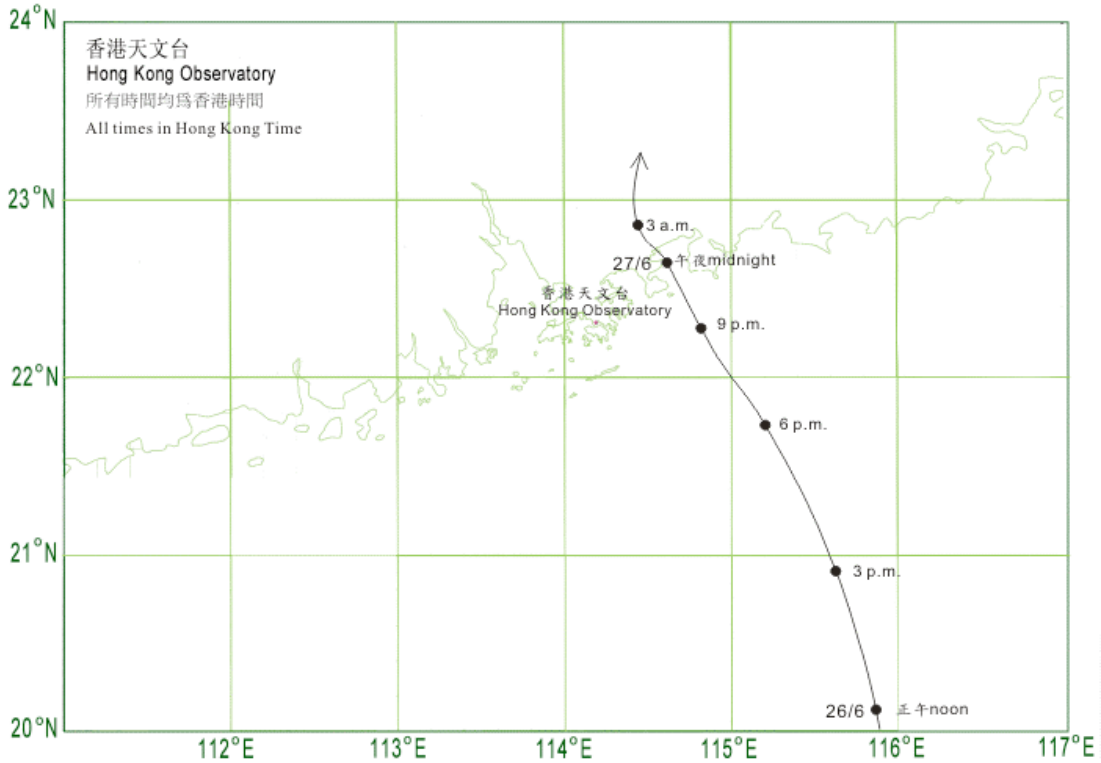


圖 3.2.1b 浪卡（0904）接近香港時的路徑圖。

Fig. 3.2.1b Track of Nangka (0904) near Hong Kong.

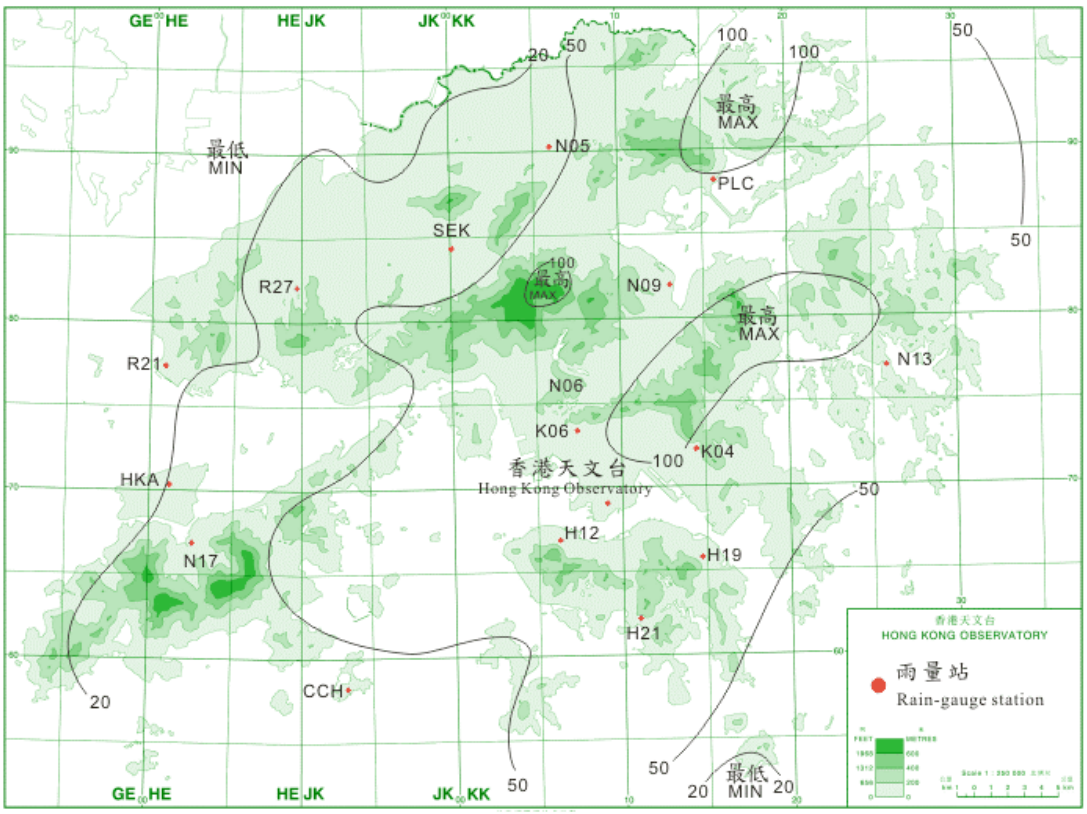


圖 3.2.2　　二零零九年六月二十六日至二十七日的雨量分佈(等雨量線單位為毫米)。

Figure 3.2.2　　Rainfall distribution on 26 – 27 June 2009 (isohyets are in millimetres).

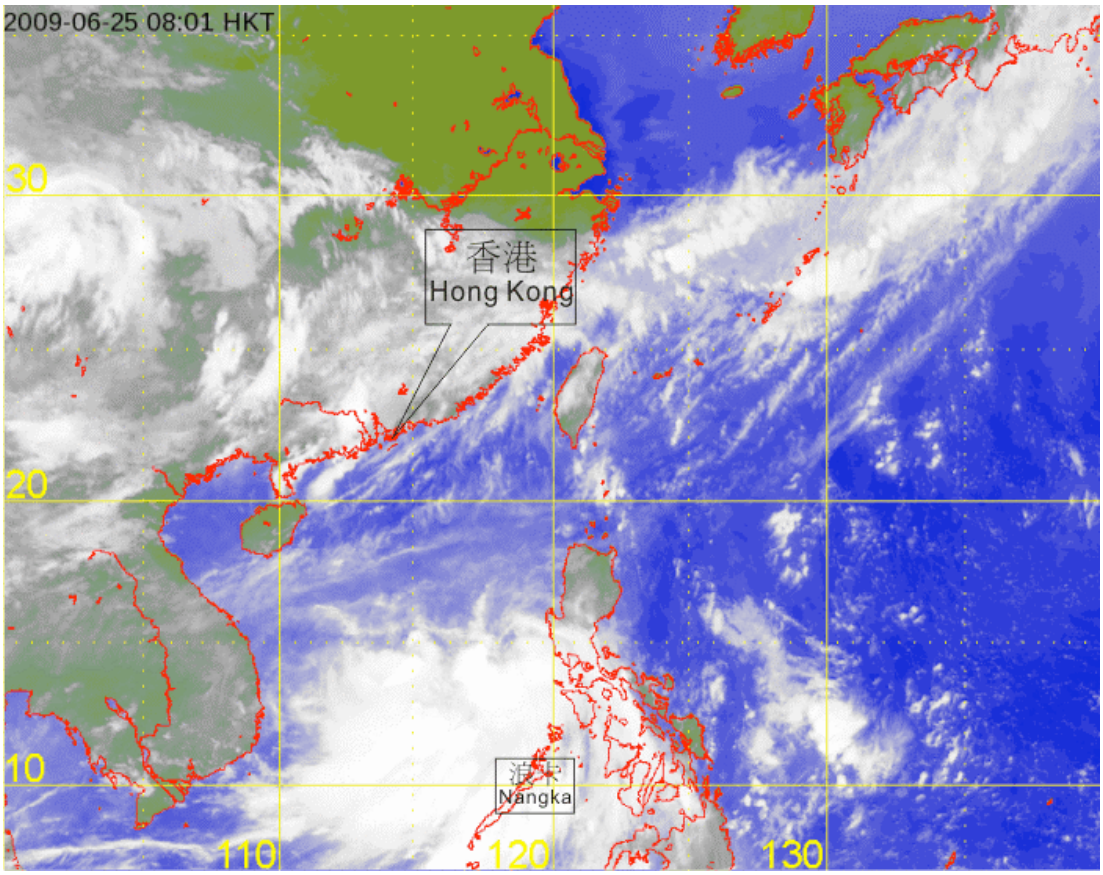


圖 3.2.3　熱帶風暴浪卡在二零零九年六月二十五日上午8時的紅外線衛星圖片。當時浪卡正在橫過南海，並達到其強度的頂峯，中心附近估計最高風速達到每小時85公里。

Figure 3.2.3　Infra-red satellite imagery at 8 a.m. on 25 June 2009 of Tropical Storm Nangka, when it was crossing the South China Sea and at its peak intensity with estimated maximum winds of 85 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-1R。〕

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

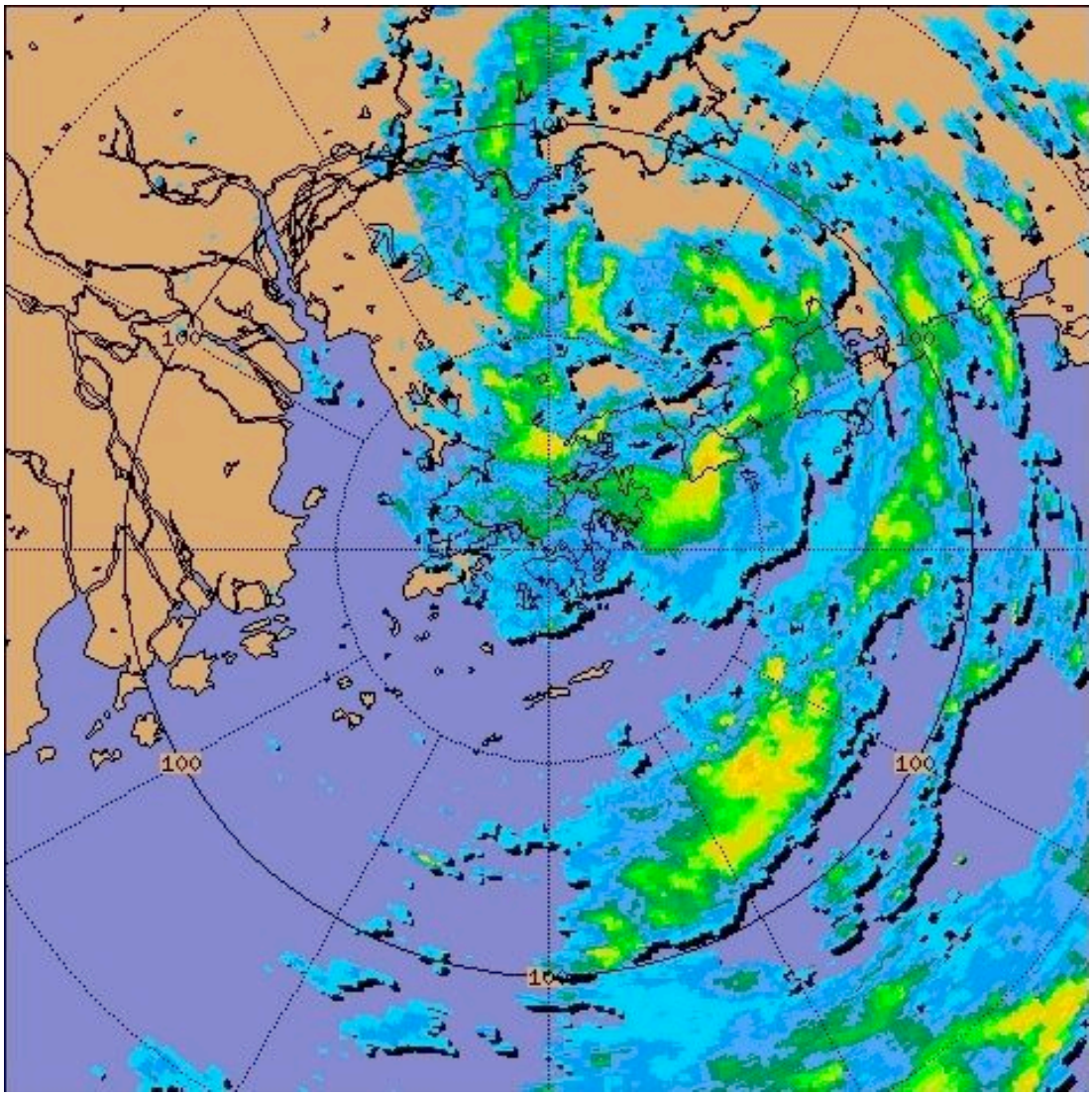


圖 3.2.4　二零零九年六月二十七日上午1時的雷達回波圖像，顯示熱帶低氣壓浪卡正在大亞灣沿岸附近登陸。

Figure 3.2.4　Radar echoes captured at 1 a.m. on 27 June 2009. Tropical Depression Nangka was making landfall over the coastal areas of Daya Bay around that time.

3.3 熱帶風暴蘇迪羅(0905)： 二零零九年七月十日至十二日

蘇迪羅是香港在二零零九年第三個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓蘇迪羅於七月十日在香港東南偏東約700公里的南海上形成，並向西北偏西移動，橫過南海北部。蘇迪羅於七月十一日下午增強為熱帶風暴及達到其強度的頂峯，中心附近最高風速估計達每小時65公里，當時位於香港以南約240公里。蘇迪羅於七月十二日早上橫過雷州半島南端，下午進入北部灣，黃昏在越南北部河內以東約170公里附近登陸，並減弱為熱帶低氣壓。蘇迪羅於當晚在越南北部進一步減弱為一低壓區。

香港天文台於七月十日下午4時45分發出一號戒備信號，當時蘇迪羅位於香港東南偏東約640公里。本港當日吹輕微至和緩西風。七月十一日本港風勢增強，下午吹清勁東風，離岸及高地吹強風。天文台於下午1時25分發出三號強風信號。蘇迪羅於下午2時最接近香港，並在香港以南240公里處掠過。黃昏時蘇迪羅逐漸移離香港，本港風勢普遍減弱，但離岸及高地仍然間中吹強風。天文台於下午9時15分改發一號戒備信號，取代三號強風信號。隨著蘇迪羅進一步遠離香港及本港風勢漸趨緩和，天文台於七月十二日上午5時20分取消所有熱帶氣旋警告信號。香港天文台總部於七月十日下午5時27分至5時55分錄得最低瞬時海平面氣壓999.7百帕斯卡，當時蘇迪羅位於香港東南偏東約620公里。蘇迪羅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3.3.1及3.3.2。

七月十日香港天晴及天氣酷熱。翌日本港受到蘇迪羅外圍雨帶影響，間中有狂風驟雨。七月十二日驟雨減少，日間大致天晴及天氣炎熱。

蘇迪羅影響香港期間，本港有20宗塌樹報告。牛池灣一小巴站有一棵約10米高大樹塌下，幸無人受傷。此外，尖東康莊道一棵約20米高大樹塌下，該處交通短暫時間受阻。

表3.3.3及3.3.4 分別是蘇迪羅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 分別為蘇迪羅的路徑圖、本港的雨量分佈圖、蘇迪羅的衛星圖像及蘇迪羅外圍雨帶的雷達圖像。

3.3 Tropical Storm Soudelor (0905): 10 – 12 July 2009

Soudelor was the third tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009.

Tropical Depression Soudelor formed over the South China Sea about 700 km east-southeast of Hong Kong on 10 July and moved west-northwestwards across the northern part of the South China Sea. Soudelor intensified into a tropical storm on the afternoon of 11 July about 240 km south of Hong Kong and reached its peak intensity with estimated maximum winds of 65 km/h near its centre. Soudelor crossed the southern tip of the Leizhou Peninsula on the morning of 12 July and entered Beibu Wan that afternoon. It made landfall over the coast of northern Vietnam about 170 km east of Hanoi and weakened into a tropical depression that evening. Soudelor further weakened into an area of low pressure over northern Vietnam that night.

In Hong Kong, the Standby Signal No. 1 was issued at 4:45 p.m. on 10 July when Soudelor was about 640 km east-southeast of Hong Kong. Local winds were light to moderate westerlies on that day. Winds strengthened on 11 July becoming fresh easterlies that afternoon and up to strong offshore and on high grounds. The Strong Wind Signal No. 3 was issued at 1:25 p.m. that day. Soudelor was closest to Hong Kong at about 2 p.m. that day when it passed about 240 km to the south. Soudelor gradually moved away from Hong Kong and local winds weakened that evening, although there were still occasionally strong winds offshore and on high grounds. The Standby Signal No. 1 was issued at 9:15 p.m. to replace the Strong Wind Signal. All tropical cyclone warning signals were cancelled at 5:20 a.m. on 12 July as Soudelor moved further away from Hong Kong and local winds gradually moderated. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 999.7 hPa was recorded between 5:27 p.m. and 5:55 p.m. on 10 July, when Soudelor was about 620 km to the east-southeast. The maximum winds recorded at various stations and the periods of strong winds during the passage of Soudelor are given in Tables 3.3.1 and 3.3.2 respectively.

The weather in Hong Kong was fine and very hot on 10 July. Under the influence of the outer rainbands of Soudelor, there were occasional squally showers on the next day. With showers easing off, it became mainly fine and hot on 12 July.

In Hong Kong, there were 20 reports of fallen trees during the passage of Soudelor. A 10-metre tall tree fell into a mini-bus terminal in Ngau Chi Wan and fortunately no one was injured. In addition, a large 20-metre tall tree fell into Hong Chong Road in Tsim Sha Tsui East and caused temporary disruption to the traffic.

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

表 3.3.1　在蘇迪羅影響下，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 Soudelor were in force

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time
黃麻角(赤柱)	Bluff Head (Stanley)	東北偏東	ENE	72	11/7	13:21	東	E	40	11/7	18:00
中環碼頭	Central Pier	東	E	58	11/7	13:40	東	E	38	11/7	14:00
長洲	Cheung Chau	東南	SE	79	11/7	16:03	東南偏東	ESE	43	12/7	03:00
長沙灣	Cheung Sha Wan	東北	NE	54	11/7	09:02	東北偏東	ENE	19	11/7	10:00
香港國際機場	Hong Kong International Airport	東	E	62	11/7	16:18	東	E	34	11/7	13:00
啟德	Kai Tak	東	E	76	11/7	11:19	東	E	34	11/7	13:00
京士柏	King's Park	東	E	63	11/7	12:25	東	E	27	11/7	14:00
流浮山	Lau Fau Shan	東	E	62	11/7	15:58	東	E	34	11/7	16:00
昂坪	Ngong Ping	東	E	96	11/7	18:12	東	E	75	11/7	18:00
北角	North Point	東	E	67	11/7	14:55	東	E	31	11/7	13:00
坪洲	Peng Chau	東北偏東	ENE	67	11/7	12:51	東北偏東	ENE	45	11/7	14:00
平洲	Ping Chau	東	E	52	11/7	13:44	東	E	16	11/7	14:00
西貢	Sai Kung	東北	NE	58	11/7	12:02	東北偏東	ENE	40	11/7	15:00
		東北偏東	ENE	58	11/7	14:38					
		東北偏東	ENE	58	11/7	14:39					
沙洲	Sha Chau	東南偏南	SSE	52	11/7	14:42	東	E	36	11/7	14:00
沙螺灣	Sha Lo Wan	東	E	54	11/7	14:02	東	E	31	11/7	14:00
		東	E	54	12/7	02:32					
沙田	Sha Tin	東北偏北	NNE	47	11/7	14:14	東北偏東	ENE	19	11/7	16:00
石崗	Shek Kong	東	E	56	11/7	11:07	東	E	30	11/7	01:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	51	11/7	22:44	東	E	30	11/7	18:00
							東	E	30	11/7	23:00
打鼓嶺	Ta Kwu Ling	東北偏東	ENE	45	11/7	11:03	東北偏東	ENE	20	11/7	15:00
大美督	Tai Mei Tuk	東南	SE	70	11/7	16:04	東	E	51	11/7	15:00
大帽山	Tai Mo Shan	東南偏東	ESE	90	11/7	17:10	東	E	59	11/7	18:00
塔門	Tap Mun	東南	SE	59	11/7	15:58	東南偏東	ESE	25	11/7	18:00
大老山	Tate's Cairn	東	E	81	11/7	10:34	東	E	52	11/7	11:00
鯽魚湖	Tsak Yue Wu	東北偏東	ENE	43	11/7	14:52	東北偏東	ENE	16	11/7	15:00
將軍澳	Tseung Kwan O	東	E	54	11/7	15:01	東	E	16	11/7	13:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	47	12/7	04:08	東	E	19	11/7	15:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	51	11/7	16:32	東南偏東	ESE	20	11/7	01:00
橫瀾島	Waglan Island	東	E	72	11/7	14:15	東北	NE	49	11/7	11:00
							東北偏東	ENE	49	11/7	14:00
濕地公園	Wetland Park	東	E	52	11/7	15:41	東	E	25	11/7	16:00
黃竹坑	Wong Chuk Hang	東	E	58	11/7	13:05	東	E	30	11/7	14:00

表 3.3.2　在蘇迪羅影響下，在熱帶氣旋警告系统的八個參考測風站所錄到持續風力達到強風*的時段

Table 3.3.2　Periods during which sustained strong winds* were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Soudelor 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	11/7	14:05	12/7	03:51
西貢	Sai Kung	11/7	12:05	11/7	15:48

* 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 speed in between the times indicated.

表 3.3.3　蘇迪羅影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.3.3　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Soudelor

站 (參閱圖 3.3.2) Station (See Fig. 3.3.2)		七月十日 10 Jul	七月十一日 11 Jul	七月十二日 12 Jul	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory		微量 Trace	8.1	微量 Trace	8.1
長洲 Cheung Chau (CCH)		0.0	11.5	0.0	11.5
香港國際機場 Hong Kong International Airport (HKA)		0.0	8.5	0.0	8.5
N05粉嶺	Fanling	0.0	6.0	0.5	6.5
N13糧船灣	High Island	0.0	0.5	0.5	1.0
K04佐敦谷	Jordan Valley	0.0	2.5	0.0	2.5
N06葵涌	Kwai Chung	0.0	3.5	0.0	3.5
H12半山區	Mid Levels	1.0	34.0	0.0	35.0
H21淺水灣	Repulse Bay	0.0	11.0	0.0	11.0
N09沙田	Sha Tin	[0.0]	[2.5]	[0.0]	[2.5]
H19筲箕灣	Shau Kei Wan	0.0	23.0	0.0	23.0
SEK石崗	Shek Kong	0.0	2.5	1.5	4.0
K06蘇屋邨	So Uk Estate	0.0	[2.0]	0.0	[2.0]
PLC大美督	Tai Mei Tuk	[0.5]	[5.0]	0.0	[5.5]
R21踏石角	Tap Shek Kok	0.0	1.0	0.0	1.0
N17東涌	Tung Chung	0.0	14.5	0.0	14.5
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 3.3.4　蘇迪羅影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.3.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Soudelor

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	2.38	11/7	10:36	0.39	11/7	15:47
石壁	Shek Pik	2.54	11/7	10:52	0.38	11/7	15:05
大廟灣	Tai Miu Wan	2.40	11/7	10:09	0.43	11/7	14:44
大埔滘	Tai Po Kau	2.40	11/7	09:06	0.55	11/7	15:21
尖鼻咀	Tsim Bei Tsui	2.72	11/7	12:04	0.32	12/7	00:07

橫瀾島沒有資料。No data for Waglan Island.

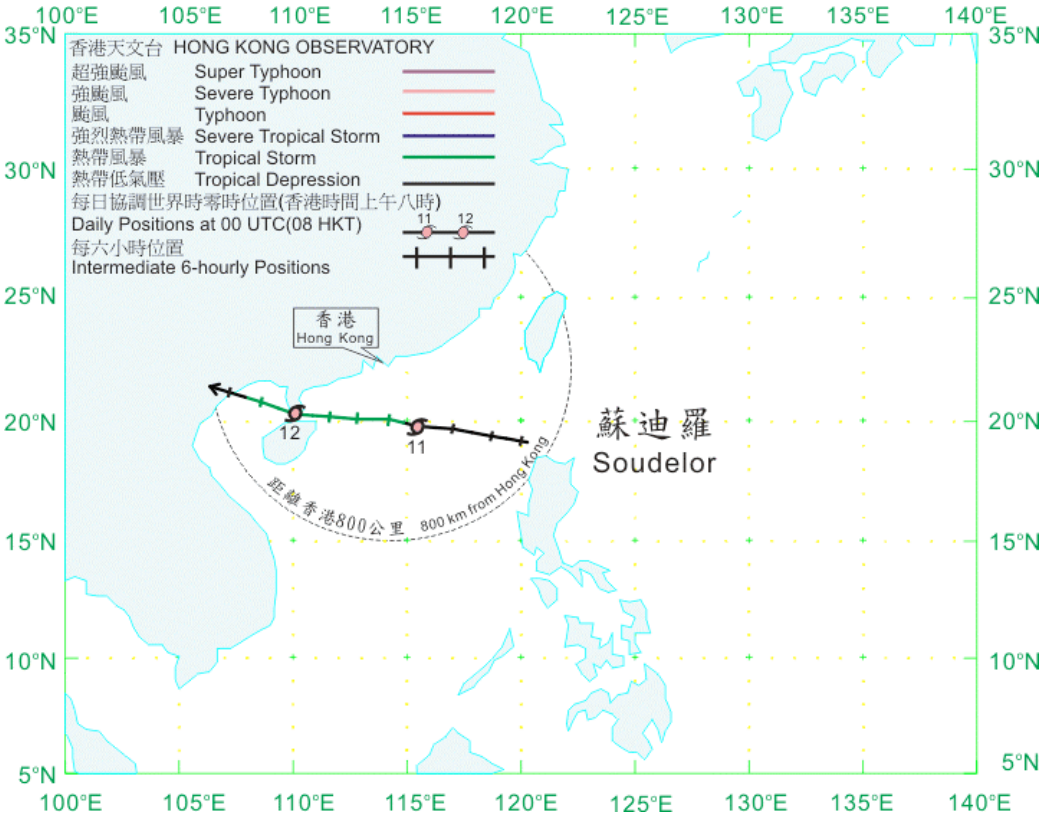


圖 3.3.1 蘇迪羅（0905）在二零零九年七月十日至十二日的路徑圖。

Figure 3.3.1 Track of Soudelor (0905) on 10 – 12 July 2009.

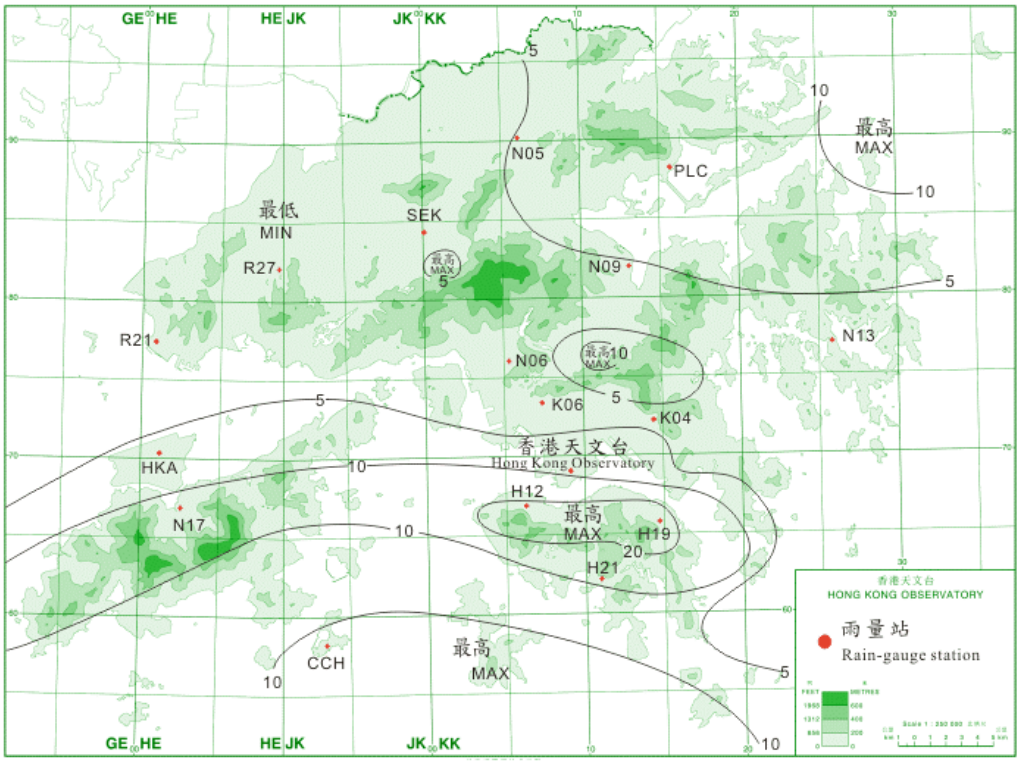


圖 3.3.2 二零零九年七月十日至十二日的雨量分佈(等雨量線單位為毫米)。

Figure 3.3.2 Rainfall distribution on 10 – 12 July 2009 (isohyets are in millimetres).

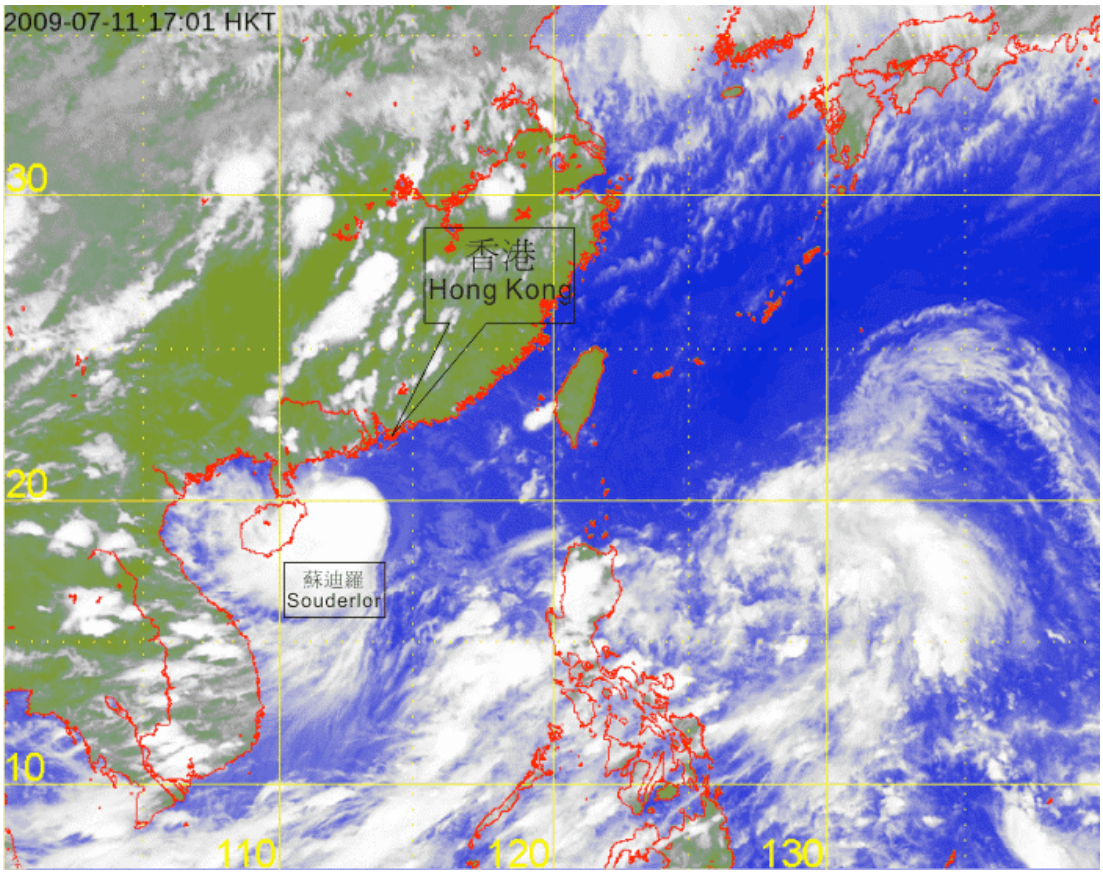


圖 3.3.3 熱帶風暴蘇迪羅在二零零九年七月十一日下午5時的紅外線衛星圖片。當時蘇迪羅正在橫過南海北部，並達到其強度的頂峯，中心附近估計最高風速達到每小時65公里。

Figure 3.3.3 Infra-red satellite imagery at 5 p.m. on 11 July 2009 of Tropical Storm Soudelor. Soudelor was crossing the northern part of the South China Sea and at its peak intensity with estimated maximum winds of 65 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-1R。〕

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

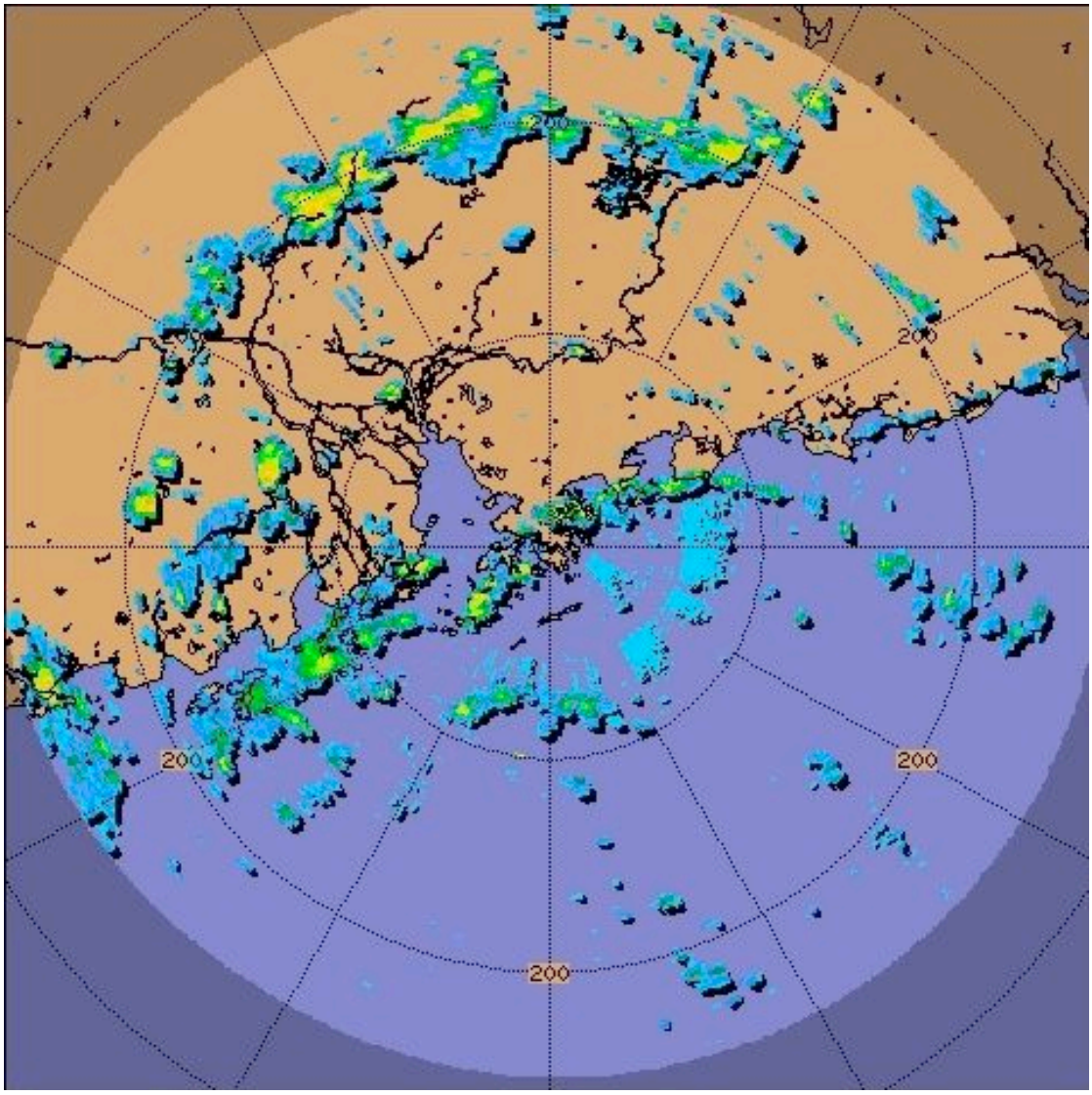


圖 3.3.4　二零零九年七月十一日下午4時的雷達回波圖像，顯示與熱帶風暴蘇迪羅相連的外圍雨帶正影響香港。

Figure 3.3.4　Radar echoes captured at 4 p.m. on 11 July 2009. The outer rainbands associated with Tropical Storm Soudelor were affecting Hong Kong around that time.

3.4 颱風莫拉菲(0906) ： 二零零九年七月十五日至十九日

莫拉菲是香港在二零零九年第四個需要發出熱帶氣旋警告信號的熱帶氣旋。莫拉菲吹襲香港期間，天文台發出九號烈風或暴風增強信號。這是自二零零八年八月颱風鸚鵡影響香港以來的首次。

熱帶低氣壓莫拉菲於七月十五日在馬尼拉以東約670公里的北太平西部上形成後，大致向西北移動，翌日增強為熱帶風暴。莫拉菲於七月十七日橫過呂宋海峽，下午增強為強烈熱帶風暴，當晚進入南海及轉向西北偏西移動。它於七月十八日早上增強為颱風，並以每小時超過20公里的速度移向華南沿岸。當晚莫拉菲達到其強度的頂峯，中心附近最高風速估計達每小時140公里。莫拉菲於七月十九日凌晨在大鵬半島沿岸登陸，然後橫過大鵬灣及深圳並減弱為強烈熱帶風暴。莫拉菲於當日早上減弱為熱帶風暴及進入廣東西部，下午進一步減弱為熱帶低氣壓，當晚在廣西減弱為一低壓區。根據報章報導，菲律賓在莫拉菲影響期間有五人死亡。 廣東省有超過24萬人受災，農作物受災面積超過1 500公頃，超過80間房屋倒塌，直接經濟損失約二億元人民幣。深圳有兩人失蹤，市內多處地方水浸。深圳機場有接近100班航班取消或延誤。汕頭對開海面有三艘船隻在巨浪中遇險，船上23人獲救。浙江温州海域一艘漁船翻沉，船上兩人失蹤。

香港天文台於七月十七日下午10時15分發出一號戒備信號，當時莫拉菲位於香港東南偏東約680公里。本港吹輕微至和緩西至西北風。由於預料莫拉菲會迅速移近香港，天文台於七月十八日下午2時15分發出三號強風信號，當時莫拉菲位於香港以東約310公里處。本港轉吹清勁西北風，晚上風勢逐步增強，接近午夜時本港普遍吹強風，高地風力達烈風程度。天文台於下午11時30分發出八號西北烈風或暴風信號，當時莫拉菲位於香港天文台以東約100公里。七月十九日凌晨本港風力顯著增強，普遍吹西至西北烈風，離岸及高地風力達暴風程度，天文台在上午1時30分發出九號烈風或暴風增強信號。莫拉菲於上午2時至3時左右最接近香港，並在天文台東北偏北約40公里掠過。其後莫拉菲開始移離香港，本港轉吹西南烈風，離岸及高地吹暴風，天文台於上午4時40分*發出八號西南烈風或暴風信號。黎明前後本港的烈風逐漸減弱，天文台在上午6時40分改發三號強風信號，隨後於上午10時40分改發一號戒備信號。隨着莫拉菲繼續遠離香港及減弱，本港的風勢逐漸緩和，天文台在下午1時15分取消所有熱帶氣旋警告信號。莫拉菲影響香港期間各站錄得的最高風速及持續風力達到強風及烈風的時段可參考表3.4.1及3.4.2。

在莫拉菲影響香港期間，各站錄得的最低瞬時海平面氣壓如下：-

站	最低瞬時海平面氣壓	日期/月份	最初及最後錄得的時間
香港天文台總部	985.6 百帕斯卡	19/7	上午1時52分 – 1 時58分
打鼓嶺	977.2 百帕斯卡	19/7	上午2時23分 – 2 時24分
沙田	982.6百帕斯卡	19/7	上午1時55分
橫瀾島	985.5百帕斯卡	19/7	上午1時17分

*於2016年10月3日更正

七月十七及十八日香港天晴及天氣酷熱。七月十八日部份地區有煙霞，黃昏時莫拉菲的外圍雨帶影響香港，本港有狂風驟雨及幾陣雷暴。七月十九日早上有狂風大雨，天文台在當日上午1時45分及2時25分分別發出黃色及紅色暴雨警告信號，並於上午3時正發出山泥傾瀉警告。下午雨勢逐漸減弱。

莫拉菲吹襲香港期間，本港有五人受傷，至少有425宗塌樹報告及三宗棚架倒塌報告。大埔頭村一棵約10米高大樹被風吹倒，壓毀鄰近一間村屋，意外中無人受傷。元朗一棵約14米大樹倒塌，壓着一間村屋，屋內六人需要撤離。九龍坑山一棵20米高樹傾倒，壓斷電線杆並擊中屋頂，令附近七戶居民停電。大埔林村新村一停車場內有大樹倒塌，壓着三至四輛私家車。一輛巴士及一輛客貨車分別在柴灣及大埔被倒下的大樹擊中，擋風玻璃受損。上述事件中均無人受傷。大埔及西貢對開海面共有三艘遊艇擱淺。香港國際機場有11航班取消、31航班延誤、一航班轉飛其它機場。

表3.4.3及3.4.4 分別是莫拉菲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 分別為莫拉菲的路徑圖、本港的雨量分佈圖、打鼓嶺的氣壓記錄、長洲的風速記錄、莫拉菲的衛星及雷達圖像。

3.4 Typhoon Molave (0906): 15 – 19 July 2009

Molave was the fourth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009. During its passage, the Hong Kong Observatory issued the Increasing Gale or Storm Signal No. 9, the first No. 9 signal since Typhoon Nuri in August 2008.

Tropical Depression Molave formed over the western North Pacific about 670 km east of Manila on 15 July and moved generally northwestwards. It intensified into a tropical storm the next day. While crossing the Luzon Strait on 17 July, Molave strengthened into a severe tropical storm in the afternoon. Molave entered the South China Sea and turned to move west-northwestwards that night. It intensified into a typhoon on the morning of 18 July and moved towards the south China coast at an average speed of over 20 km/h. Molave reached its peak intensity with estimated maximum winds of 140 km/h near its centre that night. In the early hours of 19 July, Molave made landfall over the coastal areas of Dapeng Peninsula, then moved across Mirs Bay and Shenzhen and weakened into a severe tropical storm. Molave entered western Guangdong in the morning and weakened into a tropical storm. It weakened further into a tropical depression that afternoon and subsequently into an area of low pressure over Guangxi at night. According to press reports, five people were killed in the Philippines during the passage of Molave. In Guangdong, over 240 000 people were affected, over 1 500 hectares of farmland were damaged, over 80 houses collapsed and the direct economic losses were around 200 million yuan. In Shenzhen, two people were missing and widespread flooding was reported. Around 100 flights were cancelled or delayed at Shenzhen Airport. Three vessels lost power in rough seas off Shantou and 23 sailors on board were rescued. A fishing vessel sank in the coastal waters of Wenzhou, Zhejiang and two people on board were missing.

In Hong Kong, the Standby Signal No. 1 was issued at 10:15 p.m. on 17 July when Molave was about 680 km east-southeast of Hong Kong. Local winds were mainly light to moderate west to northwesterlies. As Molave was expected to approach Hong Kong rapidly, the Strong Wind Signal No. 3 was issued at 2:15 p.m. on 18 July when Molave was about 310 km to the east of Hong Kong. Local winds freshened from the northwest and strengthened gradually. They became generally strong, reaching gale force on high ground towards midnight. The No. 8 Northwest Gale or Storm Signal was issued at 11:30 p.m. when Molave was about 100 km east of the Hong Kong Observatory. Winds strengthened significantly in the early hours of 19 July. Gale force winds from the west to northwest generally affected Hong Kong, reaching storm force offshore and on high grounds. The Increasing Gale or Storm Signal No. 9 was issued at 1:30 a.m. on 19 July. Molave was closest to Hong Kong between about 2 a.m. and 3 a.m. when it passed about 40 km to the north-northeast of the Hong Kong Observatory. Molave started to move away from Hong Kong thereafter and local winds changed to gale force southwesterlies, reaching storm force offshore and on high ground. The No. 8 Southwest Gale or Storm Signal was issued at 4:40 a.m. Gales gradually subsided around dawn and the Strong Wind Signal No. 3 was issued at 6:40 a.m., followed by the Standby Signal No. 1 at 10:40 a.m. As Molave continued to move further away from Hong Kong and weakened, local winds gradually moderated. All tropical cyclone warning signals were cancelled at 1:15 p.m. that day. The maximum winds recorded at various stations and the periods of strong and gale force winds during the passage of Molave are given in Tables 3.4.1 and 3.4.2 respectively.

During the passage of Molave, the lowest instantaneous mean sea-level pressures recorded at some selected stations are as follows:-

Station	Lowest instantaneous mean sea-level pressure	Date/Month	First and last time recorded
Hong Kong Observatory Headquarters	985.6 hPa	19/7	1:52 – 1:58 a.m.
Ta Kwu Ling	977.2 hPa	19/7	2:23 – 2:24 a.m.
Sha Tin	982.6 hPa	19/7	1:55 a.m.
Waglan Island	985.5 hPa	19/7	1:17 a.m.

The weather in Hong Kong was sunny and very hot on 17 and 18 July. There was some haze on 18 July. Under the influence of the outer rainbands of Molave, squally showers and a few thunderstorms affected Hong Kong that evening. Heavy rain with squalls affected Hong Kong on the morning of 19 July. The Amber and Red Rainstorm Warnings were issued at 1:45 a.m. and 2:25 a.m. respectively, while the Landslip Warning was issued at 3:00 a.m. The rain gradually eased off in the afternoon.

In Hong Kong, five people were injured during the passage of Molave. There were at least 425 reports of fallen trees and three reports of collapsed scaffolding. In Tai Po Tau, a 10-metre high tree toppled and damaged the roof of a dwelling nearby. No one was hurt in the incident. Six people in Yuen Long were forced to evacuate their wooden house after it was damaged by a fallen 14-metre tall tree. A 20-metre tree collapsed in Cloudy Hill, Kowloon, damaging the electric cables and the rooftop of a house and interrupting the electricity supply to seven households nearby. In Tai Po Lam Tsuen San Tsuen, a large tree fell on three to four private vehicles parked there. The windscreens of a bus and a lorry were smashed by a collapsing tree in Chai Wan and Tai Po respectively. No one was hurt in these incidents. A total of three yachts ran aground off the seas of Tai Po and Sai Kung. At the Hong Kong International Airport, 11 flights were cancelled, 31 flights were delayed and one flight was diverted.

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

表 3.4.1　在莫拉菲影響下，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 Molave were in force

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time
黃麻角(赤柱)	Bluff Head (Stanley)	西	W	96	19/7	02:27	西	W	58	19/7	03:00
中環碼頭	Central Pier	西南偏西	WSW	92	19/7	03:29	西	W	45	19/7	01:00
長洲	Cheung Chau	西南偏西	WSW	103	19/7	02:56	西	W	63	19/7	03:00
長沙灣	Cheung Sha Wan	西南	SW	79	19/7	03:44	西南	SW	47	19/7	04:00
香港國際機場	Hong Kong International Airport	西南	SW	99	19/7	04:00	西南	SW	68	19/7	04:00
啟德	Kai Tak	西	W	88	19/7	01:17	西	W	54	19/7	02:00
		西	W	88	19/7	01:35					
京士柏	King's Park	西	W	96	19/7	01:40	西	W	40	19/7	02:00
流浮山	Lau Fau Shan	西北偏西	WNW	124	19/7	02:42	西北偏西	WNW	90	19/7	03:00
昂坪	Ngong Ping	西	W	137	19/7	03:07	西南偏西	WSW	96	19/7	04:00
北角	North Point	西	W	103	19/7	01:25	西	W	58	19/7	02:00
坪洲	Peng Chau	西北偏西	WNW	112	19/7	01:04	西北偏西	WNW	67	19/7	02:00
平洲	Ping Chau	西南	SW	99	19/7	02:04	西北	NW	31	19/7	01:00
西貢	Sai Kung	西北偏西	WNW	92	19/7	00:52	南	S	51	19/7	04:00
沙洲	Sha Chau	西南偏南	SSW	96	19/7	04:25	西南偏南	SSW	72	19/7	05:00
沙螺灣	Sha Lo Wan	西南	SW	94	19/7	03:41	西南	SW	54	19/7	05:00
		西南	SW	94	19/7	04:10					
沙田	Sha Tin	西南	SW	90	19/7	02:15	西南偏南	SSW	45	19/7	03:00
石崗	Shek Kong	西	W	77	19/7	02:21	西南偏西	WSW	31	19/7	03:00
九龍天星碼頭	Star Ferry (Kowloon)	西	W	103	19/7	01:15	西	W	72	19/7	02:00
打鼓嶺	Ta Kwu Ling	西	W	92	19/7	01:51	西	W	38	19/7	03:00
大美督	Tai Mei Tuk	西	W	144	19/7	01:19	西	W	72	19/7	02:00
							西南偏西	WSW	72	19/7	03:00
大帽山	Tai Mo Shan	西	W	155	19/7	01:41	西	W	104	19/7	02:00
塔門	Tap Mun	西北偏西	WNW	148	19/7	01:03	西北偏西	WNW	77	19/7	01:00
大老山	Tate's Cairn	西北	NW	128	19/7	00:39	西北	NW	79	19/7	01:00
鯽魚湖	Tsak Yue Wu	西北偏西	WNW	67	19/7	00:37	西北偏西	WNW	23	19/7	01:00
將軍澳	Tseung Kwan O	南	S	59	19/7	03:26	南	S	22	19/7	04:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西	W	99	19/7	02:19	西南偏西	WSW	51	19/7	03:00
屯門政府合署	Tuen Mun Government Offices	西北偏西	WNW	103	19/7	01:28	西北偏西	WNW	41	19/7	02:00
橫瀾島	Waglan Island	西南偏西	WSW	122	19/7	01:50	西南偏南	SSW	92	19/7	04:00
濕地公園	Wetland Park	西南偏南	SSW	77	19/7	04:05	西北偏西	WNW	27	19/7	02:00
黃竹坑	Wong Chuk Hang	西北偏西	WNW	72	19/7	01:11	西北偏西	WNW	30	19/7	02:00

表 3.4.2　在莫拉菲影響下，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及烈風程度的時段

Table 3.4.2　Periods during which sustained strong and gale force winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Molave 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		最初達到烈風#時間 First time reaching gale force#		最後達到烈風#時間 Last time reaching gale force#	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	18/7	16:09	19/7	12:18	19/7	00:30	19/7	07:17
香港國際機場	Hong Kong International Airport	18/7	16:52	19/7	11:19	19/7	01:26	19/7	04:37
啟德	Kai Tak	18/7	23:36	19/7	03:37	-			
西貢	Sai Kung	19/7	00:51	19/7	09:45	-			
沙田	Sha Tin	19/7	02:02	19/7	02:55	-			
打鼓嶺	Ta Kwu Ling	19/7	01:28	19/7	03:02	-			
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	19/7	00:49	19/7	04:26	-			

\- 未達到指定的風力
not reaching the specified wind speed

* 十分鐘平均風速達每小時41-62 公里

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

\# 十分鐘持續風力達每小時63-87公里
10-minute mean wind speed of 63-87 km/h

註: 本表列出持續風力最初及最後達到強風及烈風程度的時間。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 or gale force winds were recorded. Note that the winds might fluctuate above or below the specified wind speed in between the times indicated.

表 3.4.3　　莫拉菲影響香港期間，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 Molave

站 (參閱圖 3.4.2) Station (See Fig. 3.4.2)		七月十七日 17 Jul	七月十八日 18 Jul	七月十九日 19 Jul	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory		0.4	11.7	124.6	136.7
長洲 Cheung Chau (CCH)		0.0	20.0	91.0	111.0
香港國際機場 Hong Kong International Airport (HKA)		0.0	16.2	104.9	121.1
N05粉嶺	Fanling	0.0	12.5	93.5	106.0
N13糧船灣	High Island	0.0	19.0	118.5	137.5
K04佐敦谷	Jordan Valley	0.0	22.0	121.5	143.5
N06葵涌	Kwai Chung	0.0	14.5	137.5	152.0
H12半山區	Mid Levels	0.0	14.5	143.0	157.5
N09沙田	Sha Tin	[0.0]	[15.5]	150.0	[165.5]
H19筲箕灣	Shau Kei Wan	0.5	13.0	122.0	135.5
SEK石崗	Shek Kong	0.0	14.5	90.0	104.5
K06蘇屋邨	So Uk Estate	0.0	12.5	151.0	163.5
PLC大美督	Tai Mei Tuk	0.0	10.0	[63.5]	[73.5]
R21踏石角	Tap Shek Kok	0.0	20.0	76.0	96.0
N17東涌	Tung Chung	0.0	29.5	146.0	175.5
R27元朗	Yuen Long	0.0	19.0	98.5	117.5

註：　[　] 基於不齊全的每小時雨量數據。

Note :　[　] based on incomplete hourly data.

表 3.4.4　　莫拉菲影響香港期間，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 Molave

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	2.67	19/7	03:30	0.62	19/7	03:30
石壁	Shek Pik	2.63	19/7	05:48	0.42	19/7	03:26
大廟灣	Tai Miu Wan	2.67	19/7	03:29	0.66	19/7	03:29
大埔滘	Tai Po Kau	2.90	19/7	03:43	0.84	19/7	03:48
尖鼻咀	Tsim Bei Tsui	3.15	19/7	04:57	0.93	19/7	04:24

橫瀾島沒有資料。No data for Waglan Island.

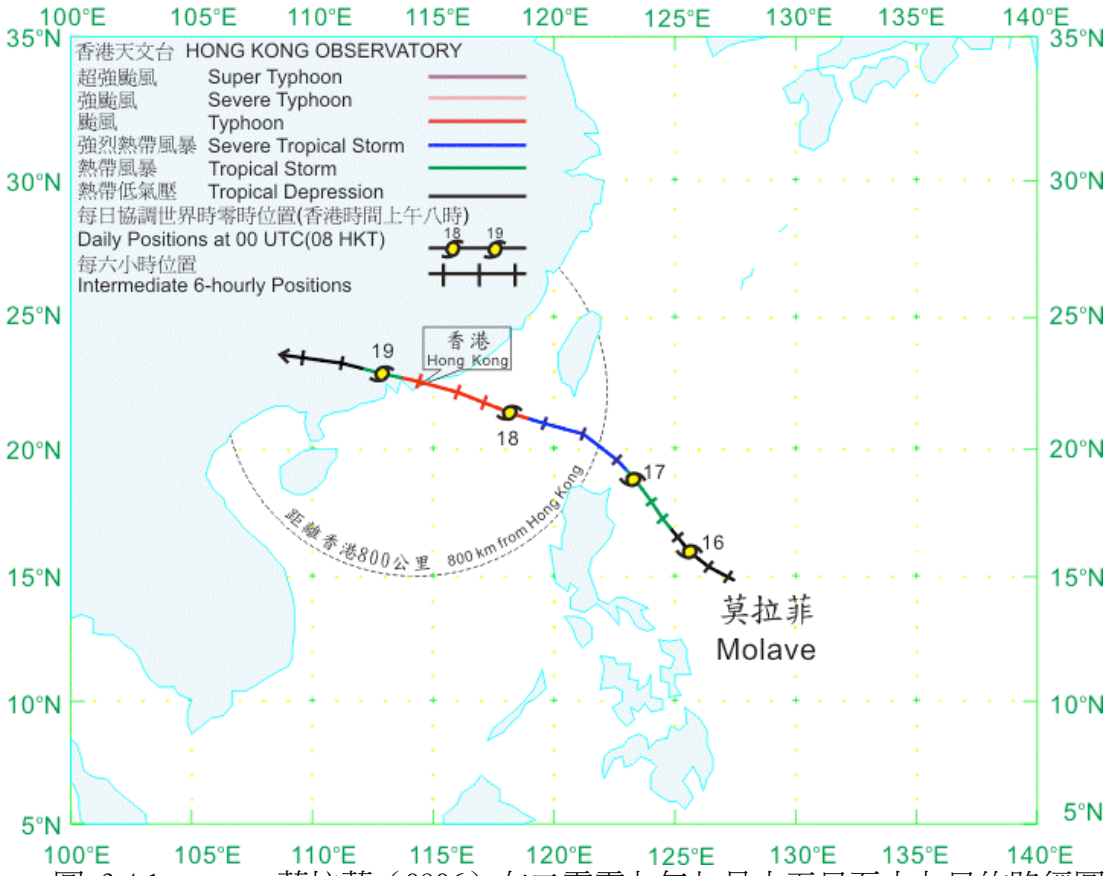


圖 3.4.1a 莫拉菲（0906）在二零零九年七月十五日至十九日的路徑圖。

Figure 3.4.1a Track of Molave (0906) on 15 – 19 July 2009.

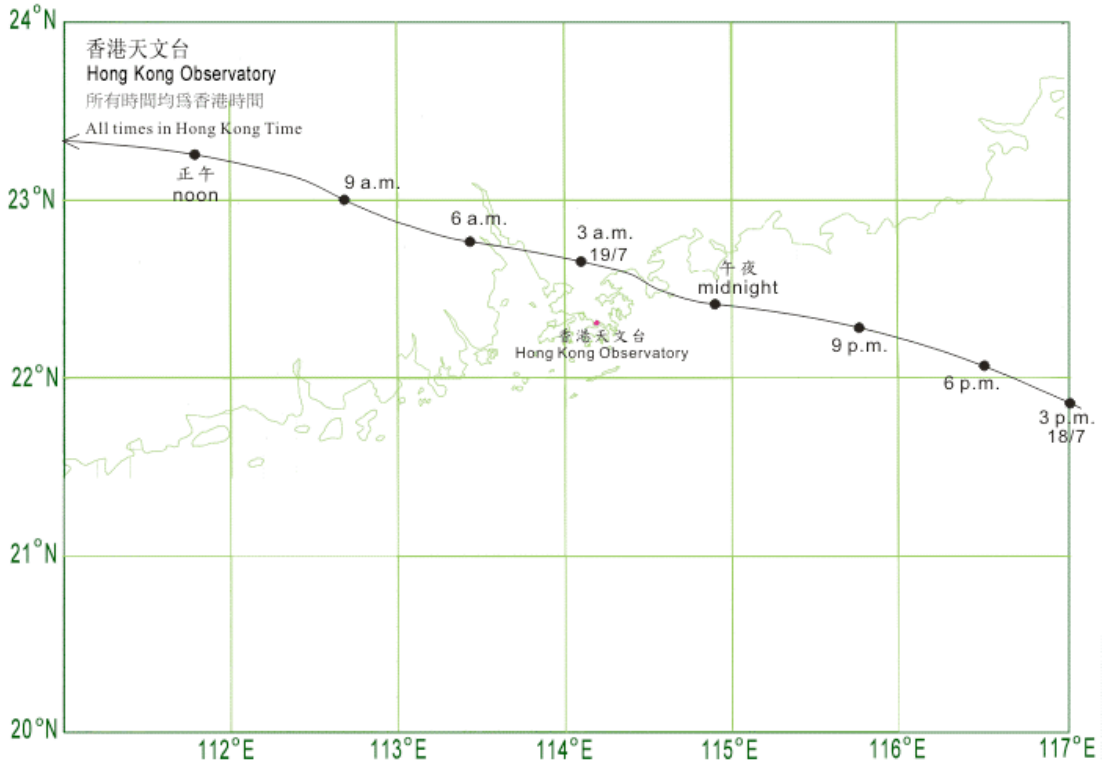


圖 3.4.1b 莫拉菲（0906）接近香港時的路徑圖。

Figure 3.4.1b Track of Molave (0906) near Hong Kong.

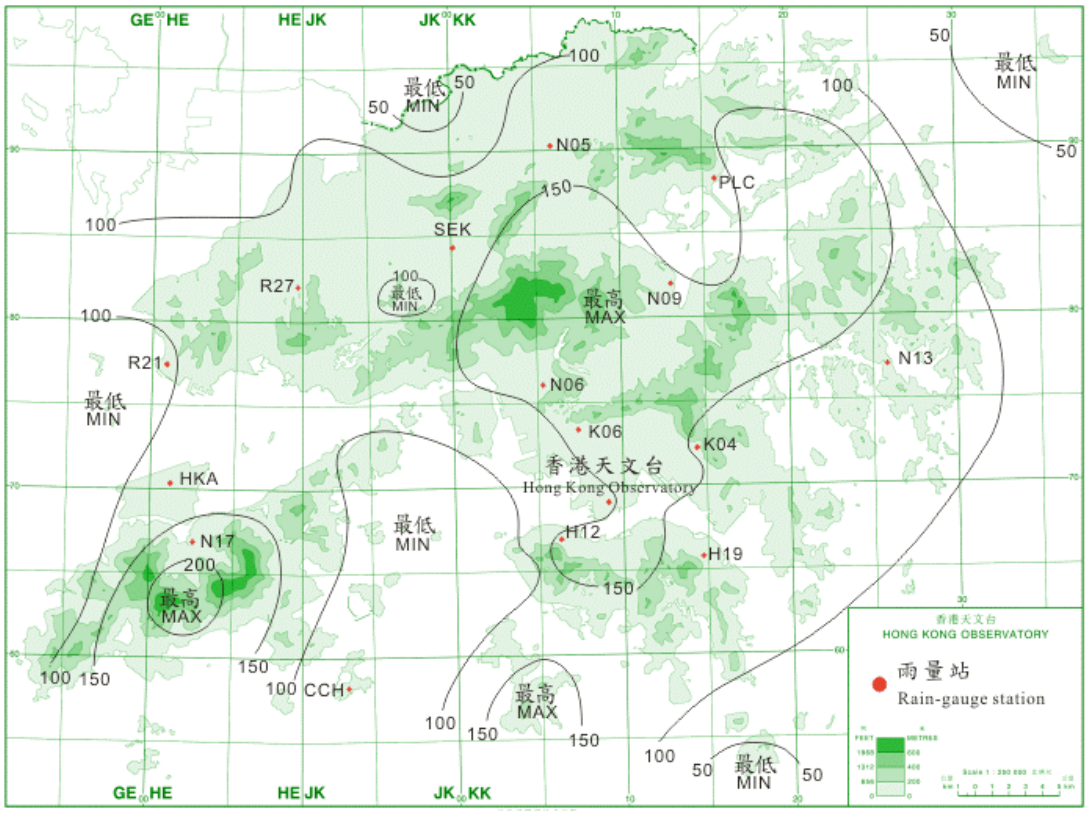


圖 3.4.2　　二零零九年七月十七日至十九日的雨量分佈(等雨量線單位為毫米)。

Figure 3.4.2　　Rainfall distribution on 17 – 19 July 2009 (isohyets are in millimetres).

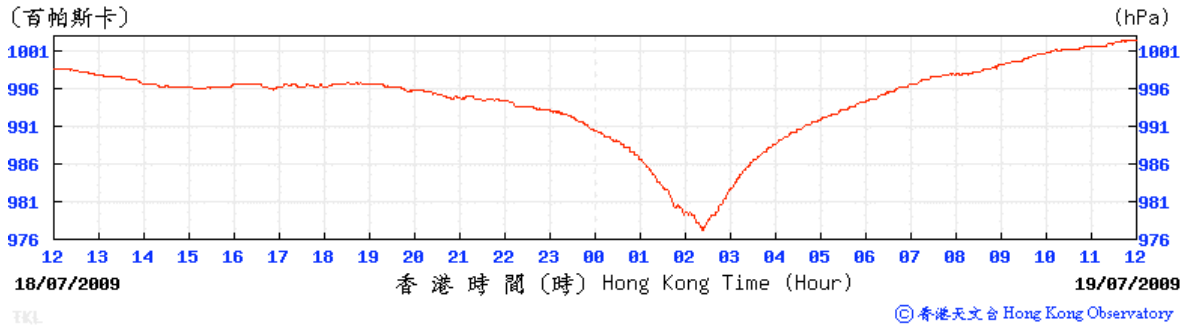


圖 3.4.3 莫拉菲影響香港期間，打鼓嶺自動氣象站錄得的海平面氣壓的時間序列。

Figure 3.4.3 Trace of mean sea level pressure recorded at Ta Kwu Ling automatic weather station during the passage of Molave.

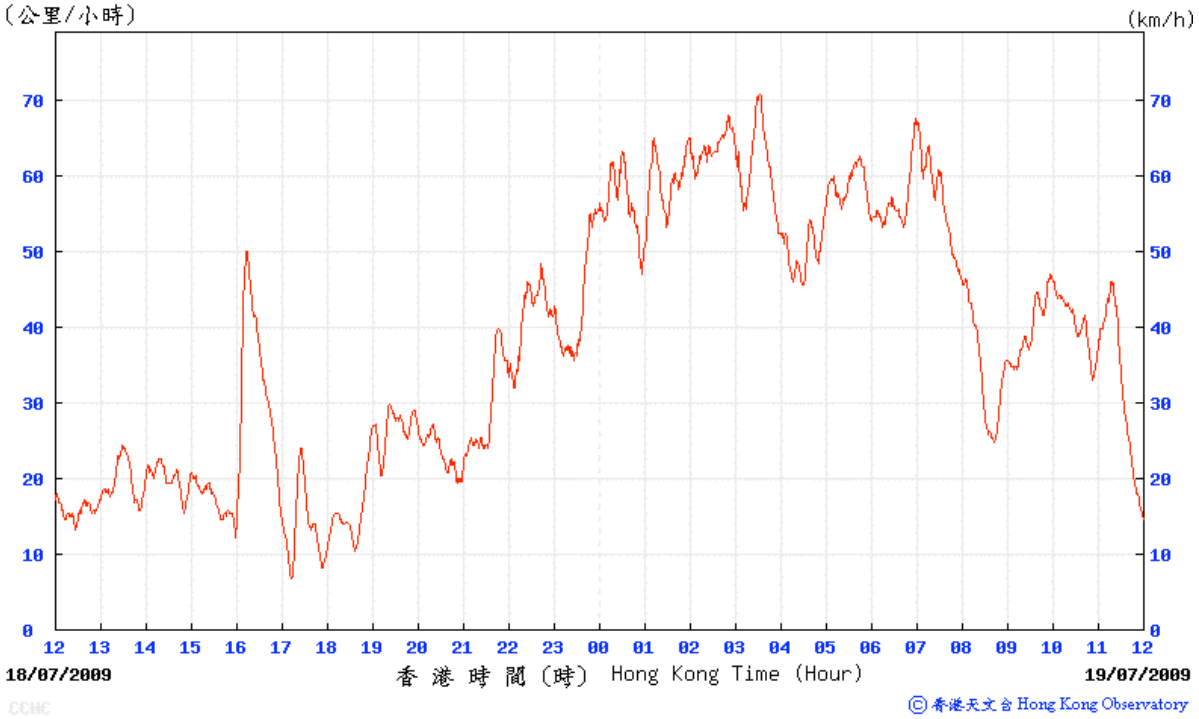


圖 3.4.4 莫拉菲影響香港期間，長洲自動氣象站錄得的十分鐘平均風速的時間序列。

Figure 3.4.4 Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station during the passage of Molave.

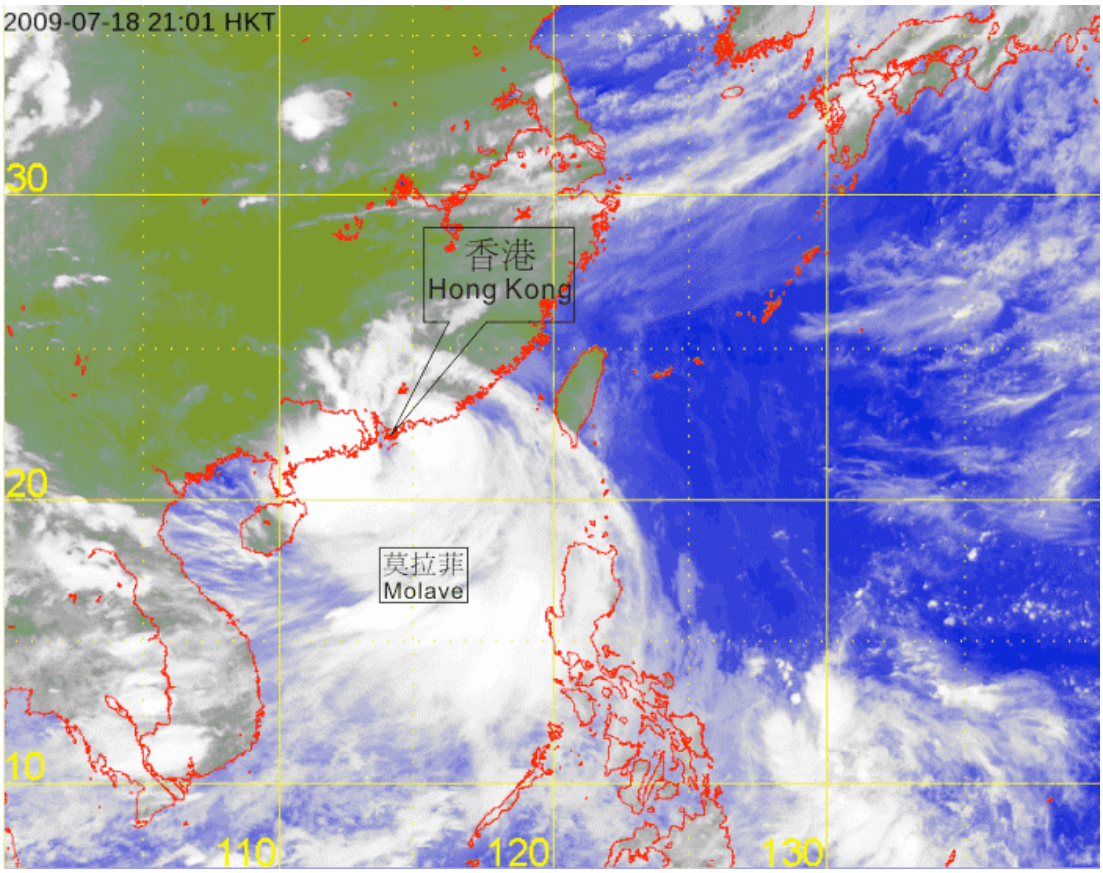


圖 3.4.5　颱風莫拉菲在二零零九年七月十八日下午9時的紅外線衛星圖片。當時莫拉菲達到其強度的頂峯，中心附近估計最高風速達到每小時140公里，並集結在香港以東約160公里。

Figure 3.4.5　Infra-red satellite imagery at 9 p.m. on 18 July 2009 of Typhoon Molave. Molave was at its peak intensity with estimated maximum winds of 140 kilometres per hour near its centre at that time, and was located about 160 km east of Hong Kong.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-1R。〕

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

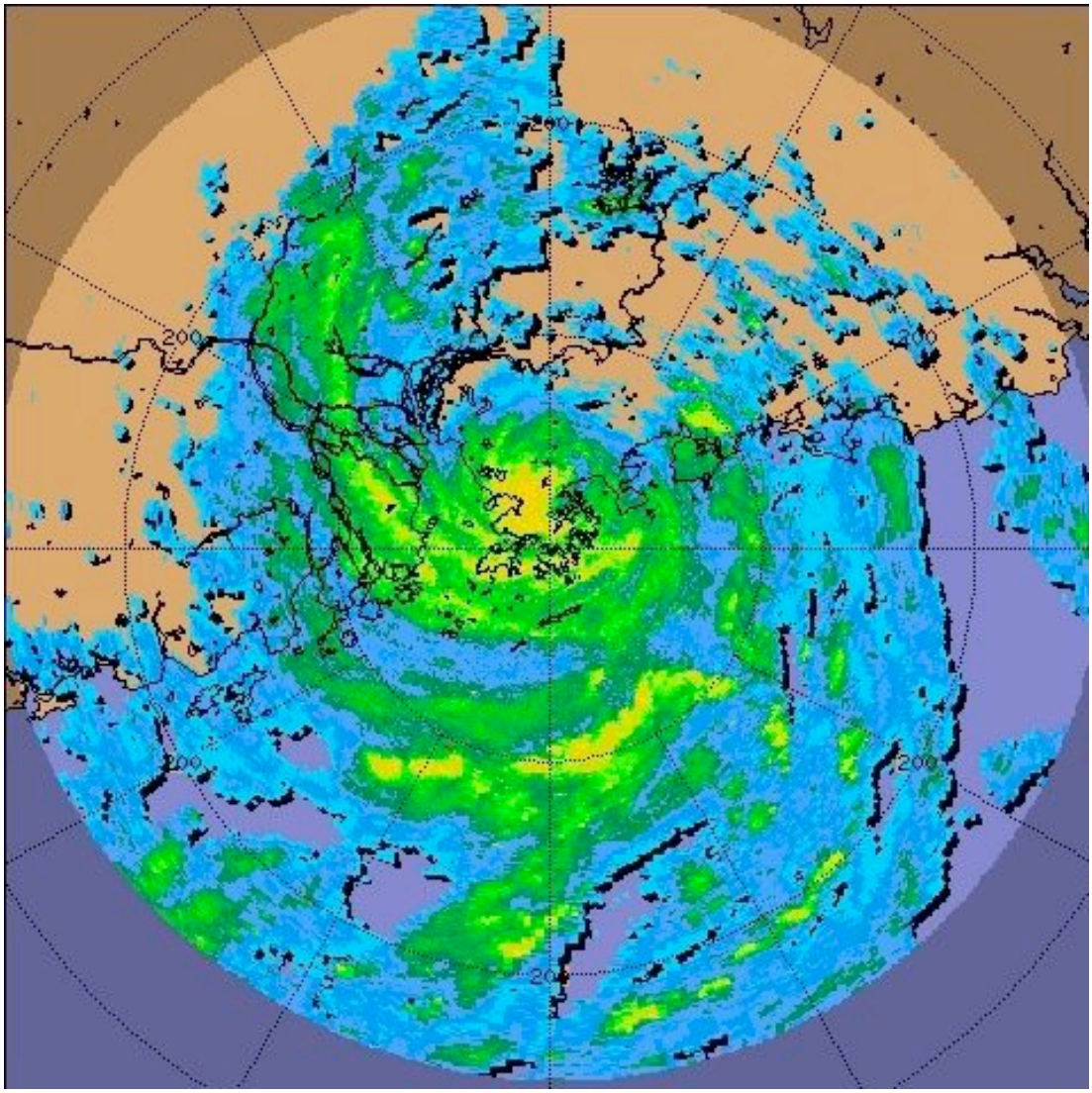


圖 3.4.6　二零零九年七月十九日上午2時30分的雷達回波圖像。當時颱風莫拉菲的中心正在橫過深圳，並最接近香港，距離天文台總部約40公里。

Figure 3.4.6　Radar echoes captured at 2:30 a.m. on 19 July 2009. The centre of Typhoon Molave was moving across Shenzhen around that time and was at its closest distance of about 40 km from the Hong Kong Observatory Headquarters.

3.5 強烈熱帶風暴天鵝(0907): 二零零九年八月一日至九日

天鵝是香港在二零零九年第五個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓天鵝於八月一日凌晨在馬尼拉東北偏東約720公里的北太平西部上形成，並向西北偏西移動，晚上橫過呂宋北部，翌日早上進入南海。天鵝於八月三日減慢移動速度，其途徑亦變得不規則，但大致移向廣東沿岸。當日黃昏天鵝增強為熱帶風暴，於八月四日下午較後時間進一步增強為強烈熱帶風暴，並達到其最高強度，其中心附近最高風速估計達每小時95公里。天鵝於八月五日在廣東西部台山附近登陸，並減弱為熱帶風暴。八月六日天鵝轉向西或西南偏西移動，橫過廣東西部沿岸地區，並減弱為熱帶低氣壓。它於八月七日向西南移動，橫過雷州半島後進入北部灣，八月八日再次增強為熱帶風暴。受到北太平洋西部颱風莫拉克的影響，天鵝於當晚轉向偏東移動，八月九日橫過南海北部，早上減弱為熱帶低氣壓，下午在西沙東北偏北約280公里的南海北部上減弱為一低壓區。

根據報章報導，天鵝為菲律賓帶來山泥傾瀉及水浸，導致最少八人死亡、四人失蹤。天鵝在廣東造成兩人死亡、7市230個鄉鎮及88 800人受災、超過1 300間房屋倒塌、11萬公頃農作物受損。海南島附近海面有四艘漁船損毀、另一艘漁船失蹤，共有四人死亡、18人失蹤。

香港天文台於八月三日下午3時15分發出一號戒備信號，當時天鵝位於香港東南偏南約380公里。本港吹和緩至清勁東風，離岸及高地間中吹強風。八月四日天鵝進一步移近本港，天文台在上午11時15分發出三號強風信號。下午風力增強，黃昏時普遍吹東至東南強風，離岸及高地風力間中達烈風程度。香港天文台總部於下午5時03分錄得最低瞬時海平面氣壓993.5百帕斯卡，當時天鵝位於香港西南偏南約130公里。隨着天鵝增強為強烈熱帶風暴及繼續移近香港，天文台於下午9時40分發出八號東南烈風或暴風信號。本港西部地區風力最強，離岸及高地吹烈風。天鵝於下午八時至十時左右最接近香港，並在香港西南約110公里掠過。隨後天鵝逐漸移離香港，本港轉吹東南風，風勢逐漸減弱。天文台在八月五日上午3時40分改發三號強風信號，取代八號信號，隨後於上午5時40分改發一號戒備信號。下午天鵝在內陸減弱為熱帶風暴，本港風勢繼續減弱，所有熱帶氣旋警告信號於下午4時正取消。天鵝影響香港期間各站錄得的最高風速及持續風力達到強風及烈風的時段可參考表3.5.1及3.5.2。

八月三日初時香港大致天晴及天氣酷熱。受到天鵝的外圍雨帶影響，下午有狂風驟雨及雷暴。八月四日及翌日大致多雲，有狂風驟雨。天文台於八月五日下午8時40分發出黃色暴雨警告。

天鵝吹襲香港期間，本港共有四人死亡、十人受傷，其中兩人在石澳對開海面一艘躉船在狂風雷暴時翻沉遇溺死亡、另一人受傷。其餘兩人分別於西環及觀塘在棚架工作時墮下死亡。火炭火炭路據報有樹墮下，但無人受傷。香港國際機場有4航班取消及17班航班延誤。

表3.5.3及3.5.4 分別是天鵝影響香港期間本港的日雨量及最高潮位資料。圖3.5.1-3.5.5 分別為天鵝的路徑圖、本港的雨量分佈圖、天文台的氣壓記錄、天鵝的衛星及雷達圖像。

3.5 Severe Tropical Storm Goni (0907): 1 – 9 August 2009

Goni was the fifth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009.

Goni developed into a tropical depression over the western North Pacific about 720 km east-northeast of Manila on the early hours of 1 August. Tracking west-northwestwards, it crossed northern Luzon that night and entered the South China Sea the next morning. On 3 August, Goni slowed down and its track became erratic but generally moved towards the coast of Guangdong. It intensified into a tropical storm that evening. Goni intensified further into a severe tropical storm and reached its peak intensity with estimated maximum winds of 95 km/h on the late afternoon of 4 August. It made landfall over western Guangdong near Taishan on 5 August and weakened into a tropical storm. Goni then turned to move west or west-southwestwards across the coastal areas of western Guangdong and weakened into a tropical depression on 6 August. On 7 August, Goni moved southwestwards and entered Beibu Wan after crossing the Leizhou Peninsula. It intensified into a tropical storm again on 8 August. Under the influence of Typhoon Morakot over the western North Pacific, Goni turned to move eastwards that night. Goni crossed the northern part of the South China Sea on 9 August. It weakened into a tropical depression in the morning and further into an area of low pressure over the northern part of the South China Sea about 280 km north-northeast of Xisha that afternoon.

According to press reports, Goni triggered landslides and floods in the Philippines, killing at least eight people with four others missing. In Guangdong, two people were killed, a total of 7 cities and 230 towns and 88 800 people were affected, over 1 300 houses collapsed, and 110 000 hectares of farmland were damaged during the passage of Goni. Four fishing vessels were damaged and another vessel missing off the seas near Hainan Island, causing four deaths and 18 people missing.

In Hong Kong, the Standby Signal No. 1 was issued at 3:15 p.m. on 3 August when Goni was about 380 km to the south-southeast. Winds in Hong Kong were moderate to fresh easterlies, occasionally strong offshore and on high ground. Goni moved closer to Hong Kong on 4 August and the Strong Wind Signal No. 3 was issued at 11:15 a.m. Winds strengthened in the afternoon and became generally strong east to southeasterlies, occasionally reaching gale force offshore and on high ground in the evening. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 993.5 hPa was recorded at 5:03 p.m. when Goni was about 130 km to the south-southwest. As Goni strengthened into a severe tropical storm and continued to move closer to Hong Kong, the No. 8 Southeast Gale or Storm Signal was issued at 9:40 p.m. Winds were strongest in the western parts of Hong Kong with gales offshore and on high ground. Goni was closest to Hong Kong between about 8 p.m. and 10 p.m. when it passed about 110 km to the southwest. With Goni moving gradually away from Hong Kong thereafter, local winds became southeasterlies and gradually subsided. The No. 8 Signal was replaced by the Strong Wind Signal No. 3 at 3:40 a.m. on 5 August, followed by the No. 1 Signal at 5:40 a.m. Goni weakened into a tropical storm overland in the afternoon and local winds continued to subside. All tropical cyclone warning signals were cancelled at 4:00 p.m. that day. The maximum winds recorded at various stations and the periods of strong and gale force winds during the passage of Goni are given in Tables 3.5.1 and 3.5.2 respectively.

The weather in Hong Kong was mainly fine and very hot at first on 3 August. Under the influence of the outer rainbands of Goni, there were squally showers and thunderstorms in the afternoon. It was mainly cloudy with squally showers on 4 August and the following day. The Amber Rainstorm Warning was issued at 8:40 p.m. on 5 August.

In Hong Kong, four people were killed and ten people were injured during the passage of Goni, including two men drowned and another injured when a barge capsized off Shek O during the squally thunderstorms, and two people killed when they fell off from the scaffolding they were working at Western District and Kwun Tong respectively. A tree was reported collapsed in Fo Tan Road, Fo Tan, but no one was injured. At the Hong Kong International Airport, 4 flights were cancelled and 17 flights were delayed.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Goni is given in Tables 3.5.3 and 3.5.4 respectively. Figures 3.5.1 - 3.5.5 show respectively the track of Goni, the rainfall distribution for Hong Kong, time series of pressure recorded at the Hong Kong Observatory, a satellite and radar imagery of Goni.

表 3.5.1　在天鵝影響下，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 Goni were in force

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東北偏東	ENE	72	3/8	23:15	東南偏東	ESE	45	4/8	20:00
中環碼頭	Central Pier	東北偏東	ENE	65	4/8	12:28	東	E	43	3/8	23:00
長洲	Cheung Chau	東南偏東	ESE	85	4/8	18:47	東南偏東	ESE	67	4/8	20:00
長沙灣	Cheung Sha Wan	東北	NE	54	4/8	08:37	東北	NE	19	3/8	22:00
							東北偏東	ENE	19	4/8	15:00
							東北偏東	ENE	19	4/8	19:00
青洲	Green Island	東北	NE	83	4/8	17:57	東北	NE	56	4/8	16:00
香港國際機場	Hong Kong International Airport	南	S	72	5/8	11:26	東南偏東	ESE	45	4/8	21:00
啟德	Kai Tak	東	E	65	4/8	13:31	東南偏東	ESE	34	5/8	01:00
京士柏	King's Park	東南偏東	ESE	58	4/8	15:44	東南偏東	ESE	25	4/8	20:00
							東南偏東	ESE	25	4/8	21:00
流浮山	Lau Fau Shan	東南偏南	SSE	58	5/8	10:56	東	E	30	4/8	19:00
昂坪	Ngong Ping	東	E	117	4/8	22:36	東	E	87	4/8	20:00
北角	North Point	-	-	68	3/8	22:49	-	-	34	3/8	23:00
坪洲	Peng Chau	東北偏東	ENE	63	4/8	14:02	東北偏東	ENE	45	4/8	17:00
		東北偏東	ENE	63	4/8	14:34					
		東南偏南	SSE	63	5/8	10:33					
平洲	Ping Chau	東	E	58	4/8	14:55	東	E	16	4/8	12:00
							東	E	16	4/8	15:00
西貢	Sai Kung	東北偏東	ENE	70	4/8	11:43	東南偏南	SSE	41	5/8	10:00
沙洲	Sha Chau	南	S	68	5/8	11:43	東南偏東	ESE	51	4/8	20:00
沙螺灣	Sha Lo Wan	東南偏東	ESE	79	4/8	20:43	東	E	40	4/8	19:00
沙田	Sha Tin	東北	NE	54	4/8	05:52	東南	SE	25	4/8	22:00
石崗	Shek Kong	東北	NE	59	4/8	12:04	東	E	30	3/8	18:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	62	4/8	20:06	東	E	38	4/8	20:00
打鼓嶺	Ta Kwu Ling	東	E	51	4/8	20:16	東	E	22	4/8	21:00
大美督	Tai Mei Tuk	西南偏西	WSW	77	4/8	12:09	東	E	45	4/8	18:00
							東	E	45	4/8	20:00
大帽山	Tai Mo Shan	東	E	99	4/8	18:59	東	E	67	4/8	20:00
塔門	Tap Mun	東南	SE	62	5/8	12:41	東南	SE	38	5/8	00:00
大老山	Tate's Cairn	東	E	87	3/8	22:54	東	E	56	4/8	11:00
		東	E	87	3/8	23:35					
鯽魚湖	Tsak Yue Wu	東	E	43	4/8	12:21	東北偏東	ENE	14	4/8	13:00
將軍澳	Tseung Kwan O	東南偏東	ESE	58	4/8	21:42	東南	SE	19	4/8	22:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	52	4/8	20:18	東南	SE	25	5/8	12:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	62	4/8	21:17	東南	SE	25	5/8	11:00
							東南	SE	25	5/8	15:00
橫瀾島	Waglan Island	東南偏東	ESE	76	4/8	20:24	東北偏東	ENE	58	4/8	11:00
濕地公園	Wetland Park	東	E	45	4/8	20:01	東南偏東	ESE	20	3/8	17:00
							東	E	20	4/8	15:00
							東	E	20	4/8	20:00
黃竹坑	Wong Chuk Hang	東南偏南	SSE	70	4/8	17:24	東	E	31	3/8	23:00

表 3.5.2　在天鵝影響下，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及烈風程度的時段

Table 3.5.2　Periods during which sustained strong and gale force winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Goni 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		最初達到烈風#時間 First time reaching gale force#		最後達到烈風#時間 Last time reaching gale force#	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	3/8	16:03	5/8	14:18	4/8	18:32	4/8	21:09
香港國際機場	Hong Kong International Airport	3/8	16:54	5/8	15:16	-			
啟德	Kai Tak	4/8	22:13	4/8	22:13	-			
西貢	Sai Kung	4/8	11:47	5/8	14:21	-			

\- 未達到指定的風力

not reaching the specified wind speed

* 十分鐘平均風速達每小時41-62 公里

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

\# 十分鐘持續風力達每小時63-87公里

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

註: 本表列出持續風力最初及最後達到強風及烈風程度的時間。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 or gale force winds were recorded. Note that the winds might fluctuate above or below the specified wind speed in between the times indicated.

表 3.5.3　　天鵝影響香港期間，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 Goni

站 (參閱圖 3.5.2) Station (See Fig. 3.5.2)		八月三日 3 Aug	八月四日 4 Aug	八月五日 5 Aug	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory		21.4	21.3	92.5	135.2
長洲 Cheung Chau (CCH)		15.0	9.5	33.5	58.0
香港國際機場 Hong Kong International Airport (HKA)		4.4	11.7	78.1	94.2
N05粉嶺	Fanling	1.5	25.5	90.0	117.0
N13糧船灣	High Island	14.5	29.0	13.0	56.5
K04佐敦谷	Jordan Valley	21.0	33.5	62.0	116.5
N06葵涌	Kwai Chung	11.5	29.0	97.5	138.0
H12半山區	Mid Levels	22.0	25.5	95.0	142.5
H21淺水灣	Repulse Bay	20.0	15.5	80.5	116.0
N09沙田	Sha Tin	[13.5]	28.5	72.5	[114.5]
H19筲箕灣	Shau Kei Wan	19.0	23.0	57.0	99.0
SEK石崗	Shek Kong	7.5	38.0	56.0	101.5
K06蘇屋邨	So Uk Estate	14.0	40.0	96.0	150.0
R31大美督	Tai Mei Tuk	13.0	23.5	58.0	94.5
R21踏石角	Tap Shek Kok	2.0	13.5	52.0	67.5
N17東涌	Tung Chung	5.0	22.0	104.5	131.5
R27元朗	Yuen Long	2.0	15.0	55.0	72.0

註：　[　] 基於不齊全的每小時雨量數據。

Note :　[　] based on incomplete hourly data.

表 3.5.4　　天鵝影響香港期間，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 Goni

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	2.58	4/8	07:53	0.35	4/8	00:11
石壁	Shek Pik	2.61	4/8	07:07	0.27	4/8	07:07
大廟灣	Tai Miu Wan	2.58	4/8	07:40	0.45	4/8	05:13
大埔滘	Tai Po Kau	2.55	4/8	05:56	0.44	4/8	15:05
尖鼻咀	Tsim Bei Tsui	2.99	5/8	09:08	0.53	5/8	01:03
橫瀾島	Waglan Island	2.72	4/8	07:26	0.42	4/8	07:26

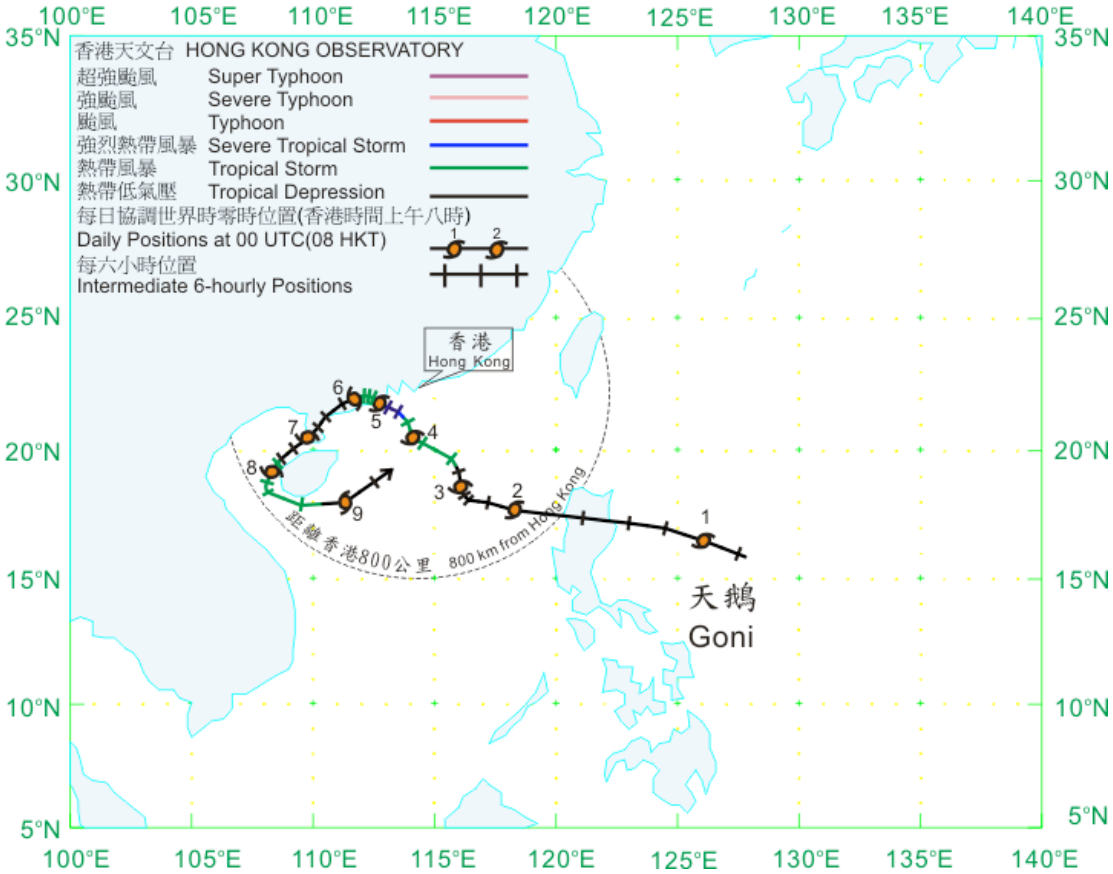


圖 3.5.1a 天鵝（0907）在二零零九年八月一日至九日的路徑圖。

Figure 3.5.1a Track of Goni (0907) on 1 – 9 August 2009.

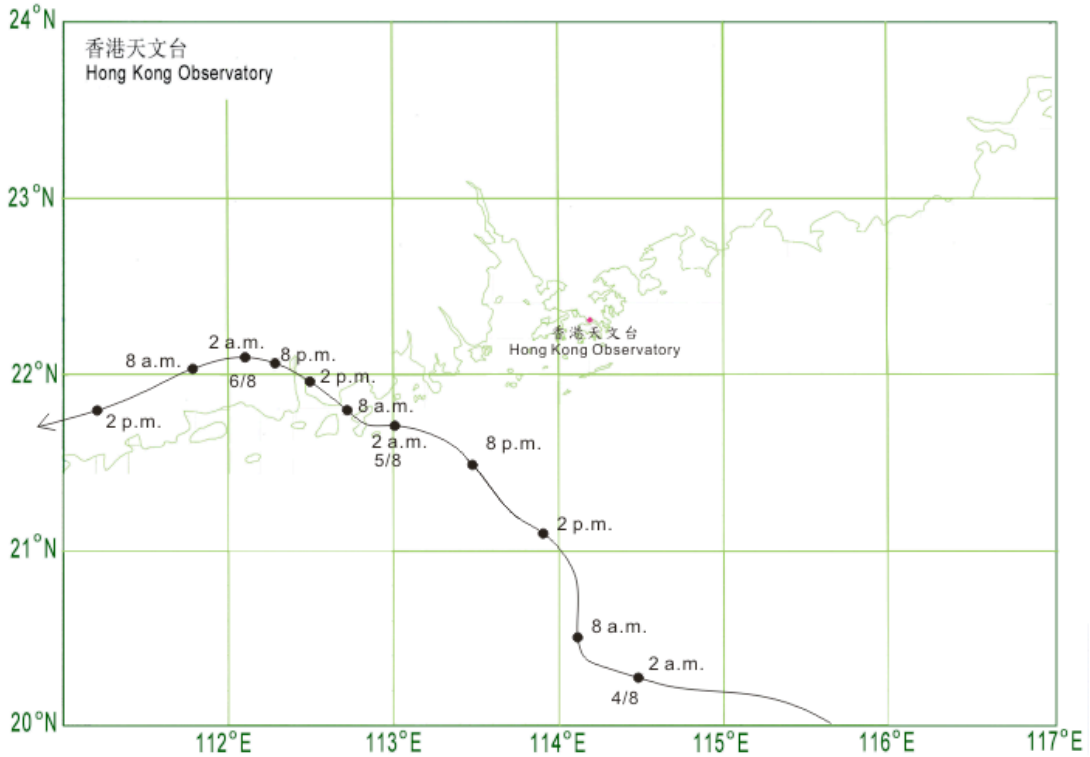


圖 3.5.1b 天鵝（0907）接近香港時的路徑圖。

Figure 3.5.1b Track of Goni (0907) near Hong Kong.

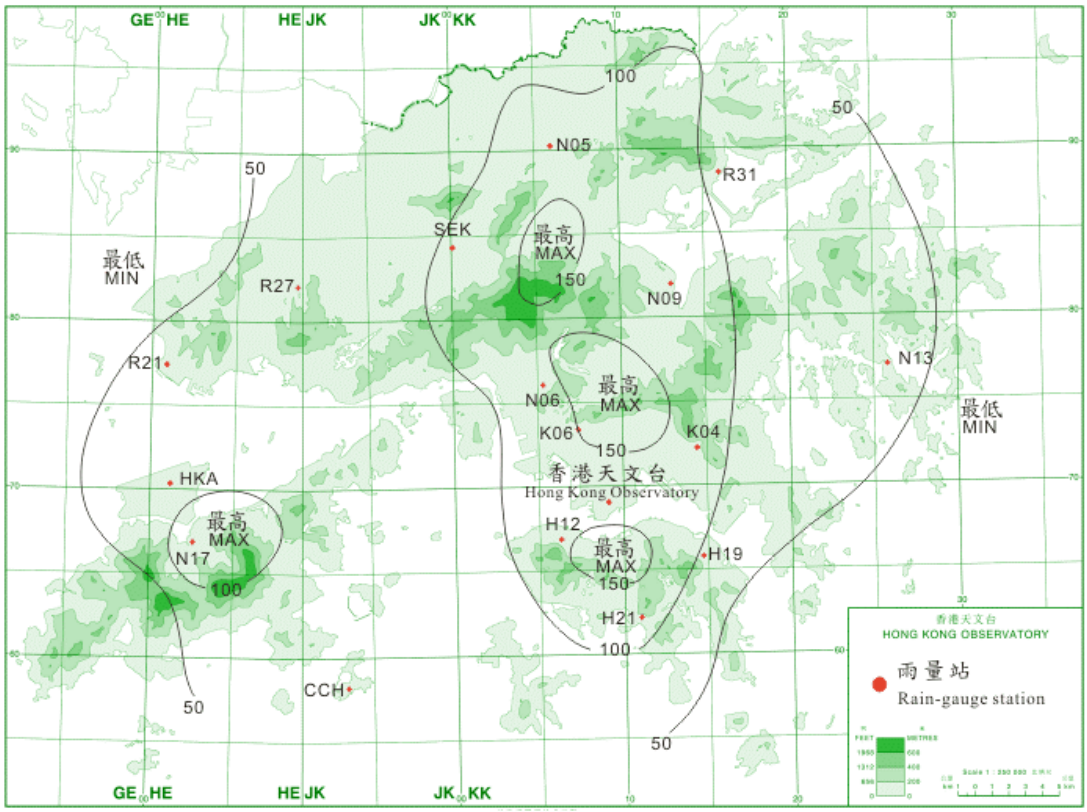


圖 3.5.2　　二零零九年八月三日至五日的雨量分佈(等雨量線單位為毫米)。

Figure 3.5.2　　Rainfall distribution on 3 – 5 August 2009 (isohyets are in millimetres).

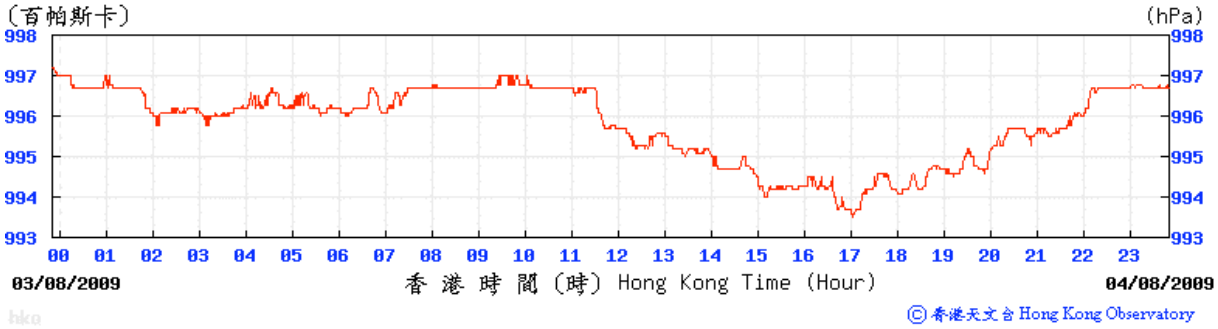


圖 3.5.3　　天鵝影響香港期間，天文台總部錄得的海平面氣壓的時間序列。

Figure 3.5.3　　Trace of mean sea level pressure recorded at the Hong Kong Observatory Headquarters during the passage of Goni.

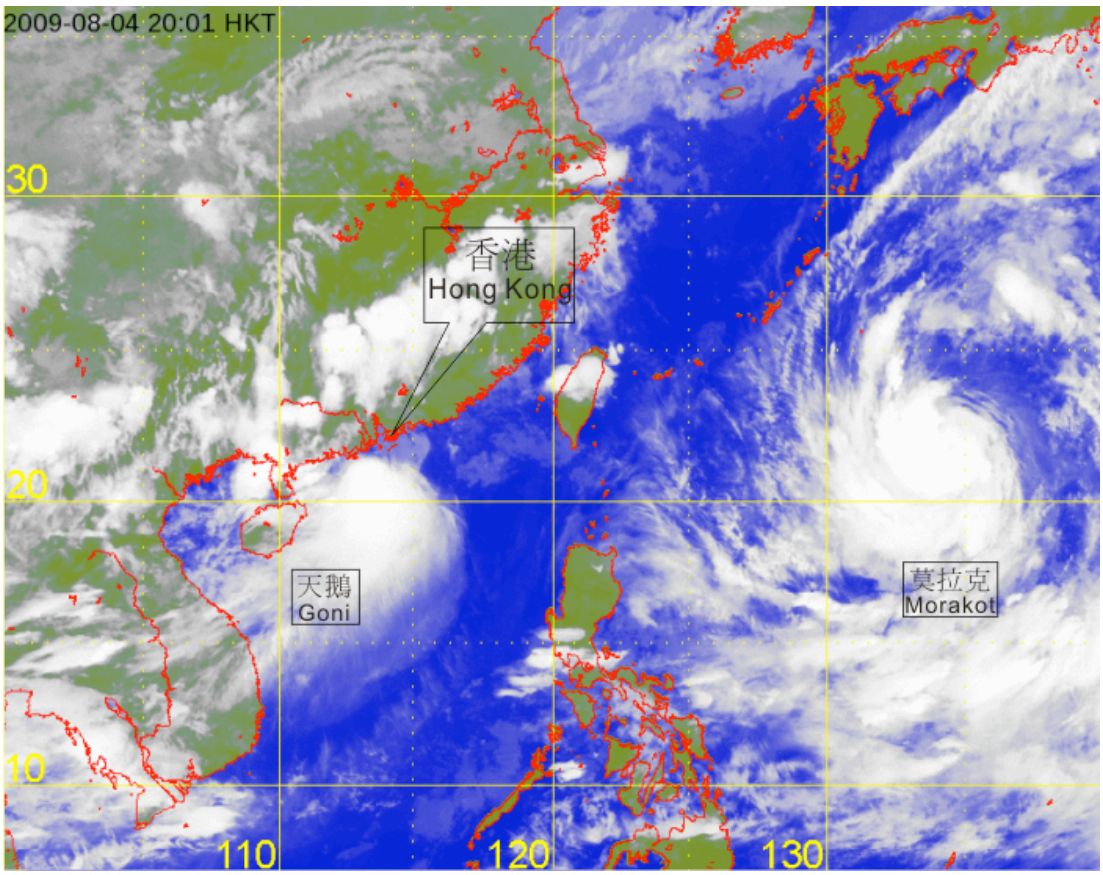


圖 3.5.4　強烈熱帶風暴天鵝在二零零九年八月四日下午8時的紅外線衛星圖片。當時天鵝集結在香港西南約110公里，並達到其最高強度，中心附近估計最高風速達到每小時95公里。另一熱帶氣旋莫拉克則集結在台灣以東的北太平洋西部上。

Figure 3.5.4　Infra-red satellite imagery at 8 p.m. on 4 August 2009 of Severe Tropical Storm Goni. Goni was located about 110 km southwest of Hong Kong and at its peak intensity with estimated maximum winds of 95 kilometres per hour near its centre. Another tropical cyclone Morakot was located over the western Pacific to the east of Taiwan.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-1R。〕

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

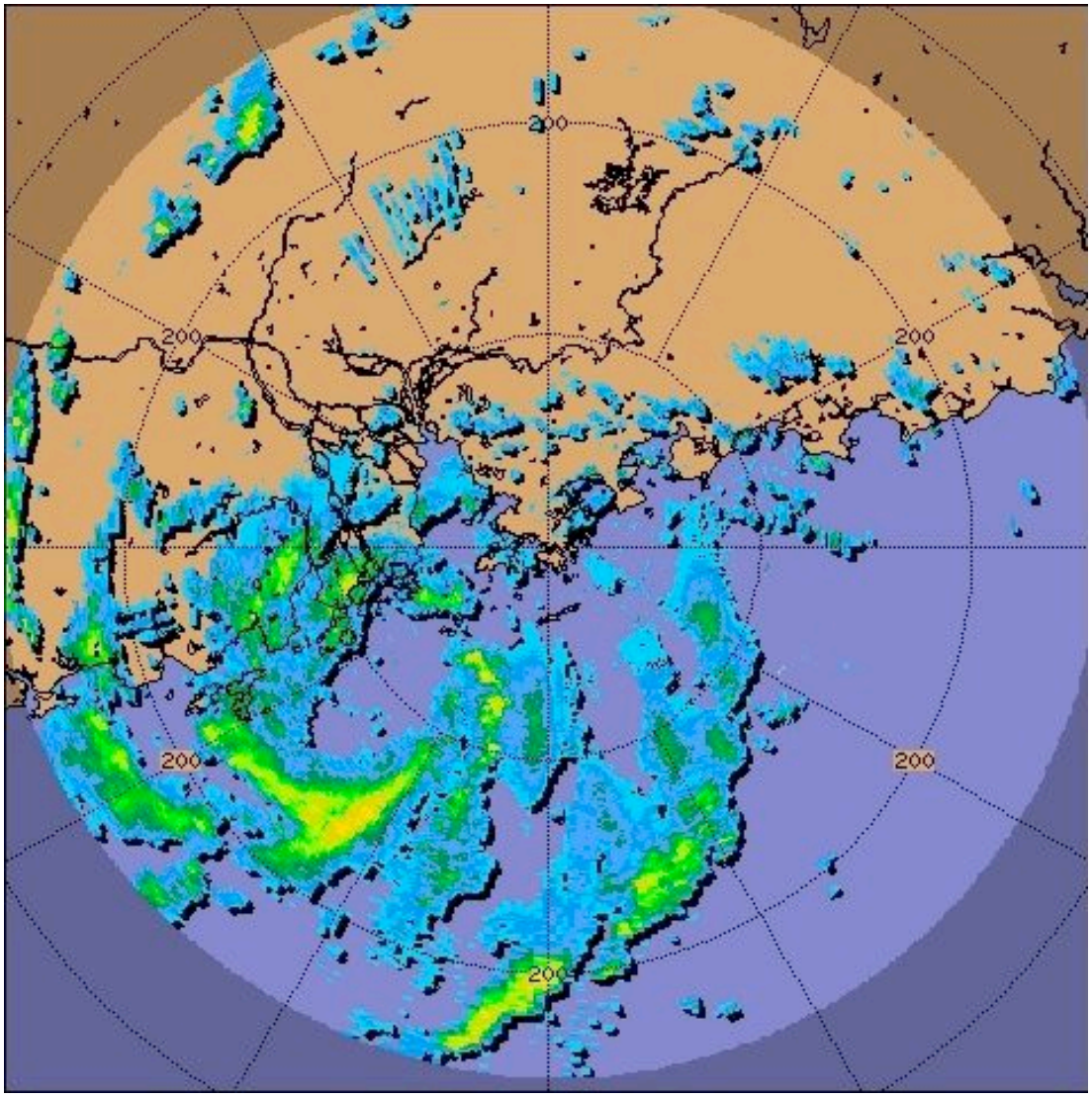


圖 3.5.5　二零零九年八月四日下午9時的雷達回波圖像。當時強烈熱帶風暴天鵝的風眼最接近香港，並在香港西南約110公里。

Figure 3.5.5　Radar echoes captured at 9:00 p.m. on 4 August 2009. The eye of Severe Tropical Storm Goni was at its closest distance of about 110 km to the southwest of Hong Kong at that time.

3.6 熱帶風暴彩虹(0913)：二零零九年九月九日至十二日

彩虹是香港在二零零九年第六個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓彩虹於九月九日早上在香港東南約790公里的南海中部上形成。它初時向西北移動，下午開始向西北偏西移動，橫過南海北部。彩虹於九月十日增強為熱帶風暴，晚上轉向西移動。它於九月十一日凌晨達到其最高強度，中心附近最高風速估計達每小時75公里，並橫過海南島北部，早上進入北部灣。九月十二日早上彩虹在越南北部登陸，並減弱為熱帶低氣壓，下午在越南北部進一步減弱為一低壓區。根據報章報導，彩虹為菲律賓帶來水浸及山泥傾瀉，並導致五人死亡。海南島、廣東及廣西有超過74 000艘漁船回港避風。越南在彩虹吹襲期間有一人死亡、另一人受傷。

香港天文台於九月十日上午4時35分發出一號戒備信號，當時彩虹位於香港東南偏南約450公里。當日早上本港吹和緩至清勁東北風，離岸及高地吹強風。彩虹於下午二時左右最接近本港，並在香港以南約330公里處掠過。下午本港風勢增強及轉吹東風，天文台在下午2時35分發出三號強風信號。香港天文台總部於下午3時02分至5時11分錄得最低瞬時海平面氣壓1005.2百帕斯卡。下午較後及晚上本港普遍吹強風，離岸及高地風力間中達烈風程度。隨着彩虹逐漸移離香港，九月十一日凌晨本港風勢逐漸緩和，天文台在上午3時35分改發一號戒備信號，取代三號強風信號。其後風勢進一步減弱，天文台在上午6時25分取消所有熱帶氣旋警告信號，而彩虹亦移至香港西南偏西約520公里處。彩虹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3.6.1及3.6.2。

九月十日初時香港大致多雲，日間開始有零散狂風驟雨。九月十一日持續多雲，間中有雨及局部地區有狂風雷暴。

彩虹吹襲香港期間，一牌玻璃從旺角一幢大廈墮下，碎片傷及一名途人。此外，本港並沒有其它嚴重的破壞報告。

表3.6.3及3.6.4 分別是彩虹影響香港期間本港的日雨量及最高潮位資料。圖3.6.1-3.6.4 分別為彩虹的路徑圖、本港的雨量分佈圖、彩虹的衛星圖像及相關的雷達圖像。

3.6 Tropical Storm Mujigae (0913): 9 – 12 September 2009

Mujigae was the sixth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009.

Mujigae developed into a tropical depression over the central part of the South China Sea about 790 km southeast of Hong Kong on the morning of 9 September. It moved northwestwards at first but soon took on a west-northwesterly track across the northern part of the South China Sea that afternoon. Mujigae intensified into a tropical storm on 10 September and turned to move westwards at night. It reached its peak intensity with estimated maximum winds of about 75 km/h near its centre in the small hours of 11 September while moving across the northern part of Hainan Island. Mujigae entered Beibu Wan that morning. It made landfall over northern Vietnam on the morning of 12 September and weakened into a tropical depression. Mujigae weakened further into an area of low pressure over northern Vietnam that afternoon. According to press reports, flooding and landslides triggered by Mujigae resulted in five deaths in the Philippines. In Hainan Island, Guangdong and Guangxi, over 74 000 fishing boats had to return to harbour to seek shelter. In Vietnam, one person was killed and another injured during the passage of Mujigae.

In Hong Kong, the Standby Signal No. 1 was issued at 4:35 a.m. on 10 September when Mujigae was about 450 km to the south-southeast. Winds in Hong Kong that morning were moderate to fresh northeasterlies, strong offshore and on high ground. Mujigae was closest to Hong Kong at about 2 p.m. passing about 330 km to the south. Local winds strengthened from the east in the afternoon and the Strong Wind Signal No. 3 was issued at 2:35 p.m. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1005.2 hPa was recorded between 3:02 p.m. and 5:11 p.m. Winds became generally strong in the late afternoon and at night, occasionally reaching gale force offshore and on high ground. Local winds gradually moderated in the small hours of 11 September as Mujigae moved away from Hong Kong and the Strong Wind No. 3 Signal was replaced by the Standby Signal No. 1 at 3:35 a.m. Local winds subsided further later and all signals were cancelled at 6:25 a.m. when Mujigae had moved to about 520 km west-southwest of Hong Kong. The maximum winds recorded at various stations and the periods of strong winds during the passage of Mujigae are given in Tables 3.6.1 and 3.6.2 respectively.

The weather in Hong Kong was mainly cloudy at first on 10 September. Scattered squally showers started to affect Hong Kong during the day. The weather remained cloudy with occasional rain and isolated squally thunderstorms on 11 September.

In Hong Kong, a passer-by was injured by pieces of broken glass as a glass sheet fell from a building in Mongkok during the passage of Mujigae. There were no other reports of significant damage in Hong Kong.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Mujigae is given in Tables 3.6.3 and 3.6.4 respectively. Figures 3.6.1 - 3.6.4 show respectively the track of Mujigae, the rainfall distribution for Hong Kong, a satellite imagery of Mujigae and a related radar imagery.

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

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

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/ 月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/ 月份 Date/ Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東北偏東	ENE	79	10/9	18:03	東北偏東	ENE	43	10/9	20:00
中環碼頭	Central Pier	東	E	67	10/9	20:07	東	E	47	10/9	17:00
長洲	Cheung Chau	東南偏東	ESE	79	10/9	20:28	東	E	51	10/9	22:00
長沙灣	Cheung Sha Wan	東	E	52	10/9	19:21	東	E	20	10/9	17:00
青洲	Green Island	東北	NE	96	10/9	16:17	東北	NE	65	10/9	17:00
香港國際機場	Hong Kong International Airport	東	E	56	10/9	20:44	東	E	36	10/9	23:00
啟德	Kai Tak	東	E	72	10/9	20:04	東	E	34	10/9	17:00
京士柏	King's Park	東南偏東	ESE	62	10/9	18:27	東	E	25	10/9	21:00
流浮山	Lau Fau Shan	東	E	56	10/9	17:22	東	E	30	10/9	14:00
昂坪	Ngong Ping	東北偏東	ENE	110	10/9	19:44	東	E	77	10/9	21:00
北角	North Point	東	E	72	10/9	16:14	東	E	36	10/9	20:00
							東	E	36	10/9	21:00
平洲	Ping Chau	東	E	56	10/9	20:42	東	E	14	10/9	20:00
							東	E	14	10/9	22:00
西貢	Sai Kung	東北偏東	ENE	62	10/9	19:23	東北偏東	ENE	41	10/9	21:00
沙洲	Sha Chau	東	E	56	10/9	17:14	東	E	38	10/9	18:00
沙螺灣	Sha Lo Wan	東	E	68	10/9	18:57	東	E	38	10/9	19:00
沙田	Sha Tin	東	E	51	10/9	18:18	東北偏東	ENE	20	10/9	21:00
		東	E	51	10/9	19:30					
石崗	Shek Kong	東南偏東	ESE	62	10/9	16:39	東	E	23	11/9	02:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	63	10/9	16:02	東	E	34	10/9	17:00
打鼓嶺	Ta Kwu Ling	東	E	49	10/9	20:33	東	E	19	10/9	18:00
		東	E	49	10/9	20:38	東	E	19	10/9	21:00
		東北偏東	ENE	49	10/9	21:01					
大美督	Tai Mei Tuk	東	E	75	10/9	17:07	東	E	49	10/9	22:00
大帽山	Tai Mo Shan	東	E	88	10/9	21:22	東	E	56	10/9	22:00
塔門	Tap Mun	東	E	59	10/9	17:11	東	E	30	10/9	07:00
大老山	Tate's Cairn	東南偏東	ESE	87	10/9	18:22	東南偏東	ESE	59	10/9	22:00
鯽魚湖	Tsak Yue Wu	東	E	49	10/9	19:19	東北偏東	ENE	16	10/9	14:00
將軍澳	Tseung Kwan O	東北偏東	ENE	52	10/9	16:59	東北偏北	NNE	19	10/9	11:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	45	10/9	13:40	東南偏東	ESE	19	10/9	17:00
		東南偏東	ESE	45	10/9	16:27					
屯門政府合署	Tuen Mun Government Offices	東北偏北	NNE	49	10/9	13:29	東北偏北	NNE	19	10/9	11:00
橫瀾島	Waglan Island	東	E	83	10/9	17:59	東	E	67	10/9	16:00
濕地公園	Wetland Park	東南偏東	ESE	43	10/9	17:47	東	E	22	10/9	18:00
黃竹坑	Wong Chuk Hang	東	E	65	10/9	16:12	東	E	31	10/9	20:00

表 3.6.2　　在彩虹影響下，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 3.6.2　Periods during which sustained strong winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Mujigae 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	時間	日期/月份	時間
		Date/Month	Time	Date/Month	Time
長洲	Cheung Chau	10/9	10:32	11/9	04:33
啟德	Kai Tak	10/9	16:15	10/9	16:18
西貢	Sai Kung	10/9	15:46	10/9	23:35

* 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 speed in between the times indicated.

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

站 (參閱圖 3.6.2) Station (See Fig. 3.6.2)		九月十日 10 Sep	九月十一日 11 Sep	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory		0.9	11.8	12.7
長洲 Cheung Chau (CCH)		1.5	12.0	13.5
香港國際機場 Hong Kong International Airport (HKA)		0.3	14.6	14.9
N13糧船灣	High Island	0.0	1.0	1.0
K04佐敦谷	Jordan Valley	0.0	6.5	6.5
N06葵涌	Kwai Chung	1.0	5.0	6.0
H12半山區	Mid Levels	2.5	23.5	26.0
H21淺水灣	Repulse Bay	1.0	43.5	44.5
SHA沙田	Sha Tin	0.0	3.5	3.5
H19筲箕灣	Shau Kei Wan	1.5	9.5	11.0
SEK石崗	Shek Kong	1.0	5.0	6.0
K06蘇屋邨	So Uk Estate	0.5	9.0	9.5
R31大美督	Tai Mei Tuk	0.0	1.0	1.0
R21踏石角	Tap Shek Kok	0.0	3.0	3.0
N17東涌	Tung Chung	2.0	32.0	34.0
R27元朗	Yuen Long	0.0	2.0	2.0

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

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	2.51	11/9	00:58	0.48	10/9	16:57
石壁	Shek Pik	2.54	11/9	00:50	0.44	10/9	13:44
大廟灣	Tai Miu Wan	2.48	11/9	00:55	0.50	10/9	13:16
大埔滘	Tai Po Kau	2.52	11/9	02:02	0.65	10/9	13:18
尖鼻咀	Tsim Bei Tsui	2.77	11/9	00:48	0.49	10/9	17:45

橫瀾島沒有資料。No data for Waglan Island.

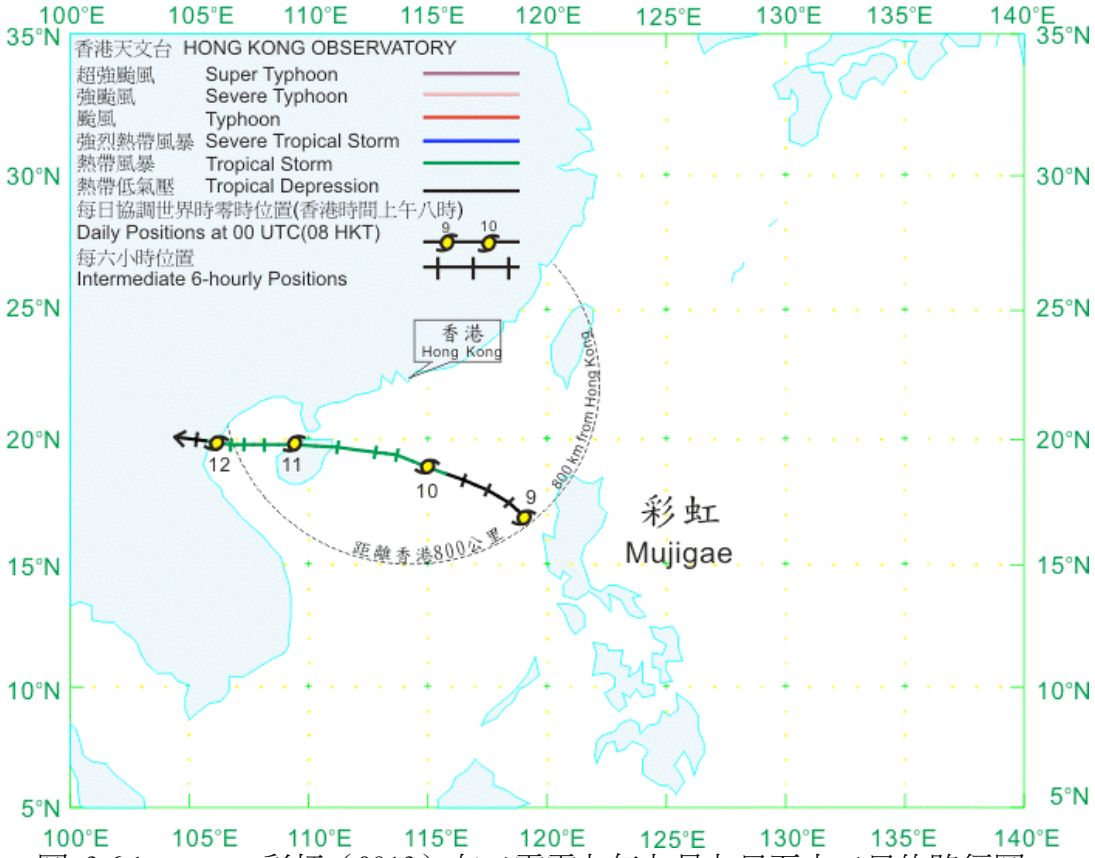


圖 3.6.1 彩虹（0913）在二零零九年九月九日至十二日的路徑圖。

Figure 3.6.1 Track of Mujigae (0913) on 9 – 12 September 2009.

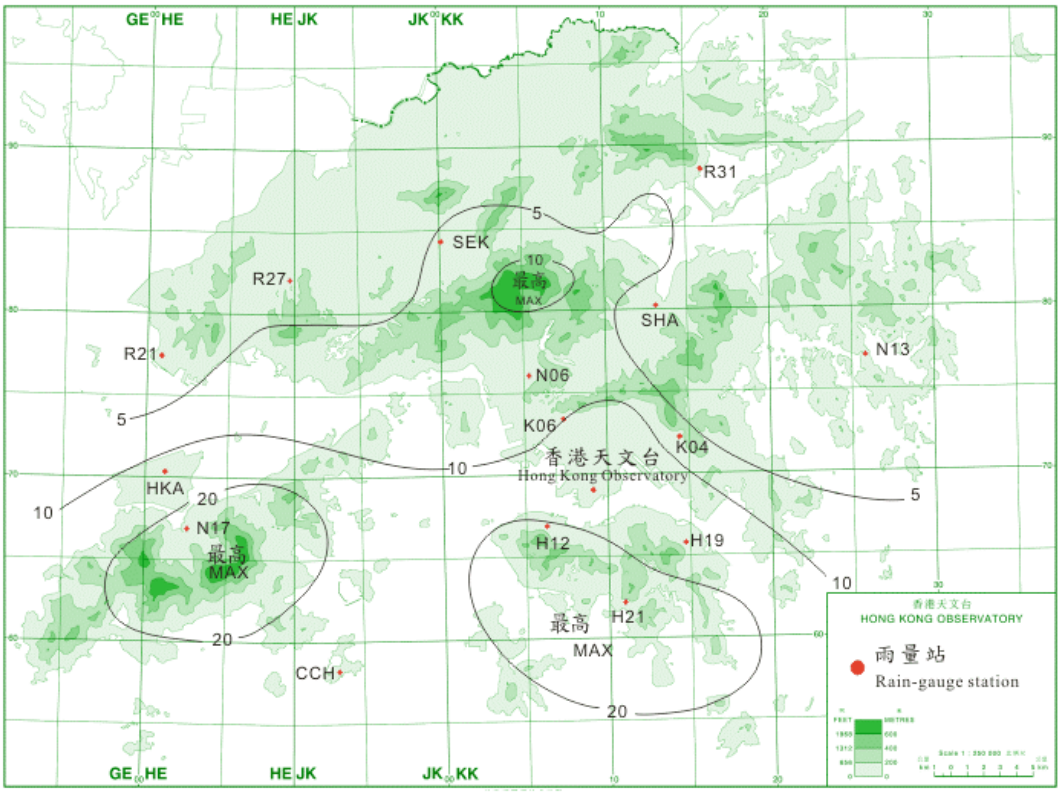


圖 3.6.2 二零零九年九月十日至十一日的雨量分佈(等雨量線單位為毫米)。

Figure 3.6.2 Rainfall distribution on 10 – 11 September 2009 (isohyets are in millimetres).

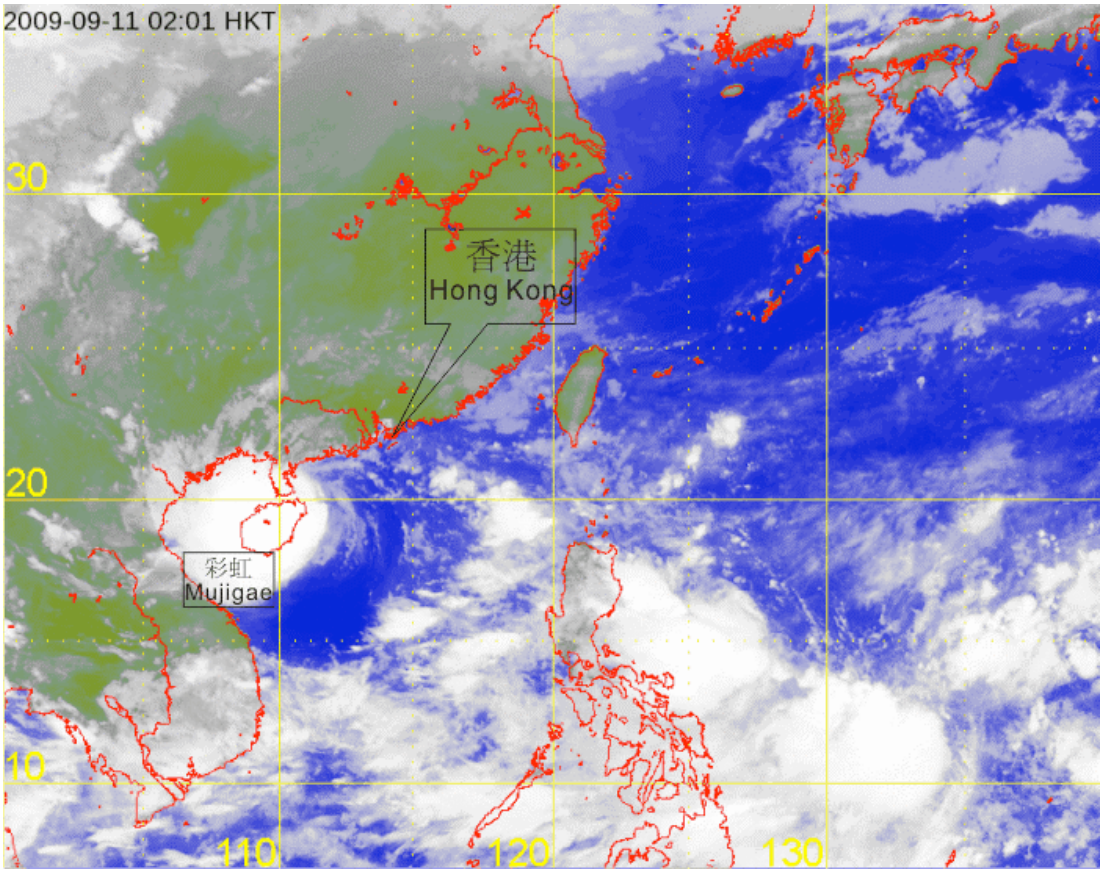


圖 3.6.3　熱帶風暴彩虹在二零零九年九月十一日上午2時的紅外線衛星圖片。當時彩虹的中心集結在香港西南約420公里，並達到其最高強度，中心附近估計最高風速達到每小時75公里。

Figure 3.6.3　Infra-red satellite imagery at 2 a.m. on 11 September 2009 of Tropical Storm Mujigae. Mujigae was located about 420 km southwest of Hong Kong and at its peak intensity with estimated maximum winds of 75 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-1R。〕

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

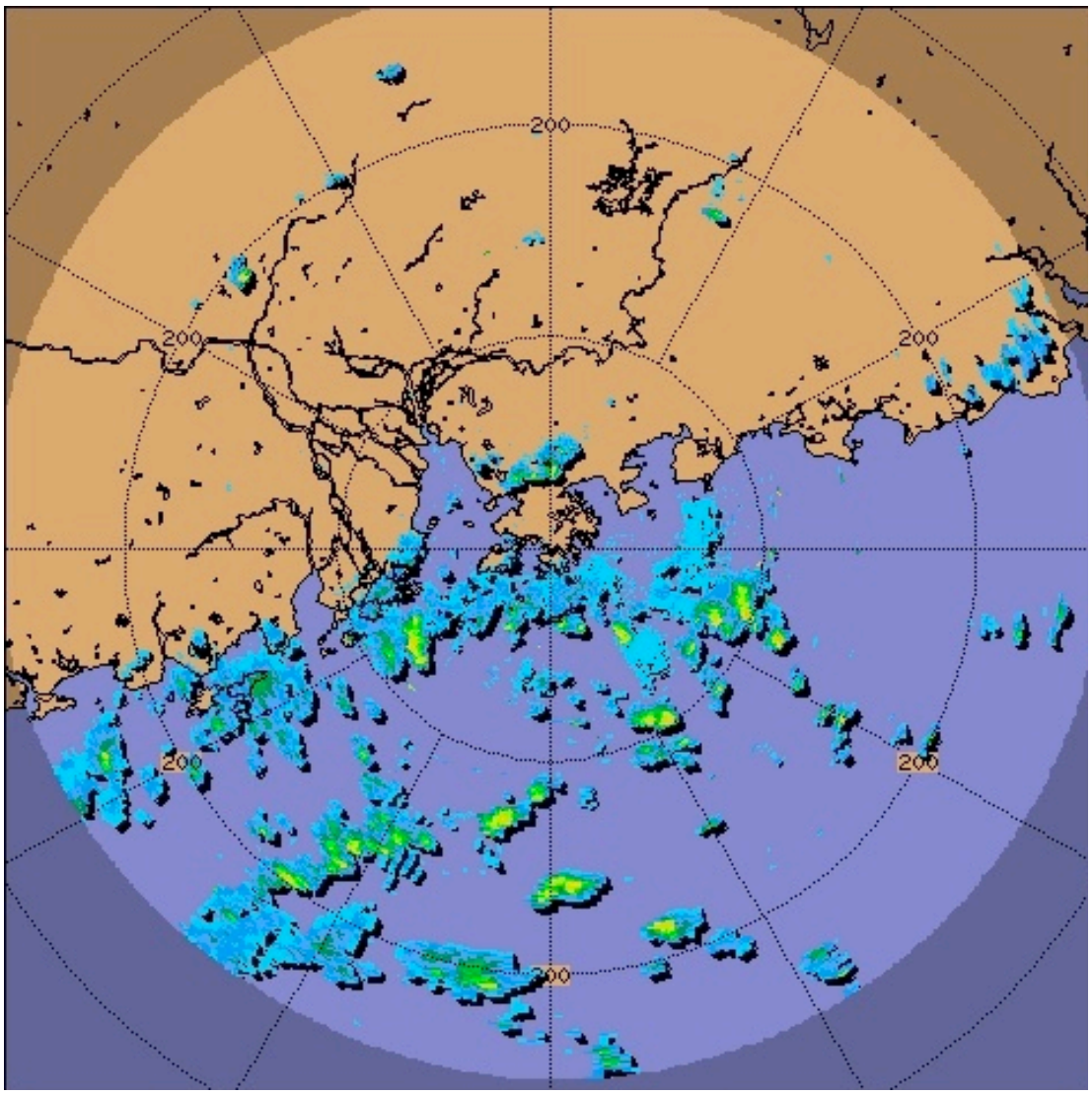


圖 3.6.4　二零零九年九月十日下午5時的雷達回波圖像，顯示與彩虹相關的外圍雨帶正影響香港南部地區。

Figure 3.6.4　Radar echoes captured at 5:00 p.m. on 10 September 2009. The outer rainbands associated with Mujigae was affecting the southern part of Hong Kong at that time.

3.7 颱風巨爵（0915）： 二零零九年九月十二日至十六日

颱風巨爵是香港在二零零九年第七個需要發出熱帶氣旋警告信號的熱帶氣旋，亦是該年第三個需要發出八號烈風或暴風信號的熱帶氣旋。

熱帶低氣壓巨爵於九月十二日在馬尼拉東北約490公里的北太平洋西部上形成，並向西北偏西移動，晚上橫過呂宋海峽。它於九月十三日早上向西移動，進入南海北部，黃昏時增強為熱帶風暴。巨爵於九月十四日早上增強為強烈熱帶風暴及轉向西北移動，靠近廣東沿岸，下午增強為颱風，晚上向西北偏西移動。巨爵於九月十五日凌晨達到其最高強度，其中心附近最高風速估計達每小時140公里。它於早上在廣東西部台山附近登陸，並減弱為強烈熱帶風暴，下午再減弱為熱帶風暴。它於九月十六日凌晨減弱為熱帶低氣壓，隨後在廣西消散。根據報章報導，巨爵為廣東帶來嚴重風暴潮及暴雨，至少有九人死亡、另九人失蹤、超過140萬人受災及超過1 200間房屋倒塌，直接經濟損失達17.5億元人民幣。澳門出現海水倒灌，海旁及低窪地區嚴重水浸。一艘巴拿馬籍貨輪在珠海高欄島附近觸礁，洩漏燃油50噸。

香港天文台於九月十三日下午8時35分發出一號戒備信號，當時巨爵位於香港東南約520公里。晚上本港吹和緩東風。九月十四日早上轉吹清勁東北風，離岸及高地間中吹強風。天文台於上午11時15分發出三號強風信號，當時巨爵位於香港東南偏南約280公里。由於巨爵繼續移近本港，下午普遍吹東北強風，離岸及高地風力間中達烈風程度。天文台於下午5時55分發出八號東北烈風或暴風信號，而巨爵已移至本港東南偏南約180 公里。晚間本港風力進一步增強，吹偏東烈風，離岸及高地風力達暴風程度。九月十五日凌晨本港逐漸轉吹東南烈風，天文台於凌晨12時35分改發八號東南烈風或暴風信號。香港天文台總部於凌晨12時42分至1時16分錄得最低瞬時海平面氣壓996.0百帕斯卡，期間巨爵最接近香港，並在香港西南偏南約130公里處掠過。黎明時份本港持續吹東南烈風，早上風勢逐漸緩和。天文台在上午10時15分改發三號強風信號，取代八號烈風或暴風信號。隨後本港風勢進一步緩和，天文台在下午1時35改發一號戒備信號，並於下午3 時40分取消所有熱帶氣旋警告信號。巨爵影響香港期間各站錄得的最高風速及持續風力達到強風及烈風的時段可參考表3.7.1及3.7.2。

九月十三日香港陽光充沛，但黃昏有狂風雷暴。九月十四日多雲及有狂風驟雨。九月十五日本港有狂風大驟雨，多處地區錄得超過100毫米的雨量。天文台在上午3時55分及下午5時55分發出黃色暴雨警告。受到巨爵帶來的風暴潮及漲潮的共同影響，大埔滘錄得的最高潮位為3.43米，是過去十年間最高潮位之一。

巨爵吹襲香港期間，本港最少有74人受傷，其中四人傷勢嚴重。全港有48宗塌樹報告，其中11宗發生在港島、19宗在九龍及18宗在新界。此外、有五宗棚架鬆脫及一宗外牆倒塌報告。本港有八宗水浸，其中大澳最為嚴重。受到巨爵帶來的風暴潮和大雨及漲潮的共同影響，大澳水深達1.5米高，令到該處商店的貨物及設備受損，約十人需要撤離。本港有多宗車輛受到水浸影響。何文田及黃大仙有四部的士受水浸影響，司機要由消房員拯救。元朗一棵大樹被吹倒，壓毀附近一間貨倉。此外，元朗亦有一簷篷被強風吹脫，壓毀四輛汽車。油麻地及葵涌有物件墜下報告，有一人受傷。尖沙咀一商業大廈的玻璃門被強風吹毀，有一人被玻璃碎片所傷。香港國際機場有八班航班轉飛其它地方。

表3.7.3及3.7.4分別是巨爵影響香港期間本港的日雨量及最高潮位資料。圖3.7.1-3.7.6分別為巨爵的路徑圖、本港的雨量分佈圖、天文台的氣壓記錄、長洲的風速記錄、巨爵的衛星及雷達圖像。

3.7 Typhoon Koppu (0915): 12 – 16 September 2009

Koppu was the seventh tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009. It was also the third time that the No. 8 Gale or Storm Signal had to be issued in the year.

Koppu developed into a tropical depression over the western North Pacific about 490 km northeast of Manila on 12 September and moved west-northwestwards to cross the Luzon Strait that night. It entered the northern part of the South China Sea with a westerly track on the morning of 13 September and intensified into a tropical storm that evening. Koppu intensified further into a severe tropical storm on the morning of 14 September and turned to move northwestwards towards the coast of Guangdong. It became a typhoon that afternoon, and took up a west-northwesterly track at night. Koppu reached its peak intensity with estimated maximum winds of 140 km/h near its centre in the small hours of 15 September. It made landfall over the coast of western Guangdong near Taishan in the morning and weakened into a severe tropical storm. It became a tropical storm that afternoon. Koppu weakened into a tropical depression on the small hours of 16 September and then dissipated over Guangxi. According to press reports, Koppu brought severe storm surge and rainstorm to Guangdong, where at least nine people were killed, another nine people missing, over 1.4 million people were affected and over 1 200 houses collapsed. The direct economic losses amounted to RMB$1.75 billion. In Macau, back-flow of sea water brought severe flooding to the coastal and low lying areas there. A Panamanian cargo vessel ran aground near Galon Island in Zhuhai, spilling some 50 tonnes of oil.

In Hong Kong, the Standby Signal No. 1 was issued at 8:35 p.m. on 13 September when Koppu was about 520 km to the southeast. Winds in Hong Kong were moderate easterly that night. Local winds freshened from the northeast on the morning of 14 September, occasionally strong offshore and on high ground. The Strong Wind Signal No. 3 was issued at 11:15 a.m. when Koppu was about 280 km to the south-southeast. As Koppu continued to move closer to Hong Kong, the northeasterlies became generally strong in the afternoon, with occasional gales force offshore and on high ground. The No. 8 Northeast Gale or Storm Signal was issued at 5:55 p.m. when Koppu was about 180 km to the south-southeast. Gales from the east affected the territory at night, reaching storm force offshore and on high ground. Winds gradually changed its direction to the southeast on the small hours of 15 September and the No. 8 Southeast Gale or Storm Signal was issued at 12:35 a.m. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 996.0 hPa was recorded between 12:42 a.m. and 1:16 a.m. on 15 September when Koppu was at its closest to Hong Kong, passing about 130 km to the south-southwest. Gales from the southeast persisted until around dawn and gradually subsided in the morning. The Strong Wind Signal No. 3 was issued at 10:15 a.m. to replace the No. 8 Gale or Storm Signal. Winds subsided further thereafter and the No. 3 Signal was replaced by the Standby Signal No. 1 at 1:35 p.m. All signals were cancelled at 3:40 p.m. The maximum winds recorded at various stations and the periods of strong and gale force winds during the passage of Koppu are given in Tables 3.7.1 and 3.7.2 respectively.

The weather in Hong Kong was sunny on 13 September but squally thunderstorms affected Hong Kong in the evening. It was cloudy with squally showers on 14 September. Heavy squally showers affected Hong Kong on 15 September and more than 100 millimetres of rainfall were recorded in many parts of Hong Kong. The Amber Rainstorm Warning was

issued at 3:55 a.m. and 5:55 p.m. respectively. The combined effect of the storm surges of Koppu and high tides resulted in a maximum sea level of 3.43 metres at Tai Po Kau, which was one of the highest sea levels recorded in the past decade.

In Hong Kong, at least 74 people were injured, four of them seriously during the passage of Koppu. There were 48 reports of fallen trees, of which 11 of them in Hong Kong Island, 19 in Kowloon and 18 in the New Territories. There were also five reports of loose scaffoldings and one report of a fallen external wall. Eight reports of flooding were received, with Tai O being worst hit. In Tai O, the combined effect of storm surge and heavy rain brought about by Koppu and high tides resulted in flood waters reaching 1.5 metres deep there, bringing damage to the goods and equipment in the shops there and around ten people have to be evacuated. There were also many incidents of vehicles being affected by flooding. In Ho Man Tin and Wong Tai Sin, four drivers had to be rescued by firemen when their taxis were affected by flood waters. In Yuen Long, a large tree was blown down and damaged a warehouse nearby. In addition, a scaffolding was also blown off by strong winds in Yuen Long, damaging four vehicles nearby. Fallen objects were reported in Yau Ma Tei and Kwai Chung, injuring one person. In Tsim Sha Tsui, strong winds damaged the door of a commercial building and a person was injured by pieces of broken glass. At the Hong Kong International Airport, eight flights were diverted.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Koppu is given in Tables 3.7.3 and 3.7.4 respectively. Figures 3.7.1 - 3.7.4 show respectively the track of Koppu, the rainfall distribution for Hong Kong, time series of pressure recorded at the Hong Kong Observatory, time series of the 10-minute mean wind speed recorded at Cheung Chau, a satellite and radar imagery of Koppu.

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

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

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/ Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東北偏東	ENE	131	14/9	20:58	東南偏東	ESE	77	15/9	02:00
中環碼頭	Central Pier	東	E	118	14/9	23:40	東	E	70	14/9	23:00
長洲*	Cheung Chau*	-	-	142	15/9	00:06	-	-	106	15/9	02:00
長洲泳灘	Cheung Chau Beach	東	E	151	14/9	22:56	東	E	104	14/9	23:00
長沙灣	Cheung Sha Wan	東北	NE	90	14/9	21:25	東北	NE	34	14/9	22:00
青洲	Green Island	東北	NE	151	14/9	21:37	東北	NE	99	14/9	22:00
		東北	NE	151	14/9	23:08					
香港國際機場	Hong Kong International Airport	東南	SE	115	15/9	04:36	東南偏東	ESE	68	15/9	03:00
啟德	Kai Tak	東	E	115	15/9	02:28	東	E	63	15/9	02:00
京士柏	King's Park	東	E	118	14/9	22:44	東南偏東	ESE	47	15/9	01:00
流浮山	Lau Fau Shan	東	E	96	15/9	00:50	東	E	51	15/9	00:00
北角	North Point	東	E	118	14/9	21:50	東	E	65	15/9	00:00
平洲	Ping Chau	東	E	104	14/9	22:33	東	E	40	14/9	23:00
西貢	Sai Kung	東北偏東	ENE	122	14/9	21:49	東北偏東	ENE	72	14/9	23:00
沙洲	Sha Chau	東南	SE	117	15/9	03:47	東南	SE	75	15/9	04:00
沙螺灣	Sha Lo Wan	東	E	140	15/9	03:30	東	E	62	14/9	23:00
沙田	Sha Tin	東北偏東	ENE	87	14/9	22:18	東南	SE	31	15/9	05:00
石崗	Shek Kong	東北	NE	121	14/9	22:42	東	E	47	15/9	01:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	110	14/9	23:22	東	E	59	15/9	00:00
打鼓嶺	Ta Kwu Ling	東	E	88	15/9	01:22	東	E	38	15/9	04:00
大美督	Tai Mei Tuk	東	E	131	14/9	23:33	東	E	88	15/9	00:00
							東	E	88	15/9	01:00
大老山	Tate's Cairn	東南偏東	ESE	158	14/9	23:21	東	E	101	14/9	22:00
鯽魚湖	Tsak Yue Wu	東北偏東	ENE	70	14/9	22:21	東	E	25	14/9	23:00
將軍澳	Tseung Kwan O	東北偏北	NNE	92	14/9	20:25	東北偏北	NNE	31	14/9	20:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	88	15/9	00:44	東南偏東	ESE	43	15/9	05:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	110	15/9	03:58	東南	SE	40	15/9	04:00
橫瀾島	Waglan Island	東北偏東	ENE	139	14/9	21:33	東	E	112	14/9	22:00
濕地公園	Wetland Park	東	E	83	15/9	00:59	東	E	38	15/9	00:00
黃竹坑	Wong Chuk Hang	東南	SE	130	15/9	00:01	東	E	49	14/9	23:00

*　由於長洲自動氣象站的風向儀受到雷暴影響失靈，請參考長洲泳灘的風向紀錄。

As the wind direction sensor at Cheung Chau Automatic Weather Station was damaged by thunderstorms, please refer to the wind direction recorded at Cheung Chau Beach.

表 3.7.2　在巨爵影響下，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及烈風程度的時段

Table 3.7.2　Periods during which sustained strong and gale force winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Koppu 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		最初達到烈風#時間 First time reaching gale force#		最後達到烈風#時間 Last time reaching gale force#	
		日期/月份	時間	日期/月份	時間	日期/月份	時間	日期/月份	時間
		Date/Month	Time	Date/Month	Time	Date/Month	Time	Date/Month	Time
長洲	Cheung Chau	14/9	11:58	15/9	14:18	14/9	18:35	15/9	09:38
香港國際機場	Hong Kong International Airport	14/9	16:24	15/9	15:37	14/9	20:19	15/9	07:46
啟德	Kai Tak	14/9	19:03	15/9	09:15	15/9	00:55	15/9	05:44
西貢	Sai Kung	14/9	11:20	15/9	14:57	14/9	19:29	15/9	09:10
打鼓嶺	Ta Kwu Ling	15/9	01:21	15/9	04:02	-			
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	15/9	03:45	15/9	09:29	-			
濕地公園	Wetland Park	14/9	22:30	15/9	02:02	-			

\- 未達到指定的風力

not reaching the specified wind speed

* 十分鐘平均風速達每小時41- 62 公里

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

\# 十分鐘持續風力達每小時63-87公里

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

註: 本表列出持續風力最初及最後達到強風及烈風程度的時間。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 or gale force winds were recorded. Note that the winds might fluctuate above or below the specified wind speed in between the times indicated.

表 3.7.3　　巨爵影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.7.3　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Koppu

站 (參閱圖 3.7.2) Station (See Fig. 3.7.2)		九月十三日 13 Sep	九月十四日 14 Sep	九月十五日 15 Sep	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory		23.4	38.8	190.3	252.5
長洲 Cheung Chau (N26)		38.0	33.5	59.5	131.0
香港國際機場 Hong Kong International Airport (HKA)		0.6	28.6	89.6	118.8
N13糧船灣	High Island	11.0	27.5	72.0	110.5
K04佐敦谷	Jordan Valley	18.5	48.0	200.0	266.5
N06葵涌	Kwai Chung	42.0	45.0	154.5	241.5
H12半山區	Mid Levels	24.5	46.5	122.5	193.5
H21淺水灣	Repulse Bay	39.0	41.5	169.0	249.5
N09沙田	Sha Tin	14.0	46.0	177.5	237.5
H19筲箕灣	Shau Kei Wan	27.5	33.0	123.0	183.5
SEK石崗	Shek Kong	4.5	43.5	148.0	196.0
K06蘇屋邨	So Uk Estate	45.0	53.5	173.5	272.0
R31大美督	Tai Mei Tuk	25.5	1.0	143.5	170.0
R21踏石角	Tap Shek Kok	1.0	32.5	74.5	108.0
N17東涌	Tung Chung	4.5	53.0	100.0	157.5
R27元朗	Yuen Long	5.0	45.5	87.0	137.5

表 3.7.4　　巨爵影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.7.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Koppu

站 (參閱圖1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	3.02	15/9	04:33	0.94	15/9	01:13
大埔滘	Tai Po Kau	3.43	15/9	01:43	1.44	15/9	01:43
尖鼻咀	Tsim Bei Tsui	3.56	15/9	04:50	1.20	15/9	04:50

石壁、大廟灣及橫瀾島沒有資料。

No data for Shek Pik, Tai Miu Wan and Waglan Island.

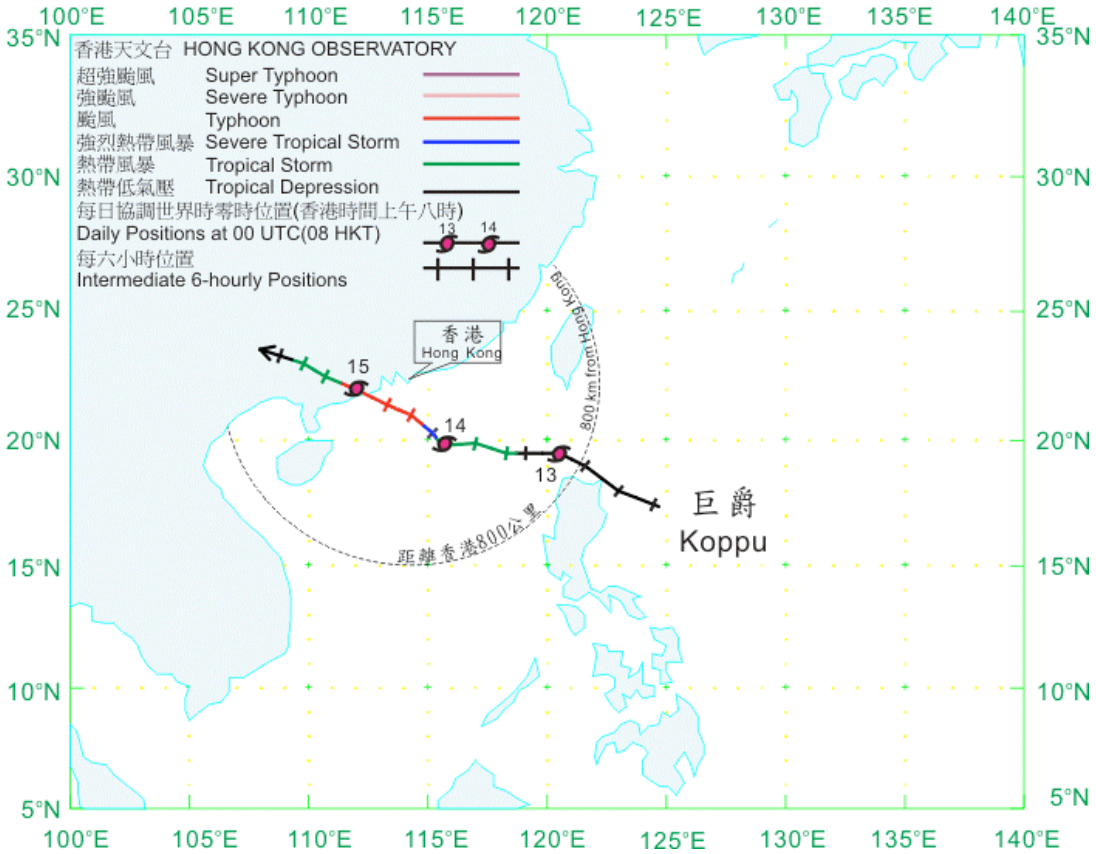


圖 3.7.1a 巨爵（0915）在二零零九年九月十二日至十六日的路徑圖。

Figure 3.7.1a Track of Koppu (0915) on 12 – 16 September 2009.

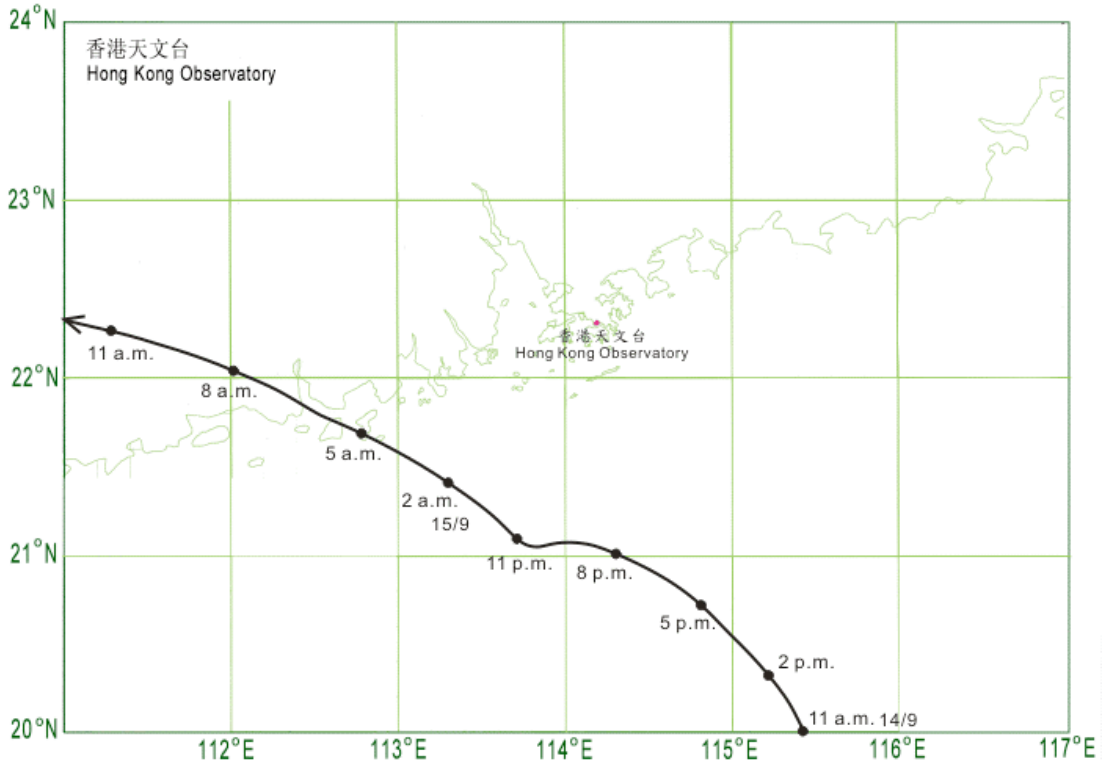


圖 3.7.1b 巨爵（0915）接近香港時的路徑圖。

Figure 3.7.1b Track of Koppu (0915) near Hong Kong.

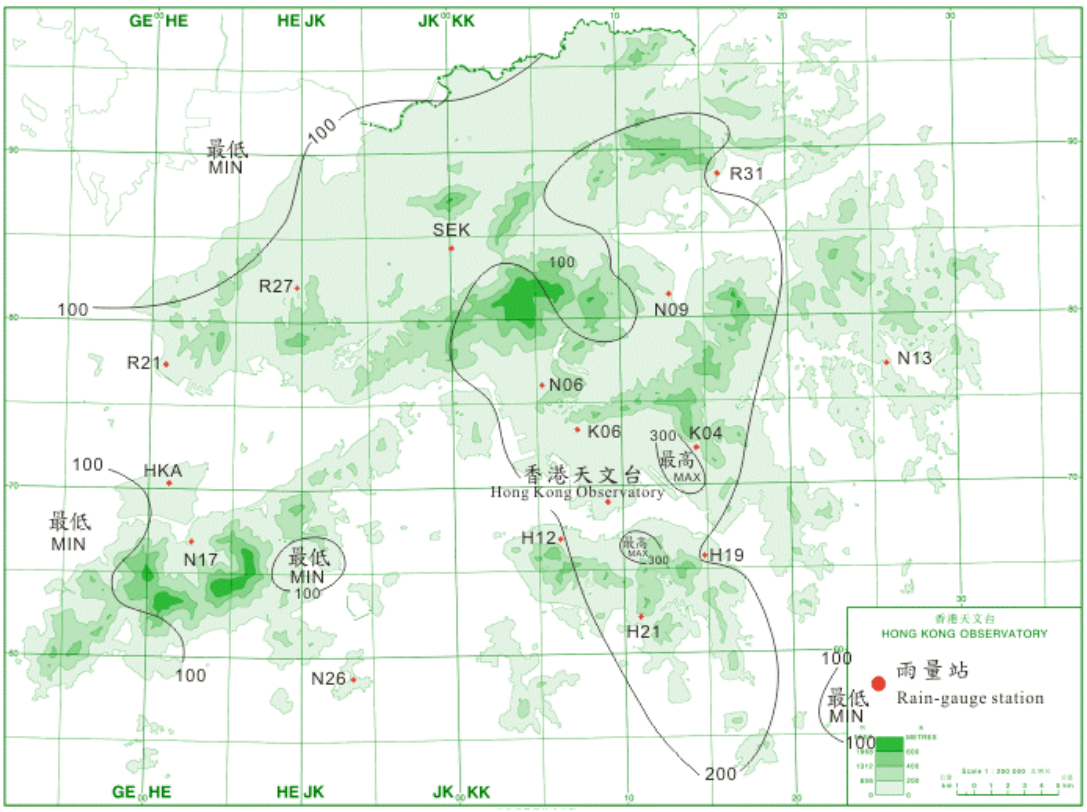


圖 3.7.2　二零零九年九月十三日至十五日的雨量分佈(等雨量線單位為毫米)。

Figure 3.7.2　Rainfall distribution on 13–15 September 2009 (isohyets are millimetres).

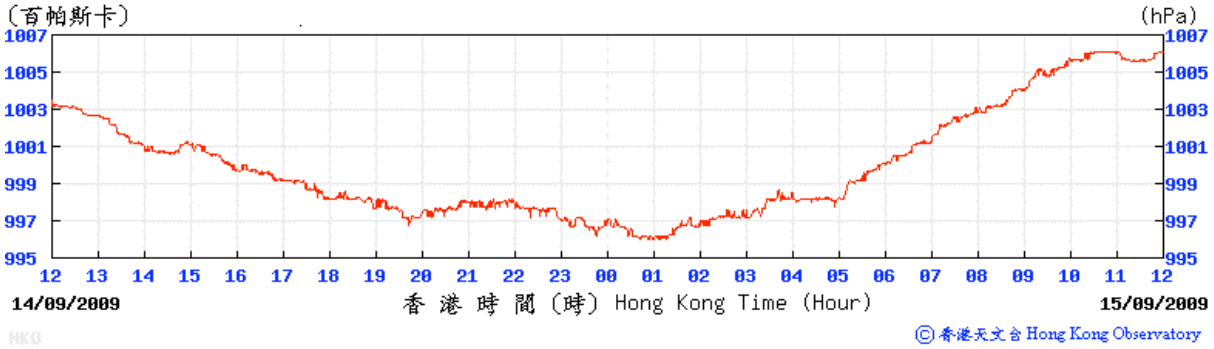


圖 3.7.3 巨爵影響香港期間，天文台總部錄得海平面氣壓的時間序列。

Figure 3.7.3 Trace of mean sea level pressure recorded at the Hong Kong Observatory Headquarters during the passage of Koppu.

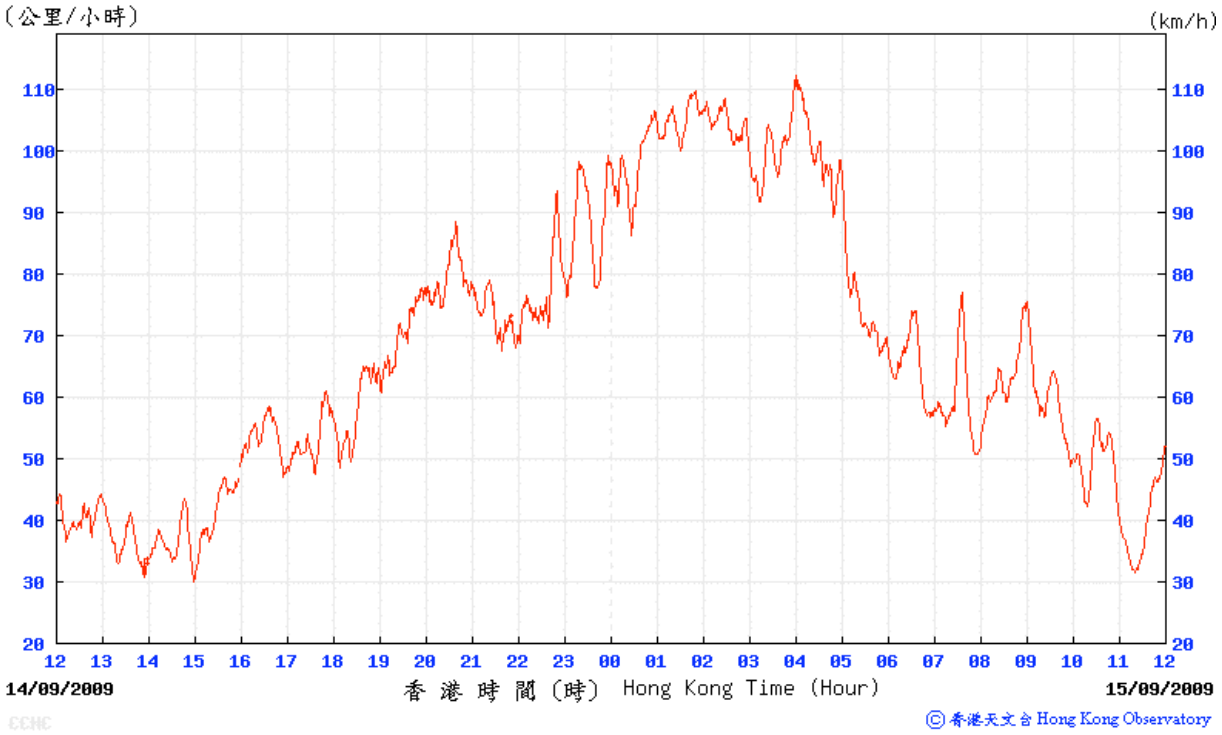


圖 3.7.4 巨爵影響香港期間，長洲自動氣象站錄得十分鐘平均風速的時間序列。

Figure 3.7.4 Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station during the passage of Koppu.

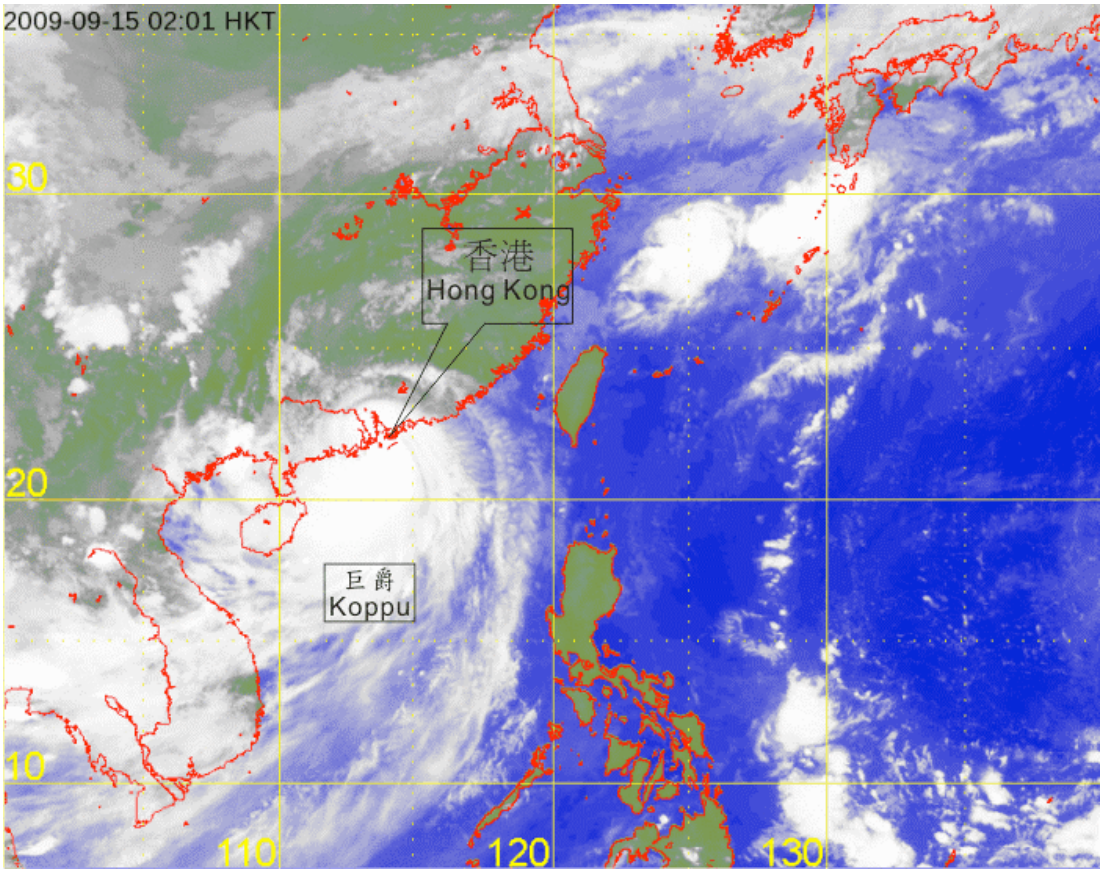


圖 3.7.5　颱風巨爵在二零零九年九月十五日上午2時的紅外線衛星圖片。當時巨爵的中心集結在香港西南約135公里，並達到其最高強度，中心附近估計最高風速達到每小時140公里。

Figure 3.7.5　Infra-red satellite imagery at 2 a.m. on 15 September 2009 of Typhoon Koppu. Koppu was located about 135 km southwest of Hong Kong and at its peak intensity with estimated maximum winds of 140 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-1R。〕

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

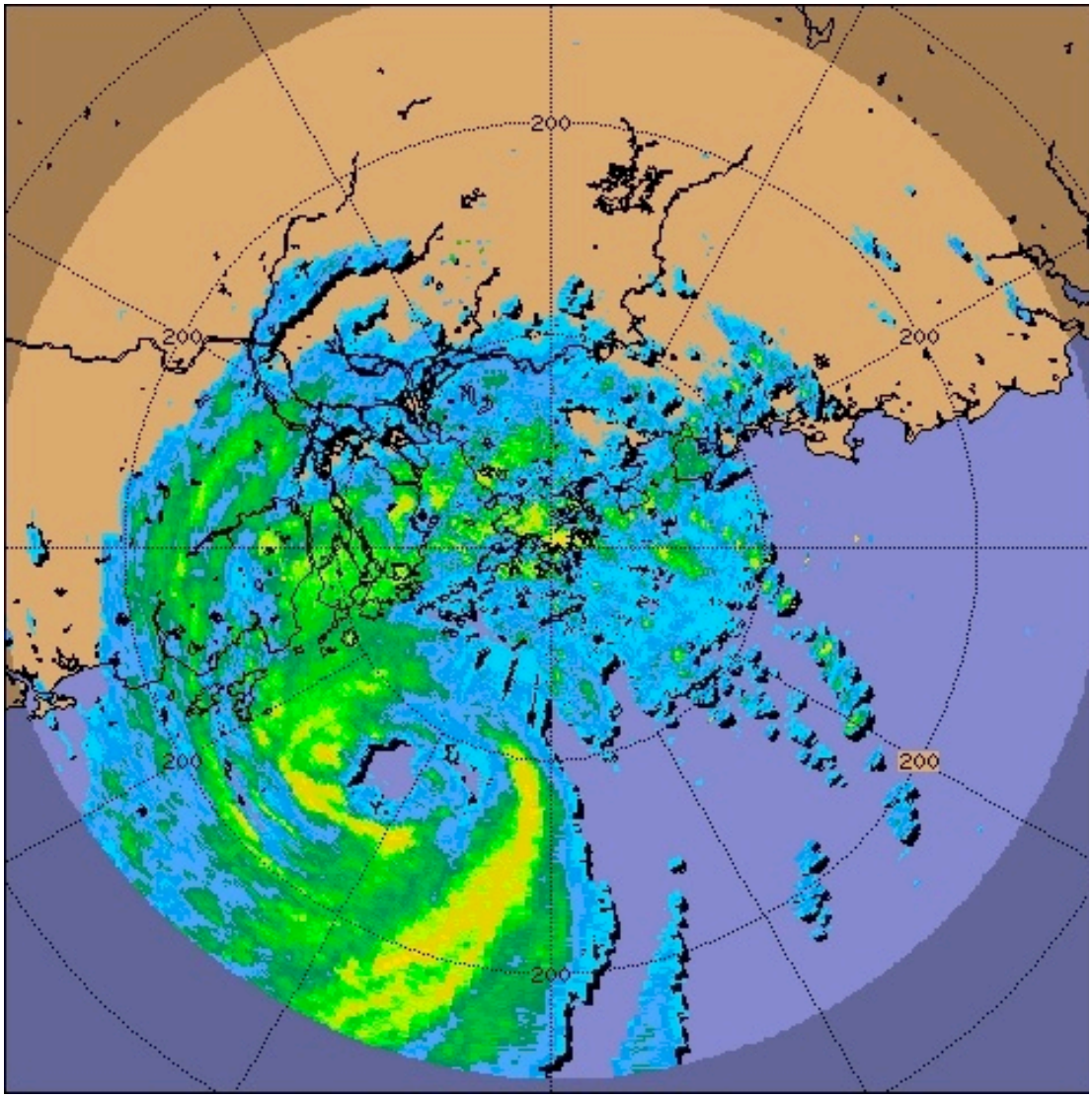


圖 3.7.6　二零零九年九月十五日上午1時的雷達回波圖像。 當時颱風巨爵的風眼最為接近香港，並在香港西南偏南約130公里。與巨爵相連的狂風驟雨正影響本港。

Figure 3.7.6　Radar echoes captured at 1:00 a.m. on 15 September 2009. The eye of Typhoon Koppu was at its closest distance of about 130 km south-southwest of Hong Kong at that time. Squally showers associated with Koppu was affecting Hong Kong.

3.8 颱風凱薩娜(0916)： 二零零九年九月二十五日至三十日

颱風凱薩娜是香港在二零零九年第八個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓凱薩娜於九月二十五日在馬尼拉以東約810公里的北太平洋西部上形成，並向西移動。它於九月二十六日早上增強為熱帶風暴，並橫過呂宋，黃昏時進入南海中部。凱薩娜橫過南海移動速度稍為減慢，並於九月二十七日早上增強為強烈熱帶風暴，其環流頗為廣泛。凱薩娜於九月二十八日早上在香港西南偏南約740公里處進一步增強為颱風，當晚午夜前達到其最高強度，其中心附近最高持續風速估計達每小時140公里。凱薩娜於九月二十九日下午在峴港東南約100公里的越南中部登陸，並減弱為強烈熱帶風暴。九月三十日凱薩娜首先減弱為熱帶風暴，後再減弱為熱帶低氣壓，當晚在老撾和泰國邊境附近消散。根據報章報導，與凱薩娜相連的大雨為菲律賓帶來嚴重水浸，導致最少293人死亡、37萬人無家可歸，經濟損失估計約為23.4億披索(約港幣3.8億元)。凱薩娜的外圍雨帶為海口帶來強風及大雨，不少大樹被吹倒。凱薩娜吹襲期間，越南、老撾及柬埔寨最少有132人死亡、135人失蹤。

香港天文台於九月二十七日下午10時15分發出一號戒備信號，當時凱薩娜位於香港以南約730公里。受到凱薩娜及東北季候風的共同影響下，本港吹和緩至清勁東北風，離岸及高地間中吹強風，海域有大浪及暗湧。凱薩娜於九月二十八日上午2時左右最接近香港，並在香港以南約720公里處掠過。香港天文台總部稍後於上午4時33分至4時45分錄得最低瞬時海平面氣壓1003.0百帕斯卡。日間凱薩娜逐漸移離香港，天文台於下午7時15分取消所有熱帶氣旋警告信號，當時凱薩娜集結在香港西南偏南約750公里。凱薩娜影響香港期間各站錄得的最高風速可參考表3.8.1。

九月二十七日香港大致多雲，日間短暫時間有陽光。受到凱薩娜外圍雨帶及東北季候風的共同影響，九月二十八日本港多雲及有雨，下午雨勢有時頗大。當日本港大部份地區錄得超過50毫米的雨量。表3.8.2及圖3.8.2是凱薩娜影響香港期間本港的日雨量及雨量分佈圖。

凱薩娜吹襲香港期間，本港並無嚴重破壞報告。

表3.8.3是凱薩娜影響香港期間本港的最高潮位資料。圖3.8.1，3.8.3-3.8.4 分別為凱薩娜的路徑圖、凱薩娜的衛星圖像及凱薩娜外圍雨帶的雷達圖像。

3.8 Typhoon Ketsana (0916): 25 – 30 September 2009

Ketsana was the eighth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal in Hong Kong in 2009.

Ketsana formed as a tropical depression over the western North Pacific about 810 km east of Manila during the morning of 25 September and moved westwards. It intensified into a tropical storm on the morning of 26 September and moved across Luzon, entering the central part of the South China Sea that evening. While crossing the South China Sea, it slowed down slightly and intensified into a severe tropical storm on the morning of 27 September with a rather extensive circulation. Ketsana intensified further into a typhoon about 740 km south-southwest of Hong Kong on the morning of 28 September and reached its peak intensity with estimated maximum sustained winds of about 140 km/h near its centre shortly before midnight. Ketsana subsequently made landfall over the central part of Vietnam about 100 km southeast of Danang on the afternoon of 29 September and weakened into a severe tropical storm. It further weakened into a tropical storm and then a tropical depression on 30 September, dissipating near the border between Laos and Thailand that night. According to press reports, heavy rain associated with Ketsana caused severe flooding in the Philippines where at least 293 people were killed and 370 000 people were made homeless. The economic losses were estimated to be about 2.34 billion peso (around HK$0.38 billion). The outer rainbands of Ketsana brought strong winds and heavy rain to Haikou with many trees fallen. At least 132 people were killed and 135 people missing in Vietnam, Laos and Cambodia during the passage of Ketsana.

In Hong Kong, the Standby Signal No. 1 was issued at 10:15 p.m. on 27 September when Ketsana was about 730 km to our south. Under the combined effect of Ketsana and the northeast monsoon, winds in Hong Kong were moderate to fresh northeasterlies, occasionally strong offshore and on high ground, with rough seas and swell over Hong Kong waters. Ketsana was closest to Hong Kong at about 2 a.m. on 28 September* when it passed about 720 km to the south. At the Hong Kong Observatory Headquarters, a lowest instantaneous mean sea-level pressure of 1003.0 hPa was recorded shortly afterwards between 4:33 and 4:45 a.m. Ketsana gradually moved away from Hong Kong during the day. All signals were cancelled at 7:15 p.m. when Ketsana was about 750 km to our south-southwest. The maximum winds recorded at various stations during the passage of Ketsana are given in Table 3.8.1.

The weather in Hong Kong was mainly cloudy with sunny intervals during the day on 27 September. Under the combined influence of the outer rainbands of Ketsana and the northeast monsoon, it was cloudy with rain on 28 September and the rain was heavy at times in the afternoon. More than 50 millimetres of rainfall were recorded in most parts of Hong Kong that day. Information on the daily rainfall and the rainfall distribution for Hong Kong are given in Table 3.8.2 and Figure 3.8.2 respectively.

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

Information on the maximum sea level in Hong Kong during the passage of Ketsana is given in Table 3.8.3. Figures 3.8.1, 3.8.3 - 3.8.4 show respectively the track of Ketsana, a satellite imagery of Ketsana and a radar imagery of the outer rainband of Ketsana.

* Revised on 3 October 2016

表 3.8.1　在凱薩娜影響下，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 3.8.1　Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when tropical cyclone warning signals for Ketsana were in force

站 (參閱圖1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/ 月份 Date/ Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/ 月份 Date/ Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東北	NE	59	28/9	16:45	東北偏東	ENE	30	27/9	23:00
中環碼頭	Central Pier	東	E	43	28/9	08:55	東	E	25	27/9	23:00
長洲	Cheung Chau	東北偏北	NNE	56	28/9	11:28	東北偏北	NNE	31	28/9	12:00
長洲泳灘	Cheung Chau Beach	東北	NE	52	28/9	10:09	東北	NE	40	28/9	07:00
長沙灣	Cheung Sha Wan	東北偏北	NNE	36	28/9	13:35	東北	NE	14	28/9	07:00
青洲	Green Island	東北偏北	NNE	58	28/9	09:15	東北偏北	NNE	40	28/9	10:00
香港 國際機場	Hong Kong International Airport	東北偏東	ENE	51	28/9	17:26	東北	NE	30	28/9	07:00
啟德	Kai Tak	東	E	45	27/9	22:49	東	E	20	27/9	23:00
京士柏	King's Park	東北偏北	NNE	34	28/9	13:24	東北	NE	13	28/9	10:00
							東北	NE	13	28/9	12:00
							東北偏東	ENE	13	28/9	19:00
流浮山	Lau Fau Shan	東北	NE	41	28/9	08:54	東北	NE	22	28/9	10:00
昂坪	Ngong Ping	東北偏東	ENE	70	28/9	18:03	東北偏東	ENE	52	28/9	12:00
北角	North Point	東	E	40	28/9	00:00	東	E	23	27/9	23:00
坪洲	Peng Chau	東北偏東	ENE	36	28/9	06:59	東	E	23	27/9	23:00
西貢	Sai Kung	東北	NE	36	28/9	16:58	北	N	20	28/9	05:00
							北	N	20	28/9	06:00
沙洲	Sha Chau	東北偏北	NNE	54	28/9	17:24	東北偏北	NNE	34	28/9	18:00
沙螺灣	Sha Lo Wan	東北偏東	ENE	41	28/9	17:30	東北偏東	ENE	20	28/9	06:00
沙田	Sha Tin	東北偏北	NNE	38	28/9	05:50	東北偏北	NNE	16	28/9	06:00
石崗	Shek Kong	東北偏東	ENE	31	27/9	23:10	東	E	16	27/9	23:00
		東北偏東	ENE	31	28/9	00:10					
九龍 天星碼頭	Star Ferry (Kowloon)	東南	SE	36	28/9	07:39	東南	SE	22	27/9	23:00
打鼓嶺	Ta Kwu Ling	東北偏北	NNE	31	28/9	06:06	北	N	12	28/9	06:00
大美督	Tai Mei Tuk	東北偏北	NNE	65	28/9	16:55	東北	NE	40	28/9	17:00
大帽山	Tai Mo Shan	東北	NE	75	28/9	16:39	東北偏東	ENE	59	28/9	13:00
塔門	Tap Mun	東北	NE	38	28/9	16:47	東北	NE	16	28/9	17:00
大老山	Tate's Cairn	東北偏東	ENE	87	28/9	17:34	東北偏東	ENE	63	28/9	12:00
鯽魚湖	Tsak Yue Wu	東北偏東	ENE	31	28/9	16:51	東北偏北	NNE	12	28/9	17:00
將軍澳	Tseung Kwan O	北	N	31	28/9	16:30	東北偏北	NNE	13	28/9	17:00
青衣島	Tsing Yi Shell	南	S	27	28/9	01:44	東南	SE	7	28/9	08:00
蜆殼油庫	Oil Depot	東南	SE	27	28/9	01:45	西北	NW	7	28/9	09:00
屯門 政府合署	Tuen Mun Government Offices	東北偏北	NNE	47	28/9	15:58	東北偏北	NNE	14	28/9	17:00
橫瀾島	Waglan Island	東北偏東	ENE	68	28/9	01:19	東北偏東	ENE	54	28/9	00:00
濕地公園	Wetland Park	東北	NE	31	28/9	08:21	東北	NE	14	28/9	06:00
							東北	NE	14	28/9	09:00
黃竹坑	Wong Chuk Hang	東南偏東	ESE	51	28/9	01:25	東	E	20	28/9	18:00

表 3.8.2　凱薩娜影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.8.2　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Ketsana

站 (參閱圖 3.8.2) Station (See Fig. 3.8.2)		九月二十七日 27 Sep	九月二十八日 28 Sep	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory		0.0	52.7	52.7
長洲 Cheung Chau (CCH)		0.0	50.0	50.0
香港國際機場 Hong Kong International Airport (HKA)		0.0	55.5	55.5
N05粉嶺	Fanling	0.0	30.0	30.0
N13糧船灣	High Island	0.0	77.5	77.5
K04佐敦谷	Jordan Valley	0.0	67.5	67.5
N06葵涌	Kwai Chung	0.0	55.5	55.5
H12半山區	Mid Levels	0.0	[69.0]	[69.0]
H21淺水灣	Repulse Bay	0.0	74.0	74.0
N09沙田	Sha Tin	0.0	49.5	49.5
H19筲箕灣	Shau Kei Wan	0.0	65.0	65.0
SEK石崗	Shek Kong	0.0	36.0	36.0
K06蘇屋邨	So Uk Estate	0.0	58.0	58.0
R31大美督	Tai Mei Tuk	0.0	39.5	39.5
R21踏石角	Tap Shek Kok	0.0	42.0	42.0
N17東涌	Tung Chung	0.0	72.0	72.0
R27元朗	Yuen Long	0.0	[35.0]	[35.0]

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

表 3.8.3　凱薩娜影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.8.3　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Ketsana

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	2.46	28/9	04:36	0.46	28/9	05:51
石壁	Shek Pik	2.52	28/9	02:58	0.48	28/9	06:50
大廟灣	Tai Miu Wan	2.50	28/9	04:37	0.49	28/9	05:45
大埔滘	Tai Po Kau	2.48	28/9	06:23	0.59	28/9	06:39
尖鼻咀	Tsim Bei Tsui	2.56	28/9	03:36	0.49	28/9	08:32

橫瀾島沒有資料。No data for Waglan Island.

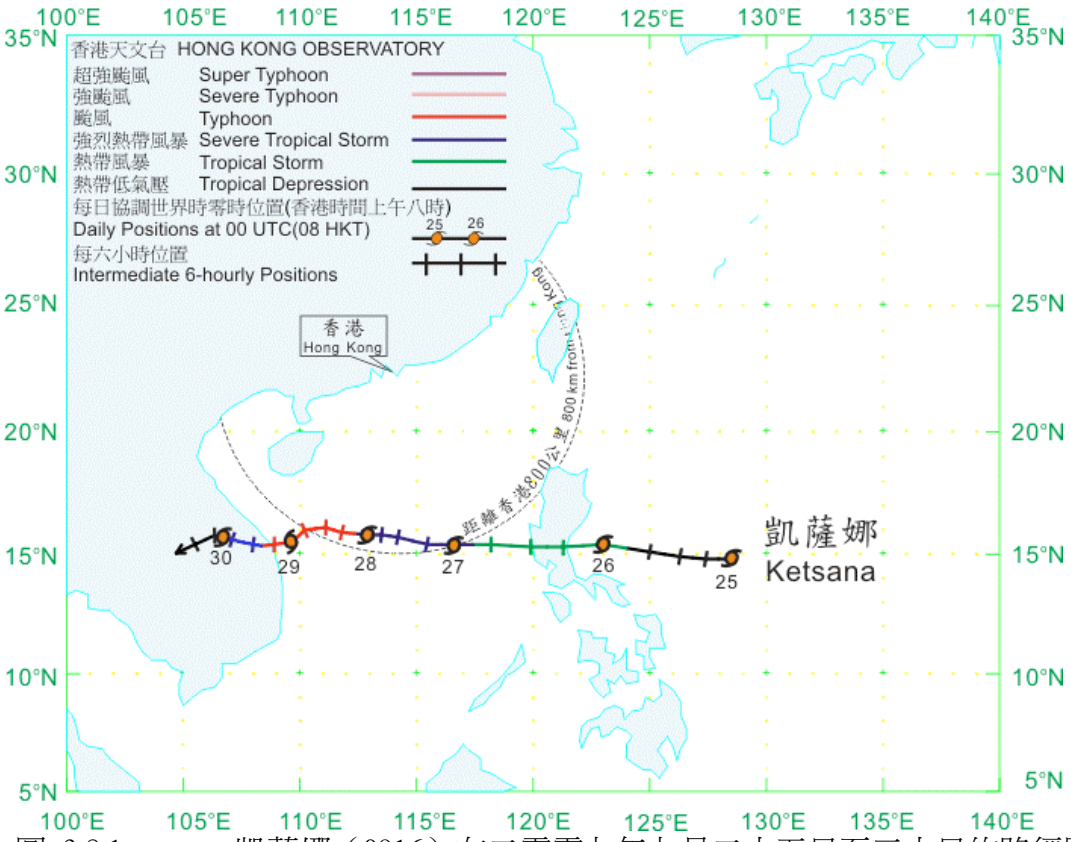


圖 3.8.1 凱薩娜（0916）在二零零九年九月二十五日至三十日的路徑圖。

Figure 3.8.1 Track of Ketsana (0916) on 25 – 30 September 2009.

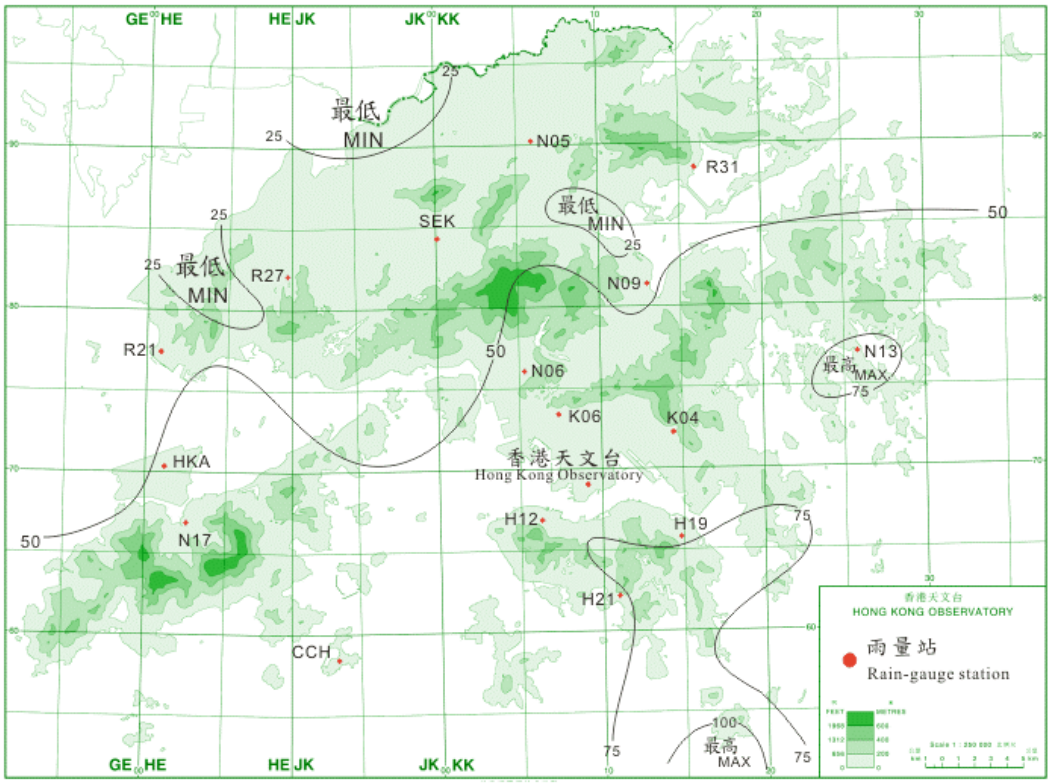


圖 3.8.2 二零零九年九月二十七日至二十八日的雨量分佈(等雨量線單位為毫米)。

Figure 3.8.2 Rainfall distribution on 27 – 28 September 2009 (isohyets are millimetres).

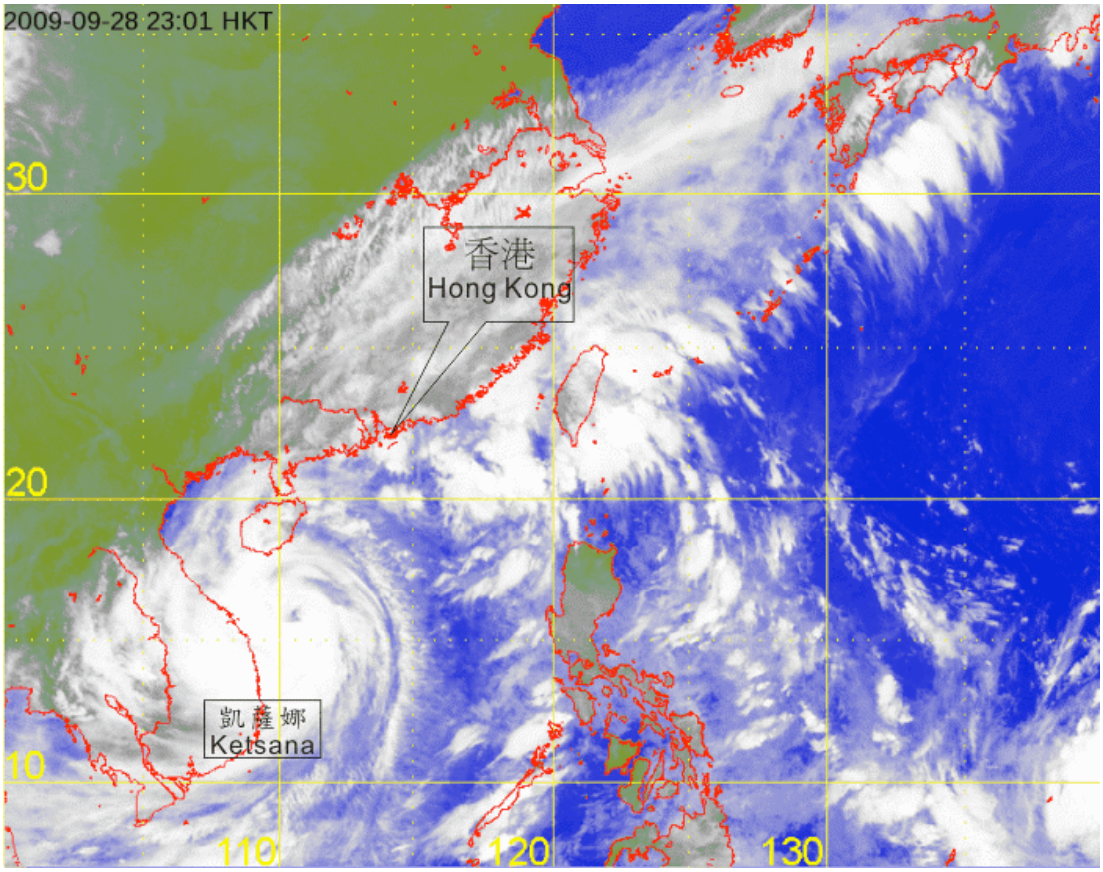


圖 3.8.3　颱風凱薩娜在二零零九年九月二十八日下午11時的紅外線衛星圖片。當時凱薩娜達到其最高強度，中心附近估計最高持續風速達到每小時140公里，其風眼集結在香港西南偏南約780公里。

Figure 3.8.3　Infra-red satellite imagery at 11 p.m. on 28 September 2009 of Typhoon Ketsana. Ketsana was at its peak intensity with estimated maximum sustained winds of 140 kilometres per hour near its centre and its eye was located about 780 km south-southwest of Hong Kong at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-1R。〕

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

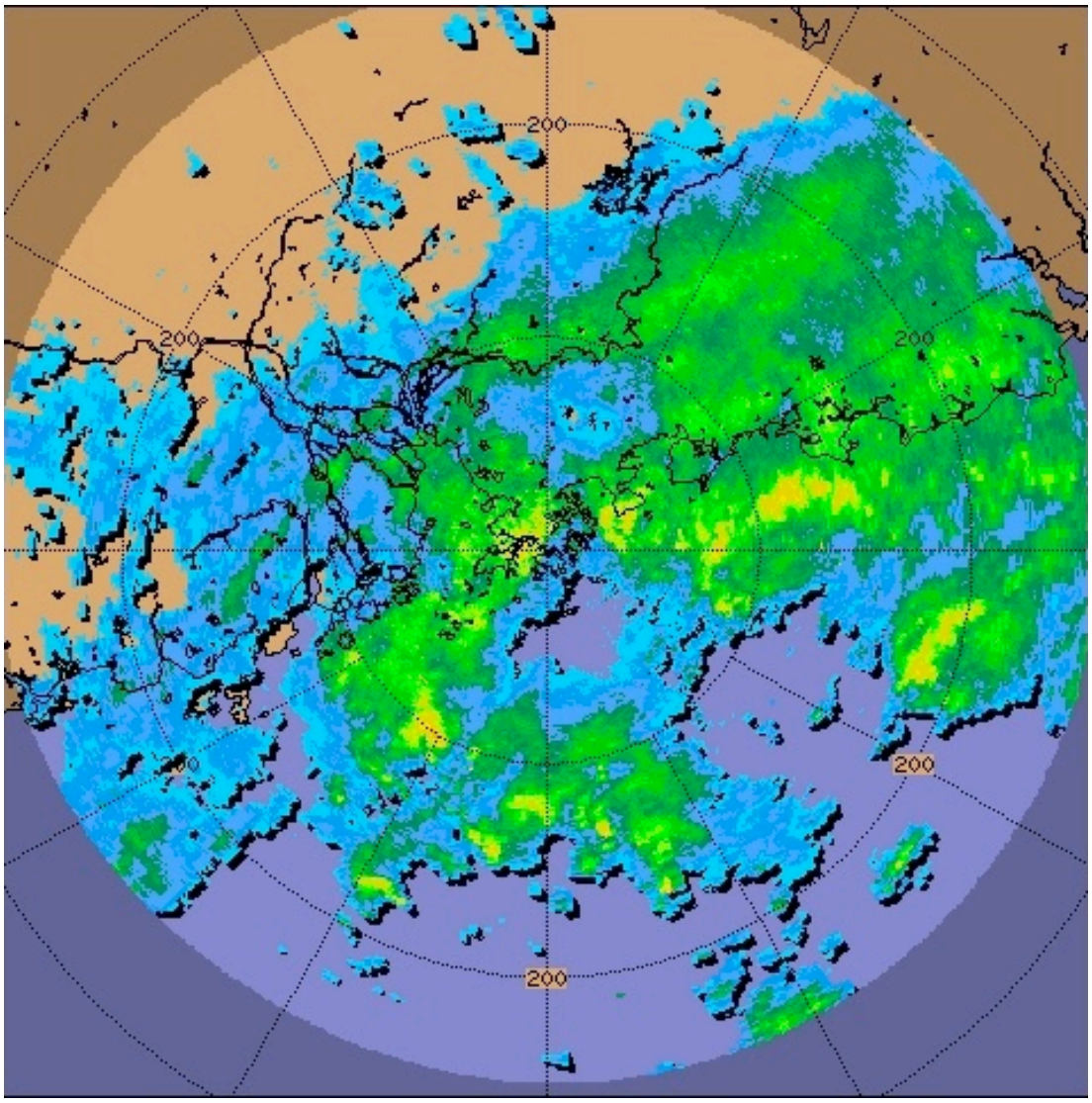


圖 3.8.4　二零零九年九月二十八日下午4時30分的雷達回波圖像。 受到颱風凱薩娜外圍雨帶及東北季候風的共同影響，當日下午香港間中有大雨。

Figure 3.8.4　Radar echoes captured at 4:30 p.m. on 28 September 2009. Under the combined influence of the outer rainbands of Typhoon Ketsana, occasionally heavy rain affected Hong Kong that afternoon.

第四節　熱帶氣旋統計表

表4.1是二零零九年在北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋一覽。表內所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是天文台在二零零九年為船舶發出的熱帶氣旋警告的次數、時段、首個及末個警告發出的時間。當有熱帶氣旋位於香港責任範圍內時（即由北緯10至30度、東經105至125度所包括的範圍），天文台會發出這些警告。表內使用的時間為協調世界時。

表4.3是二零零九年熱帶氣旋警告信號發出的次數及其時段的摘要。表內亦提供每次熱帶氣旋警告信號生效的時間和發出警報的次數。表內使用的時間為香港時間。

表4.4是一九五六至二零零九年間熱帶氣旋警告信號發出的次數及其時段的摘要。

表4.5是一九五六至二零零九年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數。

表4.6是一九五六至二零零九年間天文台發出各種熱帶氣旋警告信號的最長、最短及平均時段。

表4.7是二零零九年當熱帶氣旋影響香港時本港的氣象觀測摘要。資料包括熱帶氣旋最接近香港時的位置及時間和當時估計熱帶氣旋中心附近的最低氣壓、京士柏、香港國際機場及橫瀾島錄得的最高風速、香港天文台錄得的最低平均海平面氣壓以及香港各潮汐測量站錄得的最大風暴潮（即實際水位高出潮汐表中預計的部分，單位為米）。

表4.8.1是二零零九年位於香港600公里範圍內的熱帶氣旋及其為香港所帶來的雨量。

表4.8.2是一八八四至一九三九年以及一九四七至二零零九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是二零零九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是一九六零至二零零九年間熱帶氣旋在香港所造成的人命傷亡及破壞。資料參考了各政府部門和公共事業機構所提供的報告及本地報章的報導。

Section 4 TROPICAL CYCLONE STATISTICS AND TABLES

TABLE 4.1 is a list of tropical cyclones in 2009 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 2009, 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 2009. 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 2009 inclusive.

TABLE 4.5 gives the annual number of tropical cyclones in Hong Kong's area of responsibility between 1956 and 2009 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 1956-2009.

TABLE 4.7 is a summary of meteorological information for each tropical cyclone affecting Hong Kong in 2009, 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 2009.

TABLE 4.8.2 highlights the 10 wettest tropical cyclones in Hong Kong for the period 1884-1939 and 1947-2009.

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 2009. 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: 1960-2009. The information is based on reports from various government departments, public utility companies and local newspapers.

表 4.1　　二零零九年在北太平洋西部及南海區域的熱帶氣旋一覽

TABLE 4.1　LIST OF TROPICAL CYCLONES IN THE WESTERN NORTH PACIFIC AND THE SOUTH CHINA SEA IN 2009

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: 變爲溫帶氣旋 Extratropical
			日期/月份 Date/Month	時間+ Time+	位置 Position 北緯 °N	東經 °E	風力 (公里每小時) Winds (km/h)	氣壓 (百帕斯卡) Pressure (hPa)	日期/月份 Date/Month	時間+ Time+	位置 Position 北緯 °N	東經 °E	
颱風鯨魚	Typhoon Kujira	0901	2 / 5	1200	13.4	124.4	149	955	7 / 5	1200	29.8	147.3	XT
颱風燦鴻	Typhoon Chan-hom	0902	3 / 5	0600	9.7	111.5	130	965	12 / 5	0000	23.9	126.9	DISP
強烈熱帶風暴蓮花	Severe Tropical Storm Linfa	0903	17 / 6	1200	18.3	116.8	110	975	23 / 6	0000	30.1	123.4	DISP
熱帶風暴浪卡	Tropical Storm Nangka	0904	22 / 6	1800	11.0	128.0	85	990	26 / 6	1800	22.8	114.5	DISP
熱帶風暴蘇迪羅	Tropical Storm Soudelor	0905	10 / 7	0600	19.2	120.0	65	990	12 / 7	1200	21.2	107.2	DISP
熱帶低氣壓	Tropical Depression	-	13 / 7	0000	22.1	122.4	55	998	14 / 7	0000	26.3	118.8	DISP
颱風莫拉菲	Typhoon Molave	0906	15 / 7	1200	15.0	127.2	140	960	19 / 7	1200	23.5	109.6	DISP
強烈熱帶風暴天鵝	Severe Tropical Storm Goni	0907	31 / 7	1800	16.0	127.5	90	975	9 / 8	0600	18.8	112.5	DISP
颱風莫拉克	Typhoon Morakot	0908	3 / 8	1800	21.3	136.0	149	955	11 / 8	1800	34.2	123.0	XT
熱帶風暴艾濤	Tropical Storm Etau	0909	8 / 8	0600	23.7	139.0	85	988	13 / 8	0000	33.8	151.7	XT
熱帶低氣壓	Tropical Depression	-	13 / 8	1200	13.9	179.5	55	1006	16 / 8	1800	16.2	173.3	DISP
強颱風環高	Severe Typhoon Vamco	0910	17 / 8	0000	12.6	159.0	165	945	25 / 8	1800	48.5	164.7	XT
強烈熱帶風暴科羅旺	Severe Tropical Storm Krovanh	0911	28 / 8	0000	21.4	149.1	110	975	1 / 9	0600	42.2	146.3	XT
熱帶低氣壓	Tropical Depression	-	30 / 8	0000	14.7	179.1	55	1004	1 / 9	1200	16.5	167.5	DISP
強烈熱帶風暴杜鵑	Severe Tropical Storm Dujuan	0912	3 / 9	0000	18.0	130.0	90	982	10 / 9	0000	42.9	163.8	XT
熱帶風暴彩虹	Tropical Storm Mujigae	0913	9 / 9	0000	16.9	119.1	75	993	12 / 9	0600	20.0	105.3	DISP
超強颱風彩雲	Super Typhoon Choi-wan	0914	12 / 9	0000	14.3	153.5	210	910	20 / 9	0600	35.1	149.1	XT
颱風巨爵	Typhoon Koppu	0915	12 / 9	0600	17.5	124.4	140	960	15 / 9	1800	23.3	108.8	DISP
颱風凱薩娜	Typhoon Ketsana	0916	25 / 9	0000	14.8	128.5	140	955	30 / 9	1200	15.4	105.5	DISP
超強颱風芭瑪	Super Typhoon Parma	0917	29 / 9	0000	8.0	139.9	195	925	14 / 10	1800	20.4	106.1	DISP
超強颱風茉莉	Super Typhoon Melor	0918	29 / 9	0600	9.8	159.6	205	920	8 / 10	0600	38.3	141.1	XT
熱帶風暴尼伯特	Tropical Storm Nepartak	0919	8 /10	1200	16.8	143.4	85	992	13 / 10	1800	32.6	157.6	XT
超強颱風盧碧	Super Typhoon Lupit	0920	14 /10	1800	11.2	146.6	205	920	26 / 10	1800	34.0	142.8	XT
熱帶低氣壓	Tropical Depression	-	19 /10	0000	16.6	110.4	45	1000	20 / 10	0600	18.0	109.8	DISP
颱風銀河	Typhoon Mirinae	0921	26 /10	1200	13.2	148.5	149	955	2 / 11	1800	12.5	107.3	DISP
熱帶低氣壓	Tropical Depression	-	2 /11	0000	17.1	125.8	45	1002	2 / 11	1800	16.6	123.8	DISP
熱帶低氣壓	Tropical Depression	-	7 /11	0600	20.9	155.5	55	1002	9 / 11	1800	20.8	162.4	DISP
超強颱風妮妲	Super Typhoon Nida	0922	22 /11	0000	6.9	148.2	210	910	3 / 12	0600	22.0	134.4	DISP
熱帶低氣壓	Tropical Depression	-	23 /11	1200	9.7	127.2	45	1000	25 / 11	0000	9.8	127.1	DISP
熱帶低氣壓	Tropical Depression	-	24 /11	0600	5.8	107.7	55	1000	25 / 11	1800	6.8	110.9	DISP

+ 時間爲協調世界時　+ Times are given in UTC

表 4.2　　二零零九年為船舶發出的熱帶氣旋警告
TABLE 4.2　TROPICAL CYCLONE WARNINGS FOR SHIPPING ISSUED IN 2009

熱帶氣旋	Tropical cyclone	發出警告的次數 No. of warnings issued	發出的日期及時間 Date and time of issue of				時段 (小時) Duration (hours)
			首次警告 First warning		末次警告 Last warning		
			日期/月份 Date/Month	時間+ Time+	日期/月份 Date/Month	時間+ Time+	
颱風鯨魚	Typhoon Kujira	7	2 / 5	1200	3 / 5	0600	18
颱風燦鴻	Typhoon Chan-hom	46	3 / 5	0300	8 / 5	1200	129
* 強烈熱帶風暴蓮花	* Severe Tropical Storm Linfa	44	17 / 6	1200	22 / 6	2100	129
* 熱帶風暴浪卡	* Tropical Storm Nangka	29	23 / 6	1200	26 / 6	1800	78
* 熱帶風暴蘇迪羅	* Tropical Storm Soudelor	19	10 / 7	0600	12 / 7	1200	54
熱帶低氣壓	Tropical Depression	8	13 / 7	0300	13 / 7	2100	18
* 颱風莫拉菲	* Typhoon Molave	23	16 / 7	1200	19 / 7	0600	66
* 強烈熱帶風暴天鵝	* Severe Tropical Storm Goni	68	1 / 8	0900	9 / 8	1200	195
颱風莫拉克	Typhoon Morakot	29	6 / 8	1500	10 / 8	0300	84
* 熱帶風暴彩虹	* Tropical Storm Mujigae	27	8 / 9	2100	12 / 9	0300	78
* 颱風巨爵	* Typhoon Koppu	25	12 / 9	0600	15 / 9	0600	72
* 颱風凱薩娜	* Typhoon Ketsana	36	25 / 9	1800	30 / 9	0300	105
超強颱風芭瑪	Super Typhoon Parma	99	2 /10	1200	14 /10	1800	294
熱帶低氣壓	Tropical Depression	13	19 /10	0000	20 /10	1200	36
超強颱風盧碧	Super Typhoon Lupit	18	22 /10	0000	24 /10	0300	51
颱風銀河	Typhoon Mirinae	27	30 /10	0600	2 /11	1200	78
熱帶低氣壓	Tropical Depression	5	2 /11	0900	2 /11	2100	12
	共 Total	523					1422

* 這些熱帶氣旋引致天文台需要發出熱帶氣旋警告信號。

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

+ 時間為協調世界時。

+ Times are given in UTC.

表 4.3　二零零九年天文台所發出的熱帶氣旋警告信號及警報發出的次數
TABLE 4.3　TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG AND NUMBER OF WARNING BULLETINS ISSUED IN 2009

摘要 SUMMARY

信號 Signal	次數 No. of occasions	總時段 Total duration	
		時 h	分 min
1	13	155	45
3	9	70	15
8 西北 NW	1	2	0
8 西南 SW	1	2	0
8 東北 NE	1	6	40
8 東南 SE	2	15	40
9	1	3	10
10	-	-	
共 Total	28	255	30

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 日期/月份 Date/Month	發出 Issued 時間* Time*	取消 Cancelled 日期/月份 Date/Month	取消 Cancelled 時間* Time*
強烈熱帶風暴蓮花 Severe Tropical Storm Linfa	21	1	20/6	10:40	21/6	05:45
熱帶風暴浪卡 Tropical Storm Nangka	24	1	26/6	07:15	26/6	15:40
		3	26/6	15:40	27/6	05:25
熱帶風暴蘇迪羅 Tropical Storm Soudelor	40	1	10/7	16:45	11/7	13:25
		3	11/7	13:25	11/7	21:15
		1	11/7	21:15	12/7	05:20
颱風莫拉菲 Typhoon Molave	47	1	17/7	22:15	18/7	14:15
		3	18/7	14:15	18/7	23:30
		8 西北 NW	18/7	23:30	19/7	01:30
		9	19/7	01:30	19/7	04:40
		8 西南 SW	19/7	04:40	19/7	06:40
		3	19/7	06:40	19/7	10:40
		1	19/7	10:40	19/7	13:15
強烈熱帶風暴天鵝 Severe Tropical Storm Goni	53	1	3/8	15:15	4/8	11:15
		3	4/8	11:15	4/8	21:40
		8 東南 SE	4/8	21:40	5/8	03:40
		3	5/8	03:40	5/8	05:40
		1	5/8	05:40	5/8	16:00
熱帶風暴彩虹 Tropical Storm Mujigae	27	1	10/9	04:35	10/9	14:35
		3	10/9	14:35	11/9	03:35
		1	11/9	03:35	11/9	06:25
颱風巨爵 Typhoon Koppu	48	1	13/9	20:35	14/9	11:15
		3	14/9	11:15	14/9	17:55
		8 東北 NE	14/9	17:55	15/9	00:35
		8 東南 SE	15/9	00:35	15/9	10:15
		3	15/9	10:15	15/9	13:35
		1	15/9	13:35	15/9	15:40
颱風凱薩娜 Typhoon Ketsana	25	1	27/9	22:15	28/9	19:15

* 香港時間（協調世界時加八小時）

* Hong Kong Time （UTC + 8 hours）

表 4.4　一九五六至二零零九年間每年各熱帶氣旋警告信號的發出次數及總時段

TABLE 4.4　FREQUENCY AND TOTAL DURATION OF DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS : 1956-2009

信號 Signals / 年份 Year	1	3	8 西北 NW	8 西南 SW	8 東北 NE	8 東南 SE	9	10	總時段 Total duration 時 h	分 min
1956	5	4	0	0	0	0	0	0	191	25
1957	4	9	1	1	2	2	0	1	295	45
1958	4	5	0	0	1	0	0	0	214	5
1959	1	1	0	0	0	0	0	0	36	35
1960	11	7	0	2	2	2	1	1	432	35
1961	6	7	1	2	1	0	1	1	192	55
1962	4	3	0	1	1	0	1	1	158	10
1963	4	5	0	0	1	0	0	0	175	50
1964	11	14	1	3	5	3	3	2	570	15
1965	7	6	0	0	1	1	0	0	239	40
1966	6	5	0	0	2	2	0	0	284	40
1967	8	6	0	0	2	1	0	0	339	10
1968	7	7	0	1	1	0	1	1	290	10
1969	4	2	0	0	0	0	0	0	110	15
1970	6	8	2	1	2	0	0	0	286	45
1971	9	10	1	3	2	2	1	1	323	25
1972	8	6	0	0	1	1	0	0	288	20
1973	8	6	1	1	1	0	1	0	416	50
1974	12	10	0	0	2	1	1	0	525	20
1975	8	6	1	0	0	1	1	1	292	20
1976	6	6	0	0	1	2	0	0	351	30
1977	8	6	0	0	1	0	0	0	395	10
1978	8	9	1	1	3	2	0	0	462	10
1979	5	5	1	0	2	2	1	1	281	15
1980	10	8	0	0	1	1	0	0	414	5
1981	5	4	0	0	1	1	0	0	202	20
1982	7	4	0	0	0	0	0	0	247	35
1983	8	7	0	1	2	2	1	1	289	42
1984	6	6	0	0	1	0	0	0	280	2
1985	5	4	1	0	0	1	0	0	193	35
1986	6	7	0	1	1	0	0	0	305	0
1987	6	1	0	0	0	0	0	0	165	45
1988	6	4	0	0	0	0	0	0	204	10
1989	7	8	0	0	2	2	0	0	306	10
1990	6	4	0	0	0	0	0	0	245	10
1991	8	6	0	0	1	1	0	0	349	55
1992	5	5	0	0	1	1	0	0	167	5
1993	8	9	0	0	2	4	0	0	325	40
1994	4	3	0	0	0	0	0	0	138	10
1995	8	6	2	2	1	1	0	0	348	50
1996	7	2	0	0	0	1	0	0	189	0
1997	2	3	0	1	1	0	1	0	97	30
1998	5	2	0	0	0	0	0	0	188	35
1999	10	13	4	3	2	0	2	1	520	0
2000	7	3	0	0	0	0	0	0	329	5
2001	6	6	1	1	2	1	0	0	253	35
2002	3	2	0	0	0	1	0	0	144	25
2003	4	5	1	1	1	1	1	0	158	0
2004	3	2	1	1	1	0	0	0	77	35
2005	3	1	0	0	0	0	0	0	142	45
2006	10	3	0	0	0	0	0	0	317	50
2007	4	3	0	1	0	0	0	0	86	50
2008	8	9	2	2	3	2	1	0	347	0
2009	13	9	1	1	1	2	1	0	255	30
共 Total	350	302	23	31	58	44	19	12	14445	29
平均 Mean	6.5	5.6	0.4	0.6	1.1	0.8	0.4	0.2	267	31

表 4.5　一九五六至二零零九年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數

TABLE 4.5　ANNUAL NUMBER OF TROPICAL CYCLONES IN HONG KONG'S AREA OF RESPONSIBILITY AND THE NUMBER THAT NECESSITATED THE DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS IN HONG KONG : 1956-2009

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
共 Total	853	323
平均 Mean	15.8	6.0

表 4.6　　一九五六至二零零九年間天文台發出熱帶氣旋警告信號的時段
TABLE 4.6　　DURATION OF TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG : 1956-2009

信號 Signal	次數 Number of occasions	每次時段 Duration of each occasion			每年總時段 Total duration per year		
		平均 Mean	最長 Maximum	最短 Minimum	平均 Mean	最長 Maximum	最短 Minimum
		時 分 h min	時 分 h min	時 分 h min	時 分 h min	時 分 h min	時 分 h min
一號或以上 1 or higher	336	43 0	161 0 (桃麗達Tilda, 1964)	4 30 (熱帶低氣壓 T.D., 2000)	267 31	570 15 (1964)	36 35 (1959)
三號或以上 3 or higher	224	29 49	124 15 (瑪麗Mary, 1960)	4 5 (熱帶低氣壓 T.D., 2006)	123 42	306 35 (1974)	15 5 (2004)
八號或以上 8 or higher	80	15 0	66 50 (瑪麗Mary, 1960)	2 40 (雲茵Wynne, 1984)	22 13	100 55 (1964)	0 0
8 西北 NW	23	5 47	15 45	1 30	2 28	18 0	0 0
8 西南 SW	31	4 49	10 45	2 0	2 46	16 10	0 0
8 東北 NE	58	7 49	35 35	2 0	8 24	40 20	0 0
8 東南 SE	44	7 21	21 45	0 20	5 59	31 15	0 0
九號或以上 9 or higher	20	7 2	12 25 (約克York, 1999)	2 0 (杜鵑Dujuan, 2003)	2 36	19 25 (1964)	0 0
10	12	6 34	11 0 (約克York, 1999)	2 30 (愛麗斯Alice, 1961)	1 28	12 10 (1964)	0 0

註：( ) 內為創造該記錄的熱帶氣旋名稱及年份。
Note: ( ) are the years and the names of the tropical cyclones which created the record.

表 4.7　二零零九年當熱帶氣旋影響香港時本港的氣象觀測摘要

TABLE 4.7　A SUMMARY OF METEOROLOGICAL OBSERVATIONS RECORDED IN HONG KONG DURING THE PASSAGES OF TROPICAL CYCLONES IN 2009

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
強烈熱帶風暴蓮花 Severe Tropical Storm Linfa	6	20	14	東南偏東 ESE	380	東北偏北 NNE 11	980	6	20	17:08 - 17:14#	999.7	0.30	0.29	0.27	0.29	0.24	0.21
										17:00, 18:00	1000.1						
熱帶風暴浪卡 Tropical Storm Nangka	6	27	0	東北 NE	60	西北偏北 NNW 14	998	6	26	23:03	1000.1	0.34	0.30	0.37	0.50	0.30	0.24
										18:00, 19:00, 23:00	1000.2						
熱帶風暴蘇迪羅 Tropical Storm Soudelor	7	11	14	南 S	240	西北偏西 WNW 30	990	7	10	17:27 - 17:55#	999.7	0.39	0.38	0.43	0.55	0.32	-
										17:00, 18:00	999.9						
颱風莫拉菲 Typhoon Molave	7	19	3	東北偏北 NNE	40	西北偏西 WNW 27	970	7	19	01:52 - 01:58#	985.6	0.62	0.42	0.66	0.84	0.93	-
										02:00	985.7						
強烈熱帶風暴天鵝 Severe Tropical Storm Goni	8	4	20	西南 SW	110	西北 NW 9	975	8	4	17:03	993.5	0.35	0.27	0.45	0.44	0.53	0.42
										17:00	993.7						
熱帶風暴彩虹 Tropical Storm Mujigae	9	10	14	南 S	330	西北偏西 WNW 18	995	9	10	15:02 - 17:11#	1005.2	0.48	0.44	0.50	0.65	0.49	-
										16:00	1005.2						
颱風巨爵 Typhoon Koppu	9	15	1	西南偏南 SSW	130	西北偏西 WNW 18	960	9	15	00:42 - 01:16#	996.0	0.94	-	-	1.44	1.20	-
										01:00	996.0						
颱風凱薩娜 Typhoon Ketsana	9	28	2	南 S	720	西 W 16	980	9	28	04:33 - 04:45#	1003.0	0.46	0.48	0.49	0.59	0.49	-
										05:00	1003.2						

* 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 HK International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 HK International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 HK International Airport	橫瀾島 Waglan Island
強烈熱帶風暴蓮花 Severe Tropical Storm Linfa	6	西 W 13	西南 SW 19	西南偏西 WSW 30	西 W 19	西南 SW 22	西 W 40	西 W 40	西南 SW 30	西南偏西 WSW 47
熱帶風暴浪卡 Tropical Storm Nangka	6	東 E 19	西北 NW 31	東北偏東 ENE 54	東 E 23	東 E 38	東 E 59	東南偏東 ESE 47	東南偏東 ESE 51	東北偏東 ENE 75
熱帶風暴蘇迪羅 Tropical Storm Soudelor	7	東 E 27	東 E 36	東北 NE 49	東 E 31	東 E 40	東 E 52	東 E 63	東 E 62	東 E 72
颱風莫拉菲 Typhoon Molave	7	西 W 40	西南 SW 70	西南偏南 SSW 96	西 W 45	西南 SW 75	西南偏南 SSW 103	西 W 96	西南 SW 99	西南偏西 WSW 122
強烈熱帶風暴天鵝 Severe Tropical Storm Goni	8	東南偏東 ESE 27	東南偏東 ESE 47	東 E 58	東南偏東 ESE 31	東, 東南偏東 E, ESE 49	東 E 63	東南偏東 ESE 58	南 S 72	東南偏東 ESE 76
熱帶風暴彩虹 Tropical Storm Mujigae	9	東 E 27	東 E 36	東 E 68	東 E 31	東 E 40	東北偏東 ENE 72	東南偏東 ESE 62	東 E 56	東 E 83
颱風巨爵 Typhoon Koppu	9	東南偏東 ESE 49	東南偏東 ESE 70	東 E 112	東南偏東 ESE 54	東南 SE 87	東北偏東 ENE 117	東 E 118	東南 SE 115	東北偏東 ENE 139
颱風凱薩娜 Typhoon Ketsana	9	東 E 19	東北 NE 31	東北偏東 ENE 54	東南偏東 ESE 19	東北 NE 38	東北偏東 ENE 58	東北偏北 NNE 34	東北偏東 ENE 51	東北偏東 ENE 68

表 4.8.1　二零零九年位於香港600公里範圍內的熱帶氣旋及其為本港帶來的雨量期間，天文台錄得的雨量

TABLE 4.8.1　RAINFALL ASSOCIATED WITH EACH TROPICAL CYCLONE THAT CAME WITHIN 600 KM OF HONG KONG IN 2009

熱帶氣旋名稱 Name of tropical cyclone	熱帶氣旋位於香港600公里範圍內的時期 Period when tropical cyclone within 600 km of Hong Kong ($T_1 \longrightarrow T_2$) 日期/月份 Date/Month	時間* Time*	香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm) (i) 在香港600公里內 within 600 km of Hong Kong ($T_1 \longrightarrow T_2$)	(ii) 在 T_2 之後的24小時內 24-hour period after T_2	(iii) 在 T_2 之後的48小時內 48-hour period after T_2	(iv) 在 T_2 之後的72小時內 72-hour period after T_2	(i) + (iv) 共 Total $T_1 \longrightarrow$ (T_2+72 小時 hours)
強烈熱帶風暴蓮花	(T_1) 17 / 6	2000	5.7	15.7	32.7	36.7	42.4
Severe Tropical Storm Linfa	- (T_2) 22 / 6	0400					
熱帶風暴浪卡	(T_1) 25 / 6	2300	22.5	50.4	90.8	90.8	113.3
Tropical Storm Nangka	- (T_2) 27 / 6	0200					
熱帶風暴蘇迪羅	(T_1) 10 / 7	1900	8.1	微量 Trace	微量 Trace	+ 3.1	11.2
Tropical Storm Soudelor	- (T_2) 12 / 7	1400					
熱帶低氣壓 #	(T_1) 13 / 7	2200	0.0	微量 Trace	4.8	6.0	6.0
Tropical Depression #	- (T_2) 14 / 7	0500					
颱風莫拉菲	(T_1) 18 / 7	0200	136.3	8.1	8.1	8.7	145.0
Typhoon Molave	- (T_2) 19 / 7	2000					
強烈熱帶風暴天鵝	(T_1) 2 / 8	1300	143.5	4.3	54.0	56.6	200.1
Severe Tropical Storm Goni	- (T_2) 9 / 8	1400					
熱帶風暴彩虹	(T_1) 9 / 9	2000	4.1	14.3	14.3	++ 38.7	42.8
Tropical Storm Mujigae	- (T_2) 11 / 9	0900					
颱風巨爵	(T_1) 13 / 9	1400	252.5	20.5	20.5	20.5	273.0
Typhoon Koppu	- (T_2) 16 / 9	0200					
超強颱風芭瑪 #	(T_1) 10 /10	1600	6.6	微量	9.5	9.5	16.1
Super Typhoon Parma #	- (T_2) 12 /10	2200					
						共 Total	822.4

* 香港時間（協調世界時加八小時）。

T_1 - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T_2 - 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

\# 該熱帶氣旋並未導致天文台需要發出熱帶氣旋警告信號。

\+ 欄(iv)有關熱帶風暴蘇迪羅的雨量與欄(iii)有關熱帶低氣壓的雨量出現了3.1毫米的重疊部份。

++ 欄(iv)有關熱帶風暴彩虹的雨量與欄(i)有關颱風巨爵的雨量出現了24.4毫米的重疊部份。

* Hong Kong Time （UTC + 8 hours）.

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

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

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

\+ Figure in column (iv) of T.S. Soudelor overlaps the rainfall amount in column (i) of Tropical Depression by 3.1 mm.

++ Figure in column (iv) of T.S. Mujigae overlaps the rainfall amount in column (i) of T. Koppu by 24.4 mm.

表 4.8.2　一八八四至一九三九年及一九四七至二零零九年間十個為香港帶來最多雨量的熱帶氣旋

TABLE 4.8.2　TEN WETTEST TROPICAL CYCLONES IN HONG KONG (1884-1939, 1947-2009)

熱帶氣旋 Tropical Cyclone			香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm)				
年份 Year	月份 Month	名稱 Name	(i) 在香港600公里內 within 600 km of Hong Kong ($T_1 \rightarrow T_2$)	(ii) 在 T_2 之後的 24 小時內 24-hour period after T_2	(iii) 在 T_2 之後的 48 小時內 48-hour period after T_2	(iv) 在 T_2 之後的 72 小時內 72-hour period after T_2	(i) + (iv) 共 Total $T_1 \rightarrow$ (T_2+72 小時 hours)
1999	8	森姆 Sam	368.1	178.9	248.1	248.4	616.5
1926	7	熱帶氣旋 T.C.	34.8 #	534.0 #	561.1 #	562.2 #	597.0
1916	6	熱帶氣旋 T.C.	494.8 #	27.9 #	59.4 #	67.2 #	562.0
1965	9	愛娜斯 Agnes	404.6	8.9	64.3	126.1	530.7
1978	7	愛娜斯 Agnes	502.4	12.3	12.3	16.6	519.0
1976	8	愛倫 Ellen	90.7	394.2	421.0	425.4	516.1
1993	9	黛蒂 Dot	459.6	37.9	37.9	37.9	497.5
1982	8	黛蒂 Dot	41.2	322.5	403.1	450.5	491.7
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_1 - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T_2 - 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

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

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

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

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

表 4.9　　一九四六至二零零九年間引致天文台需要發出十號颶風信號的颱風

TABLE 4.9　TYPHOONS REQUIRING THE ISSUING OF THE HURRICANE SIGNAL NO. 10 DURING THE PERIOD 1946-2009

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 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 anemogran

表 4.10　二零零九年熱帶氣旋在香港所造成的損失

TABLE 4.10　DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG IN 2009

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$)					
		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	共Total
強烈熱帶風暴蓮花 Severe Tropical Storm Linfa	6			水箱 Water tank: 1 處 site		1 宗 case						
熱帶風暴浪卡 Tropical Storm Nangka	6		道路 Road: 1 處 site			1 宗 case						
颱風莫拉菲 Typhoon Molave	7	農地 Farmland: 219 公頃 hectares 農作物 Crops: 1,170 噸 tons			7 個 units	1 宗 case	18.25200			0.00312		18.25512
強烈熱帶風暴天鵝 Severe Tropical Storm Goni	8		道路 Road: 2 處 sites			3 宗 cases						
熱帶風暴彩虹 Tropical Storm Mujigae	9				1 個 unit	1 宗 case						
颱風巨爵 Typhoon Koppu	9	農地 Farmland: 212.1 公頃 hectares 農作物 Crops: 1,320 噸 tons 魚 Fish: 0.6 噸 tons	道路 Road: 1 處 site 行人道 Pedestrian pavement: 1 處 site 小徑及通道 Footpath & access: 2 處 sites 其他 Others: 2 處 sites	鐵路 Railway: 2 處 sites	180 個 units	8 宗 cases	20.59200		0.14102	0.03432		20.76734
颱風凱薩娜 Typhoon Ketsana	9		小徑及通道 Footpath & access: 1 處 site		2 個 units	2 宗 cases						

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　　一九六零至二零零九年間熱帶氣旋在香港所造成的人命傷亡及破壞

TABLE 4.11　CASUALTIES AND DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG : 1960-2009

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	34	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+	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. Dujuan	杜鵑	0	4	24	0	1	4
2004	14 / 7 - 16 / 7	T.S. Kompasu	圓規	0	0	12	0	0	0
2005	10 / 8 - 14 / 8	S.T.S. Sanvu	珊瑚	0	0	0	0	0	1
	16 / 9 - 19 / 9	T.S. Vicente	韋森特	2	0	0	0	0	0
	21 / 9 - 28 / 9	T. Damrey	達維	0	0	5	0	0	1
2006	9 / 5 - 18 / 5	T. Chanchu	珍珠	0	0	6	0	1	0
	27 / 6 - 29 / 6	T.S. Jelawat	杰拉華	1	0	0	0	0	0
	31 / 7 - 4 / 8	T. Prapiroon	派比安	0	0	8	0	1	4
	6 / 8 - 10 / 8	S.T.S. Bopha	寶霞	0	0	0	0	0	1
	23 / 8 - 25 / 8	T.D. -	-	0	0	0	0	0	1
	12 / 9 - 13 / 9	T.D. -	-	0	0	1	0	0	0
	27 /10 - 6 / 11	T. Cimaron	西馬侖	0	0	4	0	0	0
2007	5 / 8 - 11 / 8	S.T.S. Pabuk	帕布	1	0	17	0	0	0
2008	15 / 4 - 20 / 4	T. Neoguri	浣熊	0	0	2	0	0	0
	18 / 6 - 26 / 6	T. Fengshen	風神	0	0	17	0	0	0
	4 / 8 - 8 / 8	S.T.S. Kammuri	北冕	0	0	37	0	0	0
	17 / 8 - 23 / 8	T. Nuri	鸚鵡	2	0	112	0	0	0
	19 / 9 - 25 / 9	T. Hagupit	黑格比	0	0	58	0	10	0
2009	15 / 7 - 19 / 7	T. Molave	莫拉菲	0	0	5	0	3	0
	1 / 8 - 9 / 8	S.T.S. Goni	天鵝	4	0	10	0	1	0
	9 / 9 12 / 9	T.S. Mujigae	彩虹	0	0	1	0	0	0
	12 / 9 16 / 9	T. Koppu	巨爵	0	0	74	0	0	0

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　二零零九年熱帶氣旋的位置及強度數據

以下是二零零九年位於北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋。其每六小時之位置及強度刊於本節。

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

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

Section 5 TROPICAL CYCLONE POSITION AND INTENSITY DATA, 2009

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°).

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

颱風鯨魚(0901)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON KUJIRA (0901)

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
五月 May	2	1200	T.D.	1002	13	13.4	124.4
		1800	T.D.	996	16	13.6	124.5
	3	0000	T.S.	994	21	13.9	124.7
		0600	T.S.	990	23	14.0	125.1
		1200	S.T.S.	985	25	14.6	125.8
		1800	S.T.S.	980	28	15.1	126.5
	4	0000	S.T.S.	980	28	15.6	127.4
		0600	T.	970	33	16.3	128.5
		1200	T.	960	39	16.8	129.6
		1800	T.	955	41	17.2	131.0
	5	0000	T.	960	39	17.6	132.7
		0600	T.	960	39	18.2	134.0
		1200	T.	960	39	18.9	135.4
		1800	T.	955	41	19.5	136.8
	6	0000	T.	955	41	20.4	138.2
		0600	T.	960	39	21.6	139.8
		1200	T.	965	36	22.5	141.3
		1800	T.	975	33	24.4	142.9
	7	0000	S.T.S.	985	25	26.0	143.7
		0600	T.S.	990	23	28.0	144.9
		1200	T.S.	998	18	29.8	147.3

變為溫帶氣旋
Became Extratropical

颱風燦鴻(0902)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON CHAN-HOM (0902)

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
五月 May	3	0600	T.D.	1002	13	9.7	111.5
		1200	T.S.	996	18	9.9	111.9
		1800	T.S.	995	18	10.1	112.2
	4	0000	T.S.	992	21	10.6	112.5
		0600	T.S.	990	23	10.9	112.5
		1200	T.S.	990	23	11.4	112.5
		1800	T.S.	990	23	11.6	112.5
	5	0000	S.T.S.	985	25	11.8	112.4
		0600	S.T.S.	985	25	12.2	112.1
		1200	S.T.S.	985	25	12.7	112.0
		1800	S.T.S.	980	28	13.2	112.2
	6	0000	S.T.S.	980	28	13.6	113.0
		0600	S.T.S.	975	31	14.1	114.0
		1200	S.T.S.	975	31	14.3	114.8
		1800	S.T.S.	975	31	14.8	115.9
	7	0000	T.	970	33	15.2	117.3
		0600	T.	965	36	15.8	118.8
		1200	T.	965	36	16.3	120.0
		1800	S.T.S.	975	31	17.0	121.6
	8	0000	S.T.S.	985	25	17.2	123.6
		0600	T.S.	988	23	17.3	124.5
		1200	T.S.	990	21	17.3	125.5
		1800	T.S.	995	18	17.3	126.4
	9	0000	T.D.	998	16	17.2	127.4
		0600	T.D.	998	16	17.2	127.9
		1200	T.D.	998	16	17.4	128.8
		1800	T.D.	1000	13	18.4	128.4
	10	0000	T.D.	1000	13	18.8	127.8
		0600	T.D.	1000	13	19.4	128.0
		1200	T.D.	1000	13	20.3	127.8
		1800	T.D.	1000	13	20.6	127.4
	11	0000	T.D.	1000	13	21.6	127.1
		0600	T.D.	1004	12	21.7	126.6
		1200	T.D.	1004	12	22.3	127.1
		1800	T.D.	1004	12	23.0	127.1
	12	0000	T.D.	1004	12	23.9	126.9
			消散 Dissipated				

強烈熱帶風暴蓮花(0903)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM LINFA (0903)

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. ºN	東經 Long. ºE
六月 Jun	17	1200	T.D.	1000	13	18.3	116.8
		1800	T.D.	998	16	18.3	116.7
	18	0000	T.D.	998	16	18.2	116.6
		0600	T.S.	995	18	18.2	116.4
		1200	T.S.	995	18	17.8	116.3
		1800	T.S.	995	18	17.6	116.6
	19	0000	T.S.	990	21	17.6	116.9
		0600	T.S.	990	21	18.2	117.3
		1200	T.S.	988	23	19.3	117.2
		1800	S.T.S.	985	25	19.9	117.1
	20	0000	S.T.S.	985	25	20.2	117.2
		0600	S.T.S.	980	28	20.6	117.4
		1200	S.T.S.	975	31	21.2	117.9
		1800	S.T.S.	975	31	21.9	118.2
	21	0000	S.T.S.	980	25	22.9	118.4
		0600	T.S.	982	23	23.9	118.5
		1200	T.S.	982	23	24.5	118.5
		1800	T.S.	985	23	25.1	118.8
	22	0000	T.S.	990	21	25.9	119.4
		0600	T.S.	992	18	26.8	120.2
		1200	T.D.	995	13	28.0	121.4
		1800	T.D.	998	13	29.1	122.4
	23	0000	T.D.	998	13	30.1	123.4
			消散 Dissipated				

熱帶風暴浪卡(0904)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM NANGKA (0904)

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. ºN	東經 Long. ºE
六月 Jun	22	1800	T.D.	1004	13	11.0	128.0
	23	0000	T.D.	1000	16	11.1	126.8
		0600	T.S.	996	18	11.7	125.4
		1200	T.S.	995	18	12.2	124.4
		1800	T.S.	992	21	12.6	123.6
	24	0000	T.S.	992	21	13.0	122.2
		0600	T.S.	992	21	13.2	121.3
		1200	T.S.	992	21	13.6	120.5
		1800	T.S.	992	21	14.4	119.6
	25	0000	T.S.	990	23	15.3	118.7
		0600	T.S.	992	21	16.2	118.2
		1200	T.S.	994	18	17.4	117.6
		1800	T.S.	994	18	18.4	116.8
	26	0000	T.S.	994	18	19.2	116.1
		0600	T.S.	994	18	20.7	115.7
		1200	T.D.	996	16	22.1	114.9
		1800	T.D.	999	13	22.8	114.5
			消散 Dissipated				

熱帶風暴蘇迪羅(0905)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM SOUDELOR (0905)

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. ºN	東經 Long. ºE
七月 Jul	10	0600	T.D.	998	13	19.2	120.0
		1200	T.D.	996	13	19.4	118.7
		1800	T.D.	996	13	19.7	117.0
	11	0000	T.D.	994	16	19.8	115.5
		0600	T.S.	990	18	20.1	114.2
		1200	T.S.	990	18	20.1	112.8
		1800	T.S.	990	18	20.2	111.6
	12	0000	T.S.	992	18	20.3	110.1
		0600	T.S.	994	18	20.8	108.6
		1200	T.D.	996	16	21.2	107.2
			消散 Dissipated				

熱帶低氣壓由七月十三日至十四日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 13 - 14 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. ºN	東經 Long. ºE
七月 Jul	13	0000	T.D.	1000	13	22.1	122.4
		0600	T.D.	998	16	22.8	121.4
		1200	T.D.	998	16	23.4	120.1
		1800	T.D.	998	16	24.2	119.1
	14	0000	T.D.	999	16	26.3	118.8
			消散 Dissipated				

颱風莫拉菲(0906)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON MOLAVE (0906)

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. ºN	東經 Long. ºE
七月 Jul	15	1200	T.D.	1000	13	15.0	127.2
		1800	T.D.	998	16	15.4	126.4
	16	0000	T.D.	998	16	16.0	125.6
		0600	T.D.	998	16	16.6	125.1
		1200	T.S.	994	18	17.3	124.5
		1800	T.S.	990	21	18.0	124.0
	17	0000	T.S.	988	23	18.9	123.3
		0600	S.T.S.	985	25	19.6	122.6
		1200	S.T.S.	978	31	20.6	121.2
		1800	S.T.S.	978	31	21.0	119.6
	18	0000	T.	970	33	21.4	118.2
		0600	T.	965	36	21.8	117.1
		1200	T.	960	39	22.2	116.0
		1800	T.	970	33	22.6	114.4
	19	0000	T.S.	988	23	22.9	112.9
		0600	T.D.	992	16	23.3	111.2
		1200	T.D.	996	13	23.5	109.6
			消散 Dissipated				

強烈熱帶風暴天鵝(0907)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM GONI (0907)

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	31	1800	T.D.	992	16	16.0	127.5
八月 Aug	1	0000	T.D.	992	16	16.5	126.1
		0600	T.D.	992	16	17.0	124.5
		1200	T.D.	992	16	17.2	123.0
		1800	T.D.	992	16	17.4	121.1
	2	0000	T.D.	992	16	17.7	118.3
		0600	T.D.	991	17	18.0	117.2
		1200	T.D.	991	17	18.1	116.4
		1800	T.D.	991	17	18.3	116.2
	3	0000	T.D.	991	17	18.5	116.1
		0600	T.D.	991	17	19.2	116.0
		1200	T.S.	990	18	19.7	115.7
		1800	T.S.	990	18	20.3	114.5
	4	0000	T.S.	985	21	20.5	114.1
		0600	T.S.	980	23	21.1	113.9
		1200	S.T.S.	975	25	21.5	113.5
		1800	S.T.S.	980	25	21.7	113.0
	5	0000	S.T.S.	980	25	21.8	112.7
		0600	T.S.	985	23	22.0	112.5
		1200	T.S.	986	21	22.1	112.3
		1800	T.S.	987	18	22.1	112.1
	6	0000	T.S.	988	18	22.0	111.7
		0600	T.D.	989	16	21.8	111.2
		1200	T.D.	989	16	21.3	110.5
		1800	T.D.	989	16	20.9	110.2
	7	0000	T.D.	989	16	20.5	109.8
		0600	T.D.	989	16	20.1	109.2
		1200	T.D.	989	16	19.7	108.7
		1800	T.S.	985	18	19.5	108.5
	8	0000	T.S.	985	18	19.2	108.3
		0600	T.S.	985	18	18.8	108.1
		1200	T.S.	985	18	18.4	108.1
		1800	T.S.	985	18	17.9	109.5
	9	0000	T.D.	990	16	18.0	111.3
		0600	T.D.	992	13	18.8	112.5
			消散 Dissipated				

颱風莫拉克(0908)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON MORAKOT (0908)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
八月 Aug	3	1800	T.D.	994	13	21.3	136.0
	4	0000	T.S.	990	18	21.7	135.8
		0600	T.S.	990	18	22.2	135.4
		1200	T.S.	985	21	22.5	134.6
		1800	S.T.S.	980	25	22.6	134.0
	5	0000	S.T.S.	975	28	22.9	133.3
		0600	T.	970	33	23.0	132.2
		1200	T.	970	33	23.1	131.1
		1800	T.	965	36	23.3	129.4
	6	0000	T.	960	39	23.4	128.3
		0600	T.	960	39	23.2	126.8
		1200	T.	960	39	23.4	125.3
		1800	T.	955	41	23.4	123.9
	7	0000	T.	955	41	23.5	123.1
		0600	T.	955	41	23.5	122.4
		1200	T.	955	41	23.7	122.0
		1800	T.	960	39	24.0	121.4
	8	0000	T.	965	36	24.5	121.2
		0600	T.	965	36	25.0	120.8
		1200	T.	965	36	25.3	120.6
		1800	T.	965	36	25.5	120.5
	9	0000	T.	970	33	26.0	120.3
		0600	T.	970	33	26.3	120.1
		1200	S.T.S.	975	31	26.7	119.8
		1800	S.T.S.	984	25	27.1	119.7
	10	0000	T.S.	988	23	28.1	119.6
		0600	T.S.	990	21	28.8	119.8
		1200	T.S.	992	18	29.8	119.8
		1800	T.S.	992	18	30.9	119.9
	11	0000	T.S.	992	18	32.2	120.5
		0600	T.S.	994	18	33.1	121.4
		1200	T.D.	997	16	33.6	122.1
		1800	T.D.	997	16	34.2	123.0

變為溫帶氣旋
Became Extratropical

熱帶風暴艾濤(0909)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM ETAU (0909)

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	8	0600	T.D.	996	13	23.7	139.0
		1200	T.D.	996	13	24.2	138.2
		1800	T.D.	996	13	25.1	137.0
	9	0000	T.D.	994	16	26.0	136.3
		0600	T.D.	994	16	27.1	135.5
		1200	T.S.	992	18	27.9	135.0
		1800	T.S.	992	18	29.2	134.7
	10	0000	T.S.	990	21	30.0	134.7
		0600	T.S.	990	21	31.0	135.1
		1200	T.S.	990	21	32.2	135.7
		1800	T.S.	990	21	32.9	136.8
	11	0000	T.S.	988	23	33.3	138.6
		0600	T.S.	988	23	33.4	140.8
		1200	T.S.	990	21	33.1	143.0
		1800	T.S.	990	21	32.7	145.2
	12	0000	T.S.	990	21	32.5	148.3
		0600	T.S.	990	21	32.3	150.6
		1200	T.S.	992	18	33.2	151.8
		1800	T.S.	992	18	33.5	151.8
	13	0000	T.D.	994	16	33.8	151.7

變為溫帶氣旋
Became Extratropical

熱帶低氣壓由八月十三日至十七日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 13 - 17 AUGUST

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	13	1200	T.D.	1008	13	13.9	179.5
		1800	T.D.	1008	13	13.7	178.4
	14	0000	T.D.	1008	13	13.6	177.8
		0600	T.D.	1008	13	13.4	177.1
		1200	T.D.	1008	13	13.4	175.6
		1800	T.D.	1006	16	13.3	174.5
	15	0000	T.D.	1006	16	13.5	173.9
		0600	T.D.	1006	16	14.0	173.7
		1200	T.D.	1006	16	14.2	173.4
		1800	T.D.	1006	16	14.6	173.2
	16	0000	T.D.	1006	16	15.2	173.2
		0600	T.D.	1006	16	16.1	174.0
		1200	T.D.	1006	16	16.4	174.1
		1800	T.D.	1008	13	16.2	173.3

消散
Dissipated

強颱風環高(0910)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON VAMCO (0910)

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	17	0000	T.D.	1006	13	12.6	159.0
		0600	T.D.	1006	13	13.2	158.8
		1200	T.D.	1004	16	13.9	158.5
		1800	T.S.	1000	18	14.5	158.3
	18	0000	T.S.	998	18	15.6	157.8
		0600	T.S.	996	21	16.2	157.5
		1200	S.T.S.	985	25	16.6	157.3
		1800	S.T.S.	980	28	17.0	157.3
	19	0000	T.	970	33	17.3	157.5
		0600	T.	965	36	17.7	157.7
		1200	T.	955	41	18.0	157.6
		1800	S.T.	950	43	18.2	157.4
	20	0000	S.T.	945	46	18.6	157.4
		0600	S.T.	945	46	18.8	157.1
		1200	S.T.	945	46	19.0	157.1
		1800	S.T.	945	46	19.3	157.0
	21	0000	S.T.	945	46	19.8	156.8
		0600	S.T.	945	46	20.5	156.7
		1200	S.T.	945	46	21.1	156.7
		1800	S.T.	945	46	22.2	156.9
	22	0000	T.	955	41	23.5	156.7
		0600	T.	955	41	24.7	156.3
		1200	T.	955	41	25.6	155.9
		1800	T.	955	41	26.5	155.5
	23	0000	T.	955	41	27.5	155.0
		0600	T.	955	41	28.5	154.9
		1200	T.	955	41	29.3	154.6
		1800	T.	955	41	30.1	154.4
	24	0000	T.	955	41	31.1	154.8
		0600	T.	960	39	32.2	155.0
		1200	T.	960	39	33.6	155.3
		1800	T.	960	39	35.5	155.9
	25	0000	T.	965	36	38.1	156.8
		0600	T.	970	33	41.4	158.6
		1200	S.T.S.	980	31	45.2	161.6
		1800	S.T.S.	985	28	48.5	164.7

變為溫帶氣旋
Became Extratropical

強烈熱帶風暴科羅旺(0911)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM KROVANH (0911)

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. ºN	東經 Long. ºE
八月 Aug	28	0000	T.D.	1004	13	21.4	149.1
		0600	T.D.	1002	16	22.6	149.1
		1200	T.S.	998	18	23.8	149.0
		1800	T.S.	996	18	25.0	148.7
	29	0000	T.S.	994	21	26.3	147.8
		0600	T.S.	992	21	27.4	146.9
		1200	T.S.	990	23	28.6	146.0
		1800	S.T.S.	985	25	29.9	144.5
	30	0000	S.T.S.	985	25	30.6	142.5
		0600	S.T.S.	980	28	31.1	141.0
		1200	S.T.S.	980	28	31.8	140.6
		1800	S.T.S.	975	31	32.7	140.0
	31	0000	S.T.S.	975	31	33.5	140.0
		0600	S.T.S.	980	28	34.6	140.5
		1200	S.T.S.	985	25	36.4	141.5
		1800	S.T.S.	985	25	38.3	142.9
九月 Sep	1	0000	T.S.	992	23	40.3	144.6
		0600	T.S.	994	23	42.2	146.3

變為溫帶氣旋
Became Extratropical

熱帶低氣壓由八月三十日至九月一日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 30 AUGUST - 1 SEPTEMBER

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. ºN	東經 Long. ºE
八月 Aug	30	0000	T.D.	1004	16	14.7	179.1
		0600	T.D.	1006	13	15.0	177.9
		1200	T.D.	1008	13	15.2	176.2
		1800	T.D.	1008	13	15.2	175.0
	31	0000	T.D.	1008	13	15.4	173.6
		0600	T.D.	1008	13	15.7	172.2
		1200	T.D.	1008	13	15.9	171.3
		1800	T.D.	1008	13	16.0	170.0
九月 Sep	1	0000	T.D.	1008	13	16.2	168.9
		0600	T.D.	1006	13	16.3	168.2
		1200	T.D.	1008	13	16.5	167.5

消散
Dissipated

強烈熱帶風暴杜鵑(0912)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM DUJUAN (0912)

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	0000	T.D.	994	13	18.0	130.0
		0600	T.D.	992	16	18.2	129.5
		1200	T.D.	992	16	18.3	129.0
		1800	T.D.	992	16	18.3	128.4
	4	0000	T.S.	990	18	17.5	129.1
		0600	T.S.	988	21	18.5	129.9
		1200	T.S.	988	21	19.0	131.1
		1800	T.S.	985	23	19.5	132.2
	5	0000	T.S.	985	23	20.0	132.7
		0600	S.T.S.	982	25	21.2	133.6
		1200	S.T.S.	982	25	22.4	134.6
		1800	S.T.S.	982	25	23.4	135.2
	6	0000	S.T.S.	982	25	24.5	135.3
		0600	S.T.S.	982	25	25.3	135.8
		1200	S.T.S.	982	25	26.2	136.0
		1800	S.T.S.	982	25	26.9	136.1
	7	0000	S.T.S.	982	25	27.3	136.1
		0600	S.T.S.	982	25	27.9	136.2
		1200	S.T.S.	982	25	28.6	136.5
		1800	T.S.	985	23	29.3	137.2
	8	0000	T.S.	985	23	30.4	138.7
		0600	T.S.	985	23	31.1	140.4
		1200	T.S.	985	23	31.6	142.4
		1800	T.S.	985	23	32.3	145.1
	9	0000	T.S.	985	23	33.6	148.6
		0600	T.S.	985	23	35.1	152.2
		1200	T.S.	985	23	37.0	155.7
		1800	T.S.	985	23	39.6	159.8
	10	0000	T.S.	985	23	42.9	163.8
			變為溫帶氣旋 Became Extratropical				

熱帶風暴彩虹(0913)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM MUJIGAE (0913)

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	9	0000	T.D.	1000	13	16.9	119.1
		0600	T.D.	998	16	17.5	118.4
		1200	T.D.	998	16	18.0	117.5
		1800	T.D.	998	16	18.4	116.5
	10	0000	T.S.	995	18	18.9	115.0
		0600	T.S.	995	18	19.4	113.7
		1200	T.S.	995	18	19.5	112.8
		1800	T.S.	993	21	19.7	111.2
	11	0000	T.S.	993	21	19.8	109.4
		0600	T.S.	993	21	19.8	108.1
		1200	T.S.	994	18	19.8	107.3
		1800	T.S.	994	18	19.8	106.7
	12	0000	T.S.	995	18	19.9	106.1
		0600	T.D.	1000	13	20.0	105.3
			消散 Dissipated				

超強颱風彩雲(0914)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON CHOI-WAN (0914)

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	12	0000	T.D.	1008	13	14.3	153.5
		0600	T.D.	1006	13	14.9	152.6
		1200	T.D.	1004	16	15.1	152.0
		1800	T.S.	1002	18	15.4	150.9
	13	0000	T.S.	998	21	15.8	150.0
		0600	T.S.	994	23	15.8	149.3
		1200	S.T.S.	990	25	15.7	148.7
		1800	S.T.S.	980	31	15.7	148.5
	14	0000	T.	965	36	15.7	148.2
		0600	T.	960	39	15.8	147.8
		1200	S.T.	950	43	16.3	147.5
		1800	S.T.	935	49	16.6	147.0
	15	0000	SuperT.	930	52	17.1	146.6
		0600	SuperT.	920	54	17.6	145.7
		1200	SuperT.	915	57	17.9	145.0
		1800	SuperT.	910	59	18.2	144.2
	16	0000	SuperT.	910	59	18.6	143.4
		0600	SuperT.	910	59	19.0	142.6
		1200	SuperT.	910	59	19.2	141.9
		1800	SuperT.	910	59	19.6	141.4
	17	0000	SuperT.	915	57	20.3	140.9
		0600	SuperT.	920	54	21.0	140.3
		1200	SuperT.	925	52	21.6	139.8
		1800	S.T.	935	49	22.5	139.3
	18	0000	S.T.	935	49	23.2	138.9
		0600	S.T.	950	43	24.1	138.8
		1200	T.	955	41	25.1	139.0
		1800	T.	955	41	26.4	139.5
	19	0000	T.	960	39	27.7	140.4
		0600	T.	960	39	29.1	141.6
		1200	T.	965	36	30.5	143.3
		1800	T.	970	36	32.7	145.1
	20	0000	T.	975	33	34.1	146.8
		0600	S.T.S.	980	31	35.1	149.1

變為溫帶氣旋
Became Extratropical

颱風巨爵(0915)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON KOPPU (0915)

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. ºN	東經 Long. ºE
九月 Sep	12	0600	T.D.	1002	13	17.5	124.4
		1200	T.D.	1000	16	18.0	123.0
		1800	T.D.	1000	16	19.0	121.6
	13	0000	T.D.	1000	16	19.5	120.5
		0600	T.D.	998	16	19.5	119.1
		1200	T.S.	995	18	19.5	118.3
		1800	T.S.	985	23	19.9	117.0
	14	0000	T.S.	985	23	19.8	115.6
		0600	S.T.S.	975	31	20.3	115.2
		1200	T.	970	33	21.0	114.3
		1800	T.	960	39	21.4	113.3
	15	0000	T.	965	36	22.0	112.0
		0600	T.S.	988	23	22.5	110.7
		1200	T.S.	995	18	23.0	109.8
		1800	T.D.	998	16	23.3	108.8
			消散 Dissipated				

颱風凱薩娜(0916)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON KETSANA (0916)

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. ºN	東經 Long. ºE
九月 Sep	25	0000	T.D.	999	13	14.8	128.5
		0600	T.D.	997	16	14.8	127.4
		1200	T.D.	997	16	14.9	126.3
		1800	T.D.	995	16	15.1	125.0
	26	0000	T.S.	994	18	15.4	123.0
		0600	T.S.	991	18	15.3	121.3
		1200	T.S.	988	21	15.3	119.9
		1800	T.S.	985	23	15.4	118.2
	27	0000	S.T.S.	983	25	15.4	116.6
		0600	S.T.S.	983	25	15.4	115.5
		1200	S.T.S.	983	25	15.7	114.2
		1800	S.T.S.	980	28	15.8	113.5
	28	0000	S.T.S.	975	31	15.8	112.9
		0600	T.	960	36	15.9	111.8
		1200	T.	960	36	16.1	111.1
		1800	T.	955	39	16.0	110.2
	29	0000	T.	955	39	15.5	109.6
		0600	T.	960	36	15.4	108.9
		1200	S.T.S.	975	31	15.4	108.0
		1800	S.T.S.	982	25	15.6	107.1
	30	0000	T.S.	990	21	15.7	106.7
		0600	T.D.	997	16	15.8	106.4
		1200	T.D.	998	13	15.4	105.5
			消散 Dissipated				

超強颱風芭瑪(0917)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON PARMA (0917)

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	29	0000	T.D.	1000	13	8.0	139.9
		0600	T.D.	998	16	7.8	139.1
		1200	T.S.	995	18	7.9	138.3
		1800	T.S.	988	23	8.2	137.5
	30	0000	S.T.S.	980	28	9.1	136.8
		0600	T.	970	36	9.9	135.4
		1200	T.	960	39	10.6	133.9
		1800	T.	955	41	11.3	132.4
十月 Oct	1	0000	S.T.	945	46	11.8	131.2
		0600	SuperT.	925	54	12.5	129.7
		1200	SuperT.	930	52	13.1	128.6
		1800	SuperT.	930	52	13.9	127.5
	2	0000	S.T.	945	46	14.5	126.3
		0600	S.T.	950	43	15.0	125.5
		1200	T.	955	41	15.9	124.7
		1800	T.	955	41	16.5	123.8
	3	0000	T.	955	41	17.2	123.0
		0600	T.	955	41	17.7	122.1
		1200	T.	955	41	18.2	121.5
		1800	T.	960	39	18.6	120.8
	4	0000	T.	965	36	18.8	120.4
		0600	T.	965	36	19.3	119.8
		1200	T.	970	33	19.7	119.6
		1800	T.	970	33	20.0	119.5
	5	0000	T.	970	33	19.9	119.4
		0600	S.T.S.	975	31	20.1	119.5
		1200	S.T.S.	975	31	20.1	119.8
		1800	S.T.S.	975	31	19.8	119.9
	6	0000	S.T.S.	980	28	19.3	120.2
		0600	S.T.S.	980	28	18.9	120.6
		1200	S.T.S.	980	28	18.6	120.9
		1800	T.S.	990	23	17.9	121.4
	7	0000	T.S.	992	21	17.6	121.9
		0600	T.S.	995	18	17.5	122.3
		1200	T.D.	997	16	17.7	122.5
		1800	T.D.	996	16	17.9	122.4
	8	0000	T.S.	995	18	17.7	122.3
		0600	T.S.	995	18	17.5	122.1
		1200	T.S.	995	18	17.5	121.3
		1800	T.S.	995	18	17.3	120.6
	9	0000	T.S.	995	18	17.2	120.1
		0600	T.S.	995	18	17.3	119.6
		1200	T.S.	995	18	17.3	119.2
		1800	T.S.	995	18	17.2	118.8
	10	0000	T.S.	996	18	17.1	118.6
		0600	T.S.	996	18	18.0	118.1
		1200	T.S.	996	18	18.2	116.9
		1800	T.S.	995	18	18.1	115.7
	11	0000	T.S.	990	21	18.0	114.7
		0600	T.S.	990	21	17.6	113.5
		1200	T.S.	990	21	17.9	112.4
		1800	T.S.	990	21	18.5	111.6
	12	0000	T.S.	990	21	18.9	110.9
		0600	T.S.	992	21	19.3	110.1
		1200	T.S.	992	21	19.6	109.4
		1800	T.S.	990	23	19.7	108.8
	13	0000	T.S.	990	23	19.9	108.5
		0600	S.T.S.	984	28	20.2	108.0
		1200	S.T.S.	984	28	20.4	107.7
		1800	S.T.S.	984	28	20.4	107.4
	14	0000	S.T.S.	988	25	20.4	107.2
		0600	T.S.	995	21	20.4	106.8
		1200	T.D.	1000	16	20.4	106.4
		1800	T.D.	1005	13	20.4	106.1
			消散 Dissipated				

超強颱風茉莉(0918)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON MELOR (0918)

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	29	0600	T.D.	1004	13	9.8	159.6
		1200	T.D.	1002	16	10.4	158.0
		1800	T.D.	998	16	10.9	156.8
	30	0000	T.S.	996	18	11.7	155.8
		0600	T.S.	992	21	12.6	154.8
		1200	T.S.	990	23	12.9	154.0
		1800	S.T.S.	980	28	13.1	153.5
十月 Oct	1	0000	T.	970	33	13.5	153.2
		0600	T.	960	39	13.9	152.5
		1200	T.	955	41	14.1	152.0
		1800	S.T.	945	46	14.1	151.4
	2	0000	S.T.	940	49	14.2	151.1
		0600	S.T.	940	49	14.5	150.6
		1200	S.T.	940	49	15.0	149.9
		1800	S.T.	940	49	15.4	148.8
	3	0000	S.T.	940	49	15.6	147.9
		0600	S.T.	945	46	16.2	146.7
		1200	S.T.	940	49	16.5	145.2
		1800	SuperT.	930	52	16.5	143.7
	4	0000	SuperT.	925	54	16.6	142.2
		0600	SuperT.	925	54	17.0	140.8
		1200	SuperT.	920	57	17.5	139.3
		1800	SuperT.	920	57	17.9	137.6
	5	0000	SuperT.	925	54	18.4	136.3
		0600	SuperT.	925	54	19.2	134.8
		1200	SuperT.	925	54	20.0	133.6
		1800	SuperT.	925	54	21.2	132.5
	6	0000	SuperT.	925	54	22.5	131.7
		0600	SuperT.	930	52	23.9	131.0
		1200	SuperT.	930	52	25.1	130.6
		1800	S.T.	940	49	26.6	130.7
	7	0000	S.T.	950	43	28.2	131.4
		0600	S.T.	950	43	29.8	132.4
		1200	S.T.	950	43	31.6	134.5
		1800	T.	960	39	34.0	136.6
	8	0000	T.	970	33	36.1	138.8
		0600	S.T.S.	980	28	38.3	141.1

變為溫帶氣旋
Became Extratropical

熱帶風暴尼伯特(0919)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM NEPARTAK (0919)

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	8	1200	T.D.	1004	13	16.8	143.4
		1800	T.D.	1002	16	17.8	143.2
	9	0000	T.D.	1002	16	18.5	143.1
		0600	T.S.	1000	18	19.4	142.7
		1200	T.S.	998	18	19.8	142.5
		1800	T.S.	998	18	20.3	142.3
	10	0000	T.S.	998	18	20.7	142.2
		0600	T.S.	998	18	21.3	141.9
		1200	T.S.	998	18	21.8	141.8
		1800	T.S.	998	18	22.1	142.0
	11	0000	T.S.	996	21	22.3	142.3
		0600	T.S.	996	21	22.7	142.7
		1200	T.S.	996	21	23.0	143.3
		1800	T.S.	994	23	23.2	143.8
	12	0000	T.S.	992	23	23.5	144.3
		0600	T.S.	992	23	24.3	145.1
		1200	T.S.	992	23	25.5	146.2
		1800	T.S.	992	23	26.9	147.8
	13	0000	T.S.	992	23	28.6	150.1
		0600	T.S.	992	23	30.5	152.8
		1200	T.S.	994	21	31.4	155.1
		1800	T.S.	996	21	32.6	157.6

變為溫帶氣旋
Became Extratropical

超強颱風盧碧(0920)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON LUPIT (0920)

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	14	1800	T.D.	1006	13	11.2	146.6
	15	0000	T.D.	1004	16	11.3	144.5
		0600	T.D.	1002	16	11.8	142.1
		1200	T.S.	1000	18	12.2	140.2
		1800	T.S.	995	21	12.4	139.0
	16	0000	T.S.	990	23	13.0	137.6
		0600	S.T.S.	980	28	13.8	136.0
		1200	S.T.S.	975	31	14.2	134.4
		1800	T.	970	33	14.5	133.2
	17	0000	T.	965	36	15.1	132.7
		0600	T.	955	41	15.6	132.3
		1200	S.T.	945	46	16.1	132.3
		1800	S.T.	935	49	16.7	132.5
	18	0000	S.T.	935	49	17.1	132.9
		0600	SuperT.	930	52	17.3	133.5
		1200	SuperT.	930	52	17.7	134.0
		1800	SuperT.	920	57	18.0	134.2
	19	0000	SuperT.	920	57	18.6	134.1
		0600	SuperT.	920	57	19.0	133.2
		1200	SuperT.	920	57	19.3	132.3
		1800	SuperT.	930	52	19.8	131.3
	20	0000	SuperT.	930	52	20.2	130.6
		0600	S.T.	945	46	20.4	129.7
		1200	S.T.	950	43	20.5	128.9
		1800	S.T.	950	43	20.5	127.9
	21	0000	S.T.	950	43	20.2	127.1
		0600	T.	955	41	19.8	126.4
		1200	T.	955	41	19.4	125.7
		1800	T.	955	41	19.2	125.3
	22	0000	T.	955	41	18.9	124.8
		0600	T.	960	39	18.8	124.3
		1200	T.	965	36	18.8	123.9
		1800	T.	970	33	18.8	123.6
	23	0000	T.	970	33	18.9	123.4
		0600	S.T.S.	975	31	19.1	123.4
		1200	S.T.S.	985	25	19.6	123.5
		1800	S.T.S.	985	25	20.1	124.4
	24	0000	S.T.S.	985	25	21.4	124.9
		0600	S.T.S.	985	25	22.3	125.4
		1200	S.T.S.	978	28	23.1	125.8
		1800	S.T.S.	980	25	23.4	126.7
	25	0000	S.T.S.	980	25	24.3	127.4
		0600	T.S.	982	23	24.9	128.6
		1200	T.S.	982	23	25.7	130.1
		1800	T.S.	984	21	26.5	131.7
	26	0000	T.S.	984	21	27.4	133.3
		0600	T.S.	984	21	29.1	135.8
		1200	T.S.	984	21	31.3	139.1
		1800	T.S.	984	21	34.0	142.8

變為溫帶氣旋
Became Extratropical

熱帶低氣壓由十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 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	19	0000	T.D.	1002	13	16.6	110.4
		0600	T.D.	1000	13	17.1	110.4
		1200	T.D.	1000	13	17.4	110.4
		1800	T.D.	1000	13	17.6	110.3
	20	0000	T.D.	1002	13	17.8	110.2
		0600	T.D.	1004	13	18.0	109.8
			消散 Dissipated				

颱風銀河(0921)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON MIRINAE (0921)

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	26	1200	T.D.	1004	13	13.2	148.5
		1800	T.D.	1002	13	13.6	147.0
	27	0000	T.D.	1000	16	14.3	145.3
		0600	T.S.	995	18	14.9	143.7
		1200	T.S.	992	21	15.4	142.2
		1800	S.T.S.	980	25	15.9	140.2
	28	0000	T.	970	33	16.1	138.5
		0600	T.	965	36	16.2	137.0
		1200	T.	960	39	16.2	135.5
		1800	T.	955	41	16.2	134.0
	29	0000	T.	955	41	15.9	132.2
		0600	T.	960	39	15.8	130.7
		1200	T.	965	36	15.8	129.4
		1800	T.	965	36	15.6	127.6
	30	0000	T.	965	36	15.3	125.9
		0600	T.	965	36	14.9	124.6
		1200	T.	965	36	14.7	123.2
		1800	T.	970	33	14.4	121.9
	31	0000	S.T.S.	975	31	14.2	120.4
		0600	S.T.S.	980	28	14.2	119.3
		1200	S.T.S.	980	28	14.2	117.8
		1800	S.T.S.	985	25	14.0	116.4
十一月 Nov	1	0000	T.S.	990	23	13.9	115.3
		0600	T.S.	990	23	13.8	114.4
		1200	T.S.	990	23	13.8	113.5
		1800	T.S.	990	23	13.7	112.3
	2	0000	T.S.	990	23	13.4	110.9
		0600	T.S.	990	23	12.9	109.7
		1200	T.S.	995	21	12.7	108.4
		1800	T.D.	1004	13	12.5	107.3
			消散 Dissipated				

熱帶低氣壓由十一月二日至三日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 2 - 3 NOVEMBER

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 Nov	2	0000	T.D.	1004	13	17.1	125.8
		0600	T.D.	1004	13	17.2	125.1
		1200	T.D.	1002	13	17.0	124.4
		1800	T.D.	1004	13	16.6	123.8
			消散 Dissipated				

熱帶低氣壓由十一月七日至十日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 7 - 10 NOVEMBER

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 Nov	7	0600	T.D.	1004	13	20.9	155.5
		1200	T.D.	1004	13	20.6	156.0
		1800	T.D.	1002	16	20.6	156.6
	8	0000	T.D.	1002	16	21.1	157.4
		0600	T.D.	1002	16	21.5	158.3
		1200	T.D.	1002	16	22.2	159.5
		1800	T.D.	1002	16	21.8	159.7
	9	0000	T.D.	1002	16	20.9	159.6
		0600	T.D.	1002	16	20.6	160.6
		1200	T.D.	1002	16	20.9	161.3
		1800	T.D.	1002	16	20.8	162.4
			消散 Dissipated				

超強颱風妮妲(0922)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON NIDA (0922)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 Nov	22	0000	T.D.	1002	13	6.9	148.2
		0600	T.D.	1000	13	7.2	148.1
		1200	T.D.	1002	13	7.4	148.0
		1800	T.D.	1002	13	7.6	148.0
	23	0000	T.D.	1002	13	7.8	148.0
		0600	T.D.	1000	16	8.2	147.6
		1200	T.S.	998	18	8.5	147.1
		1800	T.S.	995	21	8.7	146.3
	24	0000	T.S.	990	23	8.8	145.8
		0600	S.T.S.	985	25	8.9	145.5
		1200	S.T.S.	980	28	9.3	145.0
		1800	S.T.S.	975	31	9.9	144.2
	25	0000	T.	960	39	10.6	143.8
		0600	S.T.	940	46	11.7	143.0
		1200	SuperT.	925	54	12.6	142.1
		1800	SuperT.	910	59	13.6	141.4
	26	0000	SuperT.	910	59	14.6	140.7
		0600	SuperT.	915	57	15.2	140.0
		1200	SuperT.	915	57	15.8	139.7
		1800	SuperT.	915	57	16.3	139.3
	27	0000	SuperT.	920	54	16.8	139.1
		0600	SuperT.	920	54	17.8	139.2
		1200	SuperT.	930	52	18.3	138.9
		1800	SuperT.	930	52	18.7	138.9
	28	0000	SuperT.	930	52	19.0	139.1
		0600	SuperT.	930	52	19.1	139.1
		1200	SuperT.	930	52	19.1	139.2
		1800	SuperT.	930	52	19.2	139.3
	29	0000	S.T.	935	49	19.3	139.3
		0600	S.T.	935	49	19.4	139.3
		1200	S.T.	935	49	19.5	139.2
		1800	S.T.	935	49	19.6	139.3
	30	0000	S.T.	945	46	19.6	139.4
		0600	S.T.	950	43	19.7	139.2
		1200	T.	955	41	19.9	139.0
		1800	T.	955	41	20.0	138.7
十二月 Dec	1	0000	T.	960	39	20.3	138.3
		0600	T.	965	36	20.5	137.8
		1200	T.	970	33	20.6	137.3
		1800	S.T.S.	975	31	20.7	136.9
	2	0000	S.T.S.	975	31	20.9	136.2
		0600	S.T.S.	985	25	21.0	135.8
		1200	T.S.	990	23	21.2	135.0
		1800	T.S.	995	21	21.5	134.6
	3	0000	T.D.	1000	16	21.7	134.2
		0600	T.D.	1002	13	22.0	134.4
			消散 Dissipated				

熱帶低氣壓由十一月二十三日至二十五日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 23 - 25 NOVEMBER

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 Nov	23	1200	T.D.	1000	13	9.7	127.2
		1800	T.D.	1000	13	9.6	127.1
	24	0000	T.D.	1000	13	9.6	127.1
		0600	T.D.	1000	13	9.4	126.8
		1200	T.D.	1000	13	9.3	126.7
		1800	T.D.	1000	13	9.3	126.5
	25	0000	T.D.	1002	13	9.8	127.1
			消散 Dissipated				

熱帶低氣壓由十一月二十四日至二十六日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 24 - 26 NOVEMBER

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 Nov	24	0600	T.D.	1002	13	5.8	107.7
		1200	T.D.	1000	16	6.3	108.0
		1800	T.D.	1000	16	6.3	108.2
	25	0000	T.D.	1000	16	6.3	108.5
		0600	T.D.	1000	16	6.4	109.0
		1200	T.D.	1002	16	6.5	110.0
		1800	T.D.	1004	13	6.8	110.9
			消散 Dissipated				