



香港天文台

HONG KONG OBSERVATORY

二 零 零 三  
熱 帶 氣 旋

**TROPICAL CYCLONES IN  
2003**

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°

香港天文台 HONG KONG OBSERVATORY

二零零三年的熱帶氣旋路徑圖  
TRACKS OF TROPICAL CYCLONES IN 2003

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

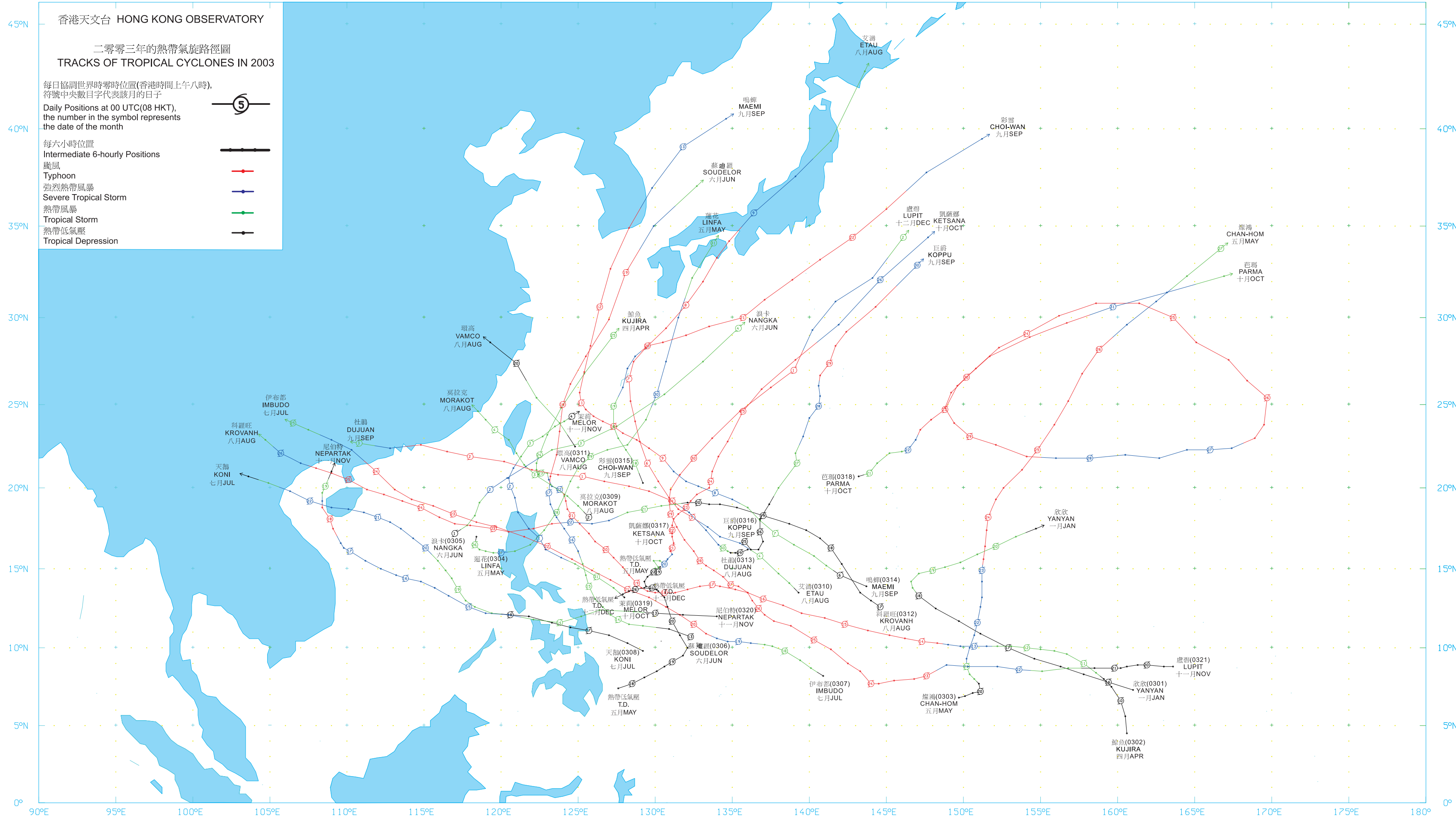
每六小時位置  
Intermediate 6-hourly Positions

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



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°

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第一節

引言

**Section 1**

**INTRODUCTION**

## 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，第三冊的覆蓋範圍東面邊界於一九八五年開始，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。由一九四七至一九六七年，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。

爲了能盡早滿足傳媒、航運界及其他有關人士或團體的需求，天文台自一九六零年開始就影響香港的個別熱帶氣旋編寫臨時報告。這些報告可提供給有需要的人士使用。初時，天文台只就那些曾導致天文台發出暴風或烈風信號的熱帶氣旋編寫臨時報告，但自一九六八年起，所有引致天文台發出熱帶氣旋警告信號的熱帶氣旋都有編寫臨時報告。

## 1.2 熱帶氣旋等級

本年報根據熱帶氣旋中心附近的最高持續地面風速，把熱帶氣旋分爲以下四個級別：

- (i) 熱帶低氣壓 (T.D.) 的最高持續風速爲每小時63公里以下。
- (ii) 熱帶風暴 (T.S.) 的最高持續風速爲每小時63至87公里。
- (iii) 強烈熱帶風暴 (S.T.S.) 的最高持續風速爲每小時88至117公里。
- (iv) 颱風 (T.) 的最高持續風速爲每小時118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爲10分鐘內風速的平均值；每小時平均風速爲該小時前60分鐘內的平均風速；每日雨量爲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，日本氣象廳會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是二零零二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“0301”代表在二零零三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，此編號會顯示在緊隨著熱帶氣旋名稱的括弧內，例如熱帶風暴欣欣(0301)。

### 1.4 資料來源

本年報內的地面風資料，是由天文台所操作的測風站網絡錄得的。表1.2是該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。

### 1.5 年報內容

本年報第二節是二零零三年所有影響北太平洋西部及南海區域的熱帶氣旋的概述。

而本年報第三節是二零零三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回波圖（如適用）。

有關熱帶氣旋的各種資料及統計表載於本年報第四節內。

二零零三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。

## 1.1 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. It contained information on tropical cyclones over the western North Pacific and the South China Sea. The first issue, which contained reports on tropical cyclones occurring in 1968, was published in 1971. Tropical cyclones within the area bounded by the Equator, 45°N, 100°E and 160°E were described. 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

In this publication, tropical cyclones are classified into the following four 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 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 will assign names from a new list to tropical cyclones attaining tropical storm strength. Table 1.1 shows the name list effective from 1 January 2002. 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 2003 was assigned the code "0301". In this publication, the appropriate code immediately follows the name of the tropical cyclone in bracket, e.g. Tropical Storm Yanyan (0301).

### 1.4 Data sources

Surface wind data presented in this report were obtained from a network of anemometers operated by the Hong Kong Observatory. Details of the stations are listed on Table 1.2.

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.

### 1.5 Content

In Section 2, an overview of all the tropical cyclones over the western North Pacific and the South China Sea in 2003 is presented.

The reports in Section 3 are individual accounts of the life history of tropical cyclones affecting Hong Kong in 2003. 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 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 imageries and radar echoes (if applicable).

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.

表 1.1 二零零二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 2002

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	龍王 Longwang	玉兔 Yutu	風神 Fengshen	杜鵑 Dajuan	海馬 Haima
北韓	DPR Korea	鴻雁 Kirogi	桃芝 Toraji	海鷗 Kalmaegi	鳴蟬 Maemi	米雷 Meari
中國香港	HK, 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	珍珠 Chanchu	蝴蝶 Wutip	黃蜂 Vongfong	芭瑪 Parma	梅花 Muifa
馬來西亞	Malaysia	杰拉華 Jelawat	聖帕 Sepat	鹿莎 Rusa	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	碧利斯 Bilis	丹娜絲 Danas	黑格比 Hagupit	盧碧 Lupit	塔拉斯 Talas
南韓	RO Korea	格美 Kaemi	百合 Nari	薔薇 Changmi	蘇特 Sudal	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	桑美 Saomai	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
北韓	DPR Korea	清松 Sonamu	楊柳 Podul	鳳仙 Pongsona	蒲公英 Mindulle	尼格 Nalgae
中國香港	HK, China	珊珊 Shanshan	玲玲 Lingling	欣欣 Yanyan	婷婷 Tingting	榕樹 Banyan
日本	Japan	摩揭 Yagi	劍魚 Kajiki	鯨魚 Kujira	圓規 Kompasu	天鷹 Washi
老撾	Lao PDR	象神 Xangsane	法茜 Faxai	燦鴻 Chan-hom	南川 Namtheun	麥莎 Matsa

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	畫眉 Vamei	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	雲娜 Rananim	古超 Guchol
菲律賓	Philippines	西馬侖 Cimaron	海貝思 Hagibis	伊布都 Imbudo	馬勒卡 Malakas	泰利 Talim
南韓	RO Korea	飛燕 Chebi	浣熊 Noguri	天鵝 Koni	鮎魚 Megi	彩蝶 Nabi
泰國	Thailand	榴槤 Durian	威馬遜 Rammasun	莫拉克 Morakot	暹芭 Chaba	卡努 Khanun
美國	U.S.A.	尤特 Utor	查特安 Chataan	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 本年報內各風速表的位置及海拔高度

TABLE 1.2 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	
中環 (天星碼頭) Central (Star Ferry Pier)	22°17'08"	114°09'31"	17
中環廣場 Central Plaza	22°16'53"	114°10'16"	378
香港國際機場 Hong Kong International Airport	22°19'00"	113°54'43"	14
長洲 Cheung Chau	22°12'04"	114°01'36"	99
長沙灣 Cheung Sha Wan	22°20'04"	114°09'05"	30
青洲 Green Island	22°17'12"	114°06'37"	105
啓德 Kai Tak	22°18'40"	114°12'39"	16
京士柏 King's Park	22°18'47"	114°10'13"	90
流浮山 Lau Fau Shan	22°28'14"	113°58'52"	50
北角 North Point	22°17'40"	114°11'59"	26
平洲 Ping Chau	22°32'54"	114°25'33"	39
西貢 Sai Kung	22°22'38"	114°16'18"	31
沙螺灣 Sha Lo Wan	22°17'33"	113°54'16"	71
沙田 Sha Tin	22°24'11"	114°12'31"	16
石崗 Shek Kong	22°26'02"	114°05'06"	26
天星碼頭 (九龍) Star Ferry Pier (Kowloon)	22°17'35"	114°10'07"	18
打鼓嶺 Ta Kwu Ling	22°31'50"	114°09'13"	28
大尾篤 Tai Mei Tuk	22°28'36"	114°14'06"	71
大帽山 Tai Mo Shan	22°24'40"	114°07'29"	969
塔門 Tap Mun	22°28'22"	114°21'29"	37
大老山 Tate's Cairn	22°21'34"	114°12'55"	588
鯽魚湖 Tsak Yue Wu	22°24'11"	114°19'24"	23
將軍澳 Tseung Kwan O	22°18'56"	114°15'20"	52
青衣 (青柏樓) Tsing Yi (Ching Pak House)	22°21'00"	114°06'24"	136
屯門 Tuen Mun	22°23'32"	113°58'27"	69
橫瀾島 Waglan Island	22°11'01"	114°18'02"	82
黃竹坑 Wong Chuk Hang	22°14'54"	114°10'15"	30



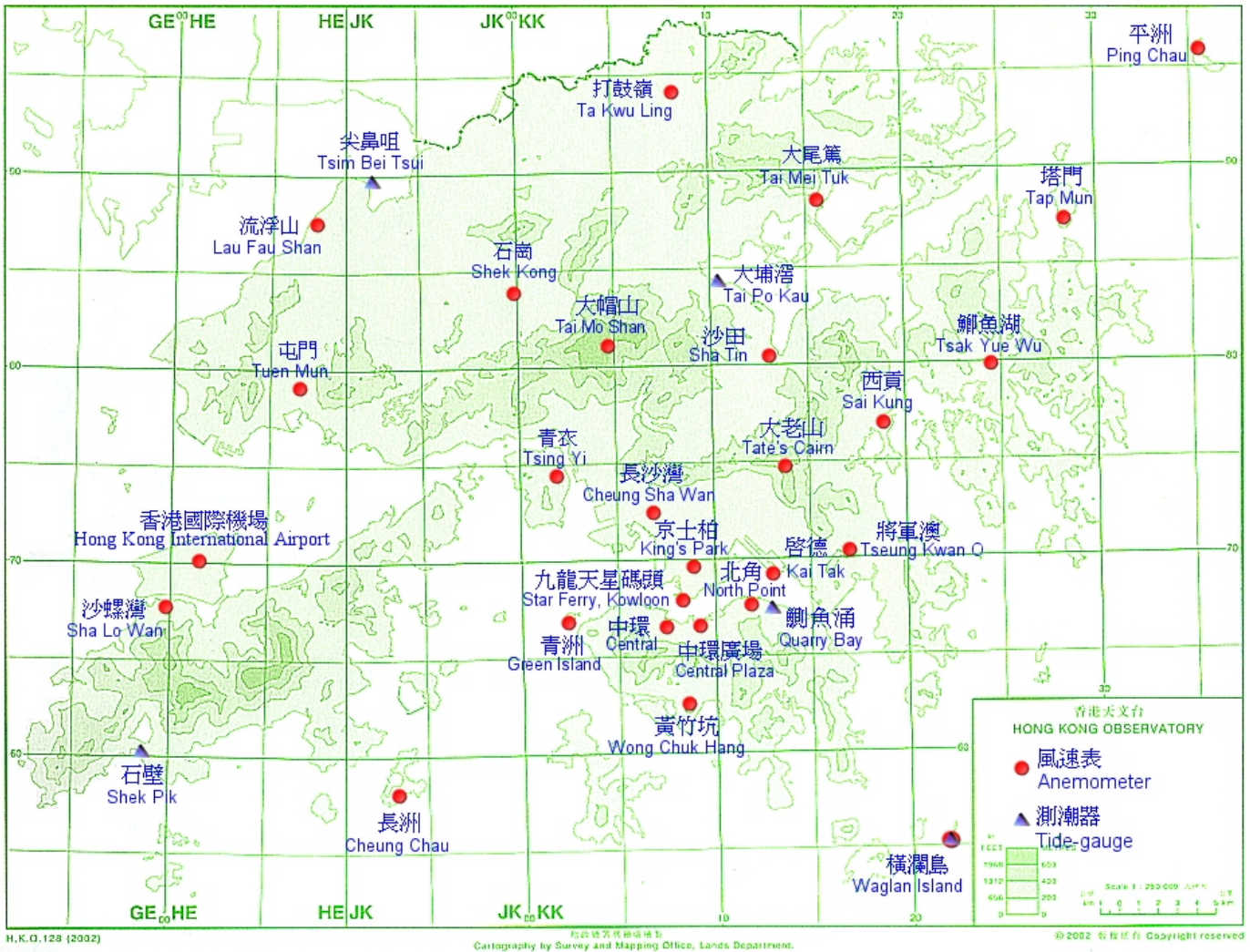


圖 1.1 本年報內提及的測風站及潮汐測量站之分佈地點。

FIGURE 1.1 LOCATIONS OF ANEMOMETERS AND TIDE GAUGE STATIONS MENTIONED IN THIS PUBLICATION.

## 第二節

### 二零零三年熱帶氣旋概述

## Section 2

# TROPICAL CYCLONE OVERVIEW FOR 2003

## 2.1 二零零三年的熱帶氣旋回顧

### 2.1.1 北太平洋西部（包括南海區域）的熱帶氣旋

二零零三年共有23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），這數目比1961-1990的30年平均數少八個，當中有14個熱帶氣旋達到颱風強度，比正常數目少兩個。

本年首個熱帶氣旋在一月形成。圖2.1是二零零三年在北太平洋西部及南海區域的熱帶氣旋及颱風出現次數之每月分佈。

於二零零三年，中國內地及菲律賓各受七個熱帶氣旋吹襲，共有五個熱帶氣旋影響日本（包括琉球群島），另有三個影響台灣，兩個登陸越南及一個橫過南韓。

二零零三年風力最強的熱帶氣旋是盧碧（0321），最高風速估計約為每小時230公里，而最低中心氣壓則約為905百帕斯卡。

芭瑪 (0318) 是二零零三年路徑最特別的熱帶氣旋（圖2.3.a）。芭瑪在十月二十二日增強為一個颱風後，沿著一個高空反氣旋西北部的西南引導氣流向東北移動（圖2.3.b）。一般來說，這季節在中緯度向東北移動的熱帶氣旋通常會於較涼的海洋面上變成溫帶氣旋或消散。但芭瑪卻沿著反氣旋的東側移動，十月二十五日轉向東南後，翌日向西推進。芭瑪在十月二十八日受反氣旋西南部的東南氣流影響轉向西北移動。十月二十九日，芭瑪在高空之西風槽影響下再次向東北移動。經過逾千公里順時針方向的打轉後，芭瑪最終於十月三十一日在西北太平洋變成一個溫帶氣旋。

### 2.1.2 香港責任範圍內的熱帶氣旋

在二零零三年的23個熱帶氣旋中，有12個影響香港責任範圍（即北緯10至30度、東經105至125度所包括的地區），比1961-1990的30年平均16.4個少約百分之27（表2.1）。這12個熱帶氣旋中，有三個在香港責任範圍內形成。在二零零三年，香港天文台總共發出342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

二零零三年共有八個熱帶氣旋影響南海區域（即北緯10至25度、東經105至120度所包括的地區），當中有兩個在南海形成，其餘六個從北太平洋西部進入南海。

### 2.1.4 影響香港的熱帶氣旋

全年只有四個熱帶氣旋影響香港（圖2.2），比正常數目少兩個（表2.2）。這四個熱帶氣旋是天鵝（0308）、伊布都（0307）、科羅旺（0312）及杜鵑（0313），它們均源自北太平洋西部。

本年九月杜鵑影響香港期間，天文台發出了自一九九九年以來首次九號烈風或暴風風力增強信號。另外，七月的伊布都及八月的科羅旺分別需要發出八號烈風或暴風信號及三號強風信號。而七月的天鵝則只需發出一號戒備信號。

### 2.1.5 熱帶氣旋的雨量

二零零三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365.7毫米，約佔該年總雨量1 941.9毫米的百分之19，比正常的737.9毫米少約一半。

## 2.2 每月概述

這一節逐月介紹二零零三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

**欣欣(0301)**於一月十六日在關島東南偏東約1 900公里處發展為一熱帶低氣壓，並穩定地向西北偏西移動。它在一月十八日減速及轉向北移，並在同日增強為一熱帶風暴。一月十九日，它改向東北偏東移動及逐漸加速。欣欣於一月二十日下午減弱為一熱帶低氣壓，並於該晚在海面上消散。

### 二月及三月

二零零三年二月及三月並無熱帶氣旋影響北太平洋西部及南海區域。

### 四月

**鯨魚(0302)**於四月九日在關島東南偏東約2 000公里的太平洋上發展成一個熱帶低氣壓。它大致向西北偏西移動，並於四月十一日清晨增強為一個熱帶風暴。鯨魚於四月十三日發展成一個強烈熱帶風暴後，翌日進一步增強為一個颱風。其風力於四月十六日達至約每小時210公里。鯨魚於四月十九日在菲律賓以東海域轉向西北移動，四月二十二日減弱為一個強烈熱帶風暴，並於次日清晨進一步減弱為一個熱帶風暴。鯨魚於四月二十四日在台灣以東海域轉向東北及加速移動，四月二十五日早上在日本九州附近變成一個溫帶氣旋。

### 五月

五月十八日清晨，一個熱帶低氣壓在馬尼拉東南約1 100公里的太平洋上形成。它初時向東北移動，並於五月十九日轉向西北偏北。它於五月二十一日開始減速，並於翌日在呂宋以東的太平洋上消散。

五月十九日，**燦鴻(0303)**在關島東南約900公里處發展成一個熱帶低氣壓。它初時移動緩慢，並於五月二十日增強為一個熱帶風暴。燦鴻於五月二十一日增強為一個強烈熱帶風暴，在隨後數天向北推進。它於五月二十三日達至颱風強度，並於翌日開始向東北加速。燦鴻於五月二十六日減弱為一個強烈熱帶風暴。它於五月二十七日進一步減弱為一個熱帶風暴，並於同日變為一個溫帶氣旋。

**蓮花(0304)**五月二十五日晚上在馬尼拉西北約380公里的南海北部上發展成一個熱帶低氣壓。它緩慢地向東移動，並於翌日增強為一個熱帶風暴。蓮花於五月二十七日增強為一個強烈熱帶風暴，但在橫過呂宋期間又減弱為一個熱帶風暴。它於五月二十八日進入呂宋以東海域後轉向東北移動。蓮花橫過呂宋期間共導致41人死亡、九人失蹤及數千人遷離家園。與蓮花相關連的大雨亦引致廣泛山泥傾瀉，農作物及建築物損毀的損失估計超過200萬美元。蓮花於五月三十日再度增強為一個強烈熱帶風暴，並向日本加速推進。蓮花於五月三十一日清晨減弱為一個熱帶風暴，同日稍後在日本南部變為一個溫帶氣旋。

### 六月

**浪卡(0305)**在六月一日於南海東沙島以南約400公里處發展成一個熱帶低氣壓，並在同日迅速增強為一個熱帶風暴。隨後數天浪卡大致向東北移動，於六月二日橫過呂宋海峽期間增強為一個強烈熱帶風暴。浪卡於六月三日清晨在台灣以東海域減弱為一個熱帶風暴，之後加速向日本以南海域推進。浪卡於六月四日早上變成一個溫帶氣旋。

六月十三日早上，**蘇迪羅(0306)**在馬尼拉東南偏東約1 300公里的太平洋上發展成一個熱帶低氣壓。它於同日晚上增強為一個熱帶風暴後，在隨後數天大致向西北方向移動。蘇迪羅於六月十六日清晨在呂宋以東海域增強為一個強烈熱帶風暴，翌日轉向北移，並於同日在呂宋海峽附近達至颱風強度。蘇迪羅接近菲律賓期間，引致11人死亡，三人受傷及兩人失蹤。超過3 000人受洪水影響需要遷離家園。蘇迪羅於六月十八日朝東北方向加速橫過東海，六月十九日晚上迅速減弱為一個熱帶風暴，六月二十日清晨在日本海上變成一個溫帶氣旋。蘇迪羅接近日本期間，九州共有21人受傷及26間房屋被毀，另外，有超過250班國內航線要被迫取消。

## 七月

**天鵝(0308)**於七月十六日在馬尼拉東南偏東約1 000公里發展成一個熱帶低氣壓。它向西北偏西移動，於七月十七日橫過菲律賓中部。在菲律賓，天鵝共引致兩人死亡及兩人失蹤。天鵝在七月十八日進入南海後增強為一個熱帶風暴，同日下午一班由馬來西亞哥達基納巴盧抵港的航機在距離天鵝西北偏西約300公里處遇上強烈湍流，15人受傷。天鵝於七月十九日轉向西北，翌日進一步增強為一個強烈熱帶風暴，中心風力達每小時100公里。它於七月二十一日向西北偏西推進，並於當晚橫過海南島。天鵝於七月二十二日進入北部灣，晚上在越南北部登陸後減弱為一個熱帶風暴。天鵝於七月二十三日清晨在內陸進一步減弱為一個熱帶低氣壓，同日稍後在河內以西約100公里消散。天鵝在越南北部引致三人死亡及18人受傷。超過1 000間房屋和數千公頃的農作物被狂風暴雨破壞。

**伊布都(0307)**於七月十七日在關島西南約730公里處發展為一個熱帶低氣壓。它大致向西北偏西移動，於當晚增強為一個熱帶風暴。伊布都於七月十九日增強為一個強烈熱帶風暴後，翌日進一步增強為一個颱風，其中心附近的最高風速在七月二十一日達每小時185公里。伊布都在七月二十二日橫過呂宋期間引致22人死亡及數百人受傷，超過14 000人需要遷離家園，損毀農作物的價值超過3 500萬美元。伊布都在七月二十二日晚上進入南海後繼續向西北偏西移動，直趨華南沿岸，七月二十四日早上它在廣東西部的陽江附近登陸後減弱為一個強烈熱帶風暴。伊布都於七月二十五日早上在內陸減弱為一個熱帶風暴，同日稍後在廣西消散。伊布都在接近香港期間引致一人死亡及45人受傷。在廣東及廣西，伊布都導致20人死亡，三人失蹤，接近6 000間房屋倒塌和超過一千萬公頃的農作物被損，直接經濟損失逾十九億人民幣。

## 八月

**莫拉克(0309)**於八月二日在馬尼拉東北約640公里的呂宋以東海域發展成一個熱帶低氣壓。它向西北移動，並在同日迅速增強為一個熱帶風暴。隨後兩天莫拉克持續向西北推進，於八月三日橫過呂宋海峽，並在當晚掠過台灣南部。莫拉克為台灣帶來大雨，農作物損失超過七千萬新台幣。莫拉克於八月四日在廈門附近登陸，並於當晚消散。

八月三日，**艾濤(0310)**在關島以西約600公里的太平洋上發展成一個熱帶低氣壓。它向西北移動，在當晚增強為一個熱帶風暴。艾濤於八月四日增強為一個強烈熱帶風暴，並於八月五日進一步增強為一個颱風。艾濤於八月六日轉向北移，於八月七日橫過琉球群島後轉向東北直趨日本。艾濤在八月八日晚上掠過日本四國。它在八月九日早上減弱為一個強烈熱帶風暴後橫過本州，並在當晚進一步減弱為一個熱帶風暴。艾濤在八月十日清晨在北海道變成一個溫帶氣旋。艾濤在橫過日本期間共導致11人死亡、10人失蹤及接近80人受傷。狂風暴雨令最少20間房屋損毀及引致106宗山泥傾瀉。超過1 000間房屋被洪水淹沒。除了火車服務需要暫停外，超過450班航機亦要被迫取消。

**科羅旺(0312)**於八月十七日在關島西南偏南約110公里處發展為一個熱帶低氣壓。它最初兩天向西北推進，於八月十九日轉向西移。科羅旺於八月二十日晚上增強為一個熱帶風暴後，翌日晚上進一步增強為一個強烈熱帶風暴。它於八月二十二日增強為一個颱風，並於當晚橫過呂宋。在菲律賓，科羅旺帶來的大雨引致一名女孩死亡，上千家庭需要遷離。它在八月二十三日早上進入南海後向西北偏西推進，翌日橫過南海北部。科羅旺在掠過海南島東北部後，於八月二十五日進入北部灣。在科羅旺的吹襲下，香港共有11人受傷。科羅旺在廣東、廣西及海南島導致最少二人死亡及五人受傷，接近13 000間房屋倒塌和14萬公頃的農作物受損，直接經濟損失逾21億人民幣。科羅旺於七月二十六日清晨在越南北部登陸後減弱為一個強烈熱帶風暴，同日進一步減弱為一個熱帶風暴，並於當晚在內陸消散。在越南北部，科羅旺導致一人死亡及五人受傷，約1 000間房屋被毀。

**環高(0311)**於八月十九日在台北東南約440公里處發展為一個熱帶低氣壓。它向西北推進，當晚增強為一個熱帶風暴。環高於八月二十日早上在浙江省温州附近登陸前減弱為一個熱帶低氣壓。其後它繼續向西北移入內陸，同日減弱為一個低氣壓區。環高在浙江省導致接近1 000間房屋損毀。

**杜鵑(0313)**於八月二十九日清晨在關島西北偏西約990公里的太平洋上發展成一個熱帶低氣壓。它初時移動緩慢，在八月三十日清晨增強為一個熱帶風暴，並在當日進一步增強為一個強烈熱帶風暴。八月三十一日它向西北偏西加速移動，同日增強為一個颱風並移向台灣南部海域。九月一日，杜鵑橫過台灣以南海域後向西推進趨向華南海岸，期間它中心附近的最高持續風速達每小時175公里。杜鵑掠過台灣南部期間造成三人死亡、一人失蹤及八人受傷，近59萬戶停電。杜鵑令台灣南部的海陸空交通完全癱瘓，並造成高達二億元新台幣的農業損失。杜鵑於九月二日清晨進入南海，並向西移近廣東沿岸。九月二日晚上，杜鵑在香港以北掠過，正面吹襲深圳市。隨後杜鵑繼續向西移動橫過廣東，於九月三日早上減弱為一個熱帶風暴，並稍後在廣西減弱為一個低壓區。在杜鵑的吹襲下，香港共有四人失蹤，24人受傷。杜鵑吹襲廣東期間共造成40人死亡，接近1 000人受傷，深圳市逾九成地區停電。直接經濟損失接近23億人民幣。

## 九月

九月六日清晨，**鳴蟬(0314)**在關島西北偏西約130公里的太平洋上發展成一個熱帶低氣壓，同日增強為一個熱帶風暴。鳴蟬隨後數天向西北移動，於九月八日清晨增強為一個強烈熱帶風暴，翌日進一步增強為一個颱風。它中心附近的最高持續風力在九月十日達每小時220公里。鳴蟬於九月十一日轉向東北偏北，它在經過沖繩島以西海域期間，造成最少一人死亡，71人受傷。鳴蟬橫過東海後於九月十二日晚上在南韓釜山附近登陸。它於九月十三日清晨減弱為一個強烈熱帶風暴後轉向東北，並進入日本海，同日稍後變成一個溫帶氣旋。鳴蟬在南韓共導致最少113人死亡及14人失蹤。約34 000公頃農地受淹及5 000間房屋被毀，數百道路及橋樑受損，經濟損失估計逾13億美元。

九月十八日清晨，**彩雲(0315)**在馬尼拉東北約1 100公里發展成一個熱帶低氣壓。它大致向西北移動，於同日增強為一個熱帶風暴。彩雲在九月十九日進一步增強為一個強烈熱帶風暴後橫過琉球群島。九月二十日，它進一步增強為一個颱風，並向東北偏東移動趨向日本南部海域。彩雲在九月二十一日加速向東北移動，翌日晚上減弱為一個強烈熱帶風暴。它於九月二十三日清晨變成一個溫帶氣旋。

**巨爵(0316)**於九月二十五日在關島西北偏西約1 030公里的太平洋上發展成一個熱帶低氣壓。它初時移動緩慢，於九月二十六日向東北偏北移動。巨爵於九月二十七日增強為一個熱帶風暴，當晚進一步增強為一個強烈熱帶風暴。它於九月二十九日達至颱風強度，並向東北加速移動。巨爵於九月三十日減弱為一個強烈熱帶風暴，同日稍後變成一個溫帶氣旋。

## 十月

十月十九日早上，**凱薩娜(0317)**在馬尼拉以東約1 000公里發展成一個熱帶低氣壓，同日增強為一個熱帶風暴。它移動緩慢，在十月二十日增強為一個強烈熱帶風暴後，於翌日進一步增強為一個颱風。十月二十二日，凱薩娜轉向東北，並在隨後數天加速移動。它於十月二十六日清晨減弱為一個強烈熱帶風暴，同日稍後變成一個溫帶氣旋。

**芭瑪(0318)**於十月二十一日清晨在硫黃島東南偏南約500公里發展成一個熱帶低氣壓。它向東北移動，同日增強為一個熱帶風暴。芭瑪於十月二十二日增強為一個強烈熱帶風暴，同日進一步增強為一個颱風。十月二十五日，芭瑪轉向東南，翌日減弱為一個強烈熱帶風暴後向西移動。它在十月二十八日再度增強為一個颱風，並於十月二十九日晚上再次轉向東北移動。芭瑪在十月三十一日逐步減弱為一個熱帶風暴，當晚變成一個溫帶氣旋。

**茉莉(0319)**於十月三十日晚上在馬尼拉東南偏東約750公里發展成一個熱帶低氣壓。它向西北移動，十月三十一日清晨增強為一個熱帶風暴，同日進一步增強為一個強烈熱帶風暴，並趨向呂宋。茉莉於十一月一日橫過呂宋北部，翌日進入呂宋海峽，並轉向東北移動。它於十一月三日清晨在掠過台灣東南部時減弱為一個熱帶風暴，十一月四日減弱為一個熱帶低氣壓，同日稍後在台灣以東海域上消散。茉莉吹襲台灣期間導致一人死亡、三人失蹤及二人受傷。

## 十一月

**尼伯特(0320)**於十一月十二日晚上在雅浦島西北偏西約530公里發展成一個熱帶低氣壓。它向西移動，十一月十三日增強為一個熱帶風暴。十一月十四日，尼伯特橫過菲律賓中部後進入南中國海。它於十一月十五日增強為一個強烈熱帶風暴後向西北移動，十一月十八日清晨達到颱風強度，同日掠過海南島西部，晚上減弱為一個強烈熱帶風暴。尼伯特於十一月十九日在北部灣逐步減弱為一個低壓區。尼伯特在菲律賓共引致四人死亡。

## 十二月

十一月十九日，**盧碧(0321)**在威克島西南偏南約1 200公里發展成一個熱帶低氣壓後大致向西移動。它於十一月二十一日增強為一個熱帶風暴，翌日增強為一個強烈熱帶風暴，盧碧在十一月二十三日進一步增強為一個颱風。它於十一月二十四日改向西北推進，十一月二十六日晚上其中心最高持續風力達每小時230公里。十一月二十九日盧碧轉向東北，並於翌日開始加速移動。它於十二月一日減弱為一個強烈熱帶風暴。十二月二日，盧碧進一步減弱為一個熱帶風暴，同日變成一個溫帶氣旋。

一個熱帶低氣壓於十二月二十五日晚上在馬尼拉以東約990公里形成並緩慢移動，翌日在菲律賓以東的海域上減弱為一個低壓區。

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備註：人命傷亡及財物損毀數據是根據報章報導輯錄而成。

## 2.1 Review of tropical cyclones in 2003

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

In 2003, 23 tropical cyclones occurred over the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°), eight less than the 30-year (1961-1990) average. Throughout the year, 14 tropical cyclones attained typhoon strength, two less than the normal figure.

The first tropical cyclone of the year formed in January. The monthly frequencies of the occurrence of tropical cyclones and typhoons in the western North Pacific and the South China Sea in 2003 are shown in Figure 2.1.

During the year, seven tropical cyclones hit mainland China, and similarly for the Philippines, five affected Japan (including Ryukyu Islands), three affected Taiwan, two made landfall over Vietnam and one traversed South Korea.

The most intense tropical cyclone in 2003 was Lupit (0321). Lupit had a maximum wind speed of about 230 km/h and a minimum sea-level pressure about 905 hPa.

Parma (0318) was the tropical cyclone with the most peculiar track in 2003 (Figure 2.3.a). After strengthening into a typhoon on 22 October, Parma tracked northeastwards following the southwesterly steering flow in the northwestern quadrant of an upper-air anticyclone (Figure 2.3.b). While tropical cyclones tracking northeastwards in the mid-latitude in this season would normally become extratropical cyclone or dissipate over cooler ocean surface, Parma turned southeastwards on 25 October and then towards the west the next day along the eastern periphery of the anticyclone. On 28 October, Parma turned northwestwards under the influence of southeasterly flow to the southwest of the anticyclone. Parma repeated the northeast track on 29 October when it encountered an approaching upper-air westerly trough. Parma finally became an extratropical cyclone on 31 October after performing a large clockwise loop of over 1 000 km over the western North Pacific.

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

Amongst those 23 tropical cyclones in 2003, 12 occurred inside Hong Kong's area of responsibility (i.e. the area bounded by 10°N, 30°N, 105°E and 125°E). This was about 27 % less than the 30-year (1961-90) annual average of 16.4 (Table 2.1). Three of these 12 tropical cyclones developed within Hong Kong's area of responsibility. Altogether, 342 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory in 2003 (Table 4.2).

### 2.1.3 Tropical cyclones over the South China Sea

There were eight tropical cyclones affecting the South China Sea (i.e. the area bounded by 10°N, 25°N, 105°E and 120°E) in 2003. Two of them formed over the area. Six moved into the area from the western North Pacific.

### 2.1.4 Tropical cyclones affecting Hong Kong

Only four tropical cyclones affected Hong Kong in 2003 (Figure 2.2), two less than the normal number (Table 2.2). These four tropical cyclones were Koni (0308), Imbudo (0307), Krovanh (0312) and Djujan (0313). All of them originated from the western North Pacific.

The Increasing Gale or Storm Signal No. 9 was issued when Djujan affected Hong Kong in September, the first time since 1999. Imbudo in July and Krovanh in August led to the issuance of the Gale or Storm Signal No.8 and the Strong Wind Signal No. 3 respectively. Koni in July only necessitated the issuance of the Standby Signal No. 1 in Hong Kong.



### 2.1.5 Tropical cyclone rainfall

Tropical cyclone rainfall (the total rainfall recorded at the Hong Kong Observatory from the time when a tropical cyclone is centred within 600 km of Hong Kong to 72 hours after it has dissipated or moved farther than 600 km away from Hong Kong) in 2003 was 365.7 mm. This is about half of the normal of 737.9 mm and accounts for some 19 % of the year's total rainfall of 1 941.9 mm.

## 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

**Yanyan (0301)** developed as a tropical depression about 1 900 km east-southeast of Guam on 16 January and moved steadily to the west-northwest. It slowed down and turned north on 18 January. On the same day, it intensified into a tropical storm. On 19 January, it headed east-northeast and speeded up gradually. Yanyan weakened into a tropical depression on the afternoon of 20 January and dissipated over water that night.

### FEBRUARY – MARCH

No tropical cyclone occurred over the western North Pacific and the South China Sea in February and March.

### APRIL

**Kujira (0302)** developed as a tropical depression over the Pacific, about 2 000 km east-southeast of Guam on 9 April. Tracking mainly to the west-northwest, it intensified into a tropical storm in the early morning of 11 April. Kujira became a severe tropical storm on 13 April and strengthened further into a typhoon the next day. It attained a maximum sustained wind speed of about 210 km/h on 16 April. Kujira turned towards the northwest over the seas east of the Philippines on 19 April. It weakened into a severe tropical storm on 22 April and further weakened into a tropical storm in the early morning of the following day. Kujira accelerated towards the northeast over the seas east of Taiwan on 24 April. It became an extratropical cyclone near Kyushu in Japan in the morning of 25 April.

### MAY

On the early morning of 18 May, a tropical depression was formed over the Pacific, about 1 100 km southeast of Manila. It tracked towards the northeast at first and then turned to the north-northwest on 19 May. It started to slow down on 21 May and dissipated over the Pacific east of Luzon the following day.

**Chan-hom (0303)** developed as a tropical depression about 900 km southeast of Guam on 19 May. It moved slowly at first and strengthened into a tropical storm on 20 May. Chan-hom intensified into a severe tropical storm on 21 May and tracked northwards for the next few days. It attained typhoon strength on 23 May and started to accelerate towards the northeast the following day. Chan-hom weakened into a severe tropical storm on 26 May. It weakened further into a tropical storm on the early morning of 27 May and became an extratropical cyclone the same day.

On the night of 25 May, **Linfa (0304)** developed as a tropical depression over the northern part of the South China Sea, about 380 km northwest of Manila. It moved slowly towards the east and intensified into a tropical storm the next day. Linfa intensified into a severe tropical storm on 27 May, but weakened to a tropical storm again while moving across Luzon. During the passage of

Linfa, 41 were killed, nine were missing and thousands were displaced in Luzon. Heavy rain associated with Linfa also triggered widespread flooding and landslides. Damage to crops and infrastructure was estimated to be over USD 2 millions. It entered the seas east of Luzon on 28 May and then tracked towards the northeast. Linfa intensified into a severe tropical storm again and accelerated towards Japan on 30 May. Linfa weakened into a tropical storm on the early morning of 31 May and became an extratropical cyclone in southern Japan the same day.

## JUNE

On 1 June, [Nangka \(0305\)](#) developed as a tropical depression over the South China Sea, about 400 km south of Dongsha Dao. It rapidly intensified into a tropical storm the same day and then tracked mainly to the northeast in the next few days. While moving across the Luzon Strait, Nangka strengthened into a severe tropical storm on 2 June. On the early morning of 3 June, it weakened into a tropical storm over the seas east of Taiwan and then accelerated towards the seas south of Japan. Nangka became an extratropical cyclone on the morning of 4 June.

On the morning of 13 June, [Soudelor \(0306\)](#) formed as a tropical depression over the Pacific, about 1 300 km east-southeast of Manila. It strengthened into a tropical storm that night and moved northwestwards in the next few days. Soudelor intensified into a severe tropical storm on the early morning of 16 June over the seas east of Luzon. On the next day, Soudelor turned northwards and attained typhoon strength near Luzon Strait. In the Philippines, Soudelor caused 11 deaths, three people injured and two missing. Widespread floods also caused more than 3 000 people to be displaced. Soudelor accelerated to the northeast and crossed the East China Sea on 18 June. It weakened rapidly into a tropical storm on the night of 19 June and became an extratropical cyclone over the Sea of Japan on the early morning of 20 June. In Japan, 21 people were injured and 26 houses were damaged in Kyushu during the approach of Soudelor. More than 250 domestic flights were canceled.

## JULY

[Koni \(0308\)](#) developed as a tropical depression about 1 000 km east-southeast of Manila on 16 July. Tracking to the west-northwest, it moved across the central part of the Philippines on 17 July. In the Philippines, Koni caused two deaths and two others missing during its passage. Koni entered the South China Sea and intensified into a tropical storm on 18 July. An aircraft enroute from Kota Kinabalu of Malaysia to Hong Kong encountered severe turbulence that afternoon the same day when it passed about 300 km west-northwest of Koni. Fifteen persons were injured. On 19 July, it turned to the northwest. Koni intensified further into a severe tropical storm and attained a maximum wind speed of about 100 km/h near the centre on 20 July. On 21 July, it moved towards west-northwest and traversed Hainan that night. Koni entered Beibu Wan on 22 July and then weakened into a tropical storm after making landfall in northern Vietnam that night. Over land, Koni further weakened into a tropical depression in the early morning of 23 July and dissipated about 100 km west of Hanoi the same day. In northern Vietnam, three people were killed and 18 were injured. The torrential rains and high winds damaged more than 1 000 houses and thousands of hectares of crops.

[Imbudo \(0307\)](#) developed as a tropical depression about 730 km southwest of Guam on 17 July. Tracking towards the west-northwest, it intensified into a tropical storm the same night. Imbudo became a severe tropical storm on 19 July and further strengthened into a typhoon the next day with a maximum wind speed reaching about 185 km/h near its centre on 21 July. Imbudo swept through Luzon on 22 July, killing 22 people and injuring hundreds. More than 14 000 people were evacuated and over USD 35 million worth of crops were destroyed. Imbudo entered the South China Sea on the night of 22 July and continued to move west-northwestwards towards the South China coast. On the morning of 24 July, it made landfall near Yangjiang of western Guangdong and then weakened into a severe tropical storm. Imbudo weakened into a tropical storm over land on the morning of 25 July and dissipated in Guangxi the same day. During the

approach of Imbudo, one person was killed and 45 others were injuries in Hong Kong. In Guangdong and Guangxi, the death toll due to Imbudo reached 20, with three people missing. Near 6 000 houses collapsed and more than 10 millions hectares of crops were damaged. The estimated economic loss was over 1.9 billion RMB.

## AUGUST

On 2 August, **Morakot (0309)** developed as a tropical depression over seas east of Luzon, about 640 km northeast of Manila. It moved towards the northwest and intensified rapidly into a tropical storm the same day. Maintaining a northwest track in the next two days, Morakot moved across Luzon Strait on 3 August and skirted the southern part of Taiwan the same night. Morakot brought heavy rain to Taiwan and resulted in a loss of over NT\$ 70 million in crops. On 4 August, Morakot made landfall near Xiamen and dissipated that night.

On 3 August, **Etau (0310)** formed as a tropical depression over the Pacific, about 600 km west of Guam. It headed northwest and strengthened into a tropical storm the same night. Etau intensified into a severe tropical storm on 4 August and further intensified into a typhoon on 5 August. Etau turned towards the north on 6 August. After crossing the Ryukyu Islands on 7 August, it moved towards the northeast the same day and headed towards Japan. On the night of 8 August, Etau skirted Shikoku, Japan. While traversing Honshu on 9 August, Etau weakened into a severe tropical storm in the morning and further into a tropical storm that night. Etau transformed into an extratropical cyclone in Hokkaido on the early morning of 10 August. During the passage of Etau in Japan, 11 people were killed, 10 reported missing and about 80 were injured. The torrential rains and high winds damaged at least 20 houses and caused 106 cases of landslides. More than 1 000 houses were flooded. In addition to suspension of train service, more than 450 flights were cancelled.

**Krovanh (0312)** developed as a tropical depression about 110 km south-southwest of Guam on 17 August. It tracked northwestwards in the first two days and turned westwards on 19 August. Krovanh intensified into a tropical storm on the night of 20 August and further intensified into a severe tropical storm the next night. It reached typhoon strength on 22 August and moved across Luzon that night. In the Philippines, the heavy rain brought by Krovanh killed a girl and caused over 1000 families to be displaced. Adopting a west-northwest track, Krovanh entered the South China Sea on 23 August morning and moved across the northern part of the South China Sea the next day. After skirting the northeastern part of Hainan, Krovanh entered Beibu Wan on 25 August. The approach of Krovanh resulted in 11 people injured in Hong Kong. In Guangdong, Guangxi and Hainan, at least two people were killed and five were injured during the approach of Krovanh. About 13 000 houses collapsed and 140 thousands hectares of crops were affected. The estimated economic loss was over 2.1 billions RMB. Krovanh weakened into a severe tropical storm on the early morning on 26 August after making landfall over northern Vietnam. It further weakened into a tropical storm the same day and dissipated over inland that night. In northern Vietnam, one person was found dead and five were hurt during the passage of Krovanh. Krovanh also flattened about 1 000 houses.

On 19 August, **Vamco (0311)** formed as a tropical depression about 440 km southeast of Taipei. Tracking northwestwards, it intensified into a tropical storm the same night. Vamco weakened into a tropical depression shortly before it made landfall near Wenzhou in Zhejiang on the morning of 20 August. Moving further inland towards the northwest, it weakened into an area of low pressure the same day. Near 1 000 houses were damaged during the passage of Vamco in Zhejiang.

**Dujuan (0313)** developed as a tropical depression about 990 km west-northwest of Guam over the Pacific on the early morning of 29 August and was slow-moving. It intensified into a tropical storm on the early morning of 30 August and strengthened further into a severe tropical storm the same day. Accelerating towards the west-northwest on 31 August, Dujuan attained typhoon

strength and moved towards the seas near southern Taiwan. After crossing the seas south of Taiwan on 1 September, Dujuan headed westwards towards the South China coast. The maximum sustained wind speed near its centre reached 175 km/h. In southern Taiwan, three people were killed, one found missing and eight injured during the approach of Dujuan. Electricity supply to about 590 000 families were interrupted. All transportation services in southern Taiwan were temporarily suspended and the agricultural loss reached NT\$200 millions. Dujuan entered the South China Sea on the early morning of 2 September and moved westwards towards the coast of Guangdong. On the night of 2 September, Dujuan skirted the north of Hong Kong and hit Shenzhen. It then continued to move westwards crossing Guangdong. Dujuan weakened rapidly into a tropical storm on the morning of 3 September and became an area of low pressure over Guangxi afterward. The approach of Dujuan resulted in four people missing and 24 others injured in Hong Kong. 40 people were killed and about 1 000 were injured as Dujuan rampaged across Guangdong. Power supplies in 90 % of the area in Shenzhen were interrupted. The direct economic loss caused by Dujuan was some 2.3 billions RMB.

### SEPTEMBER

On the early morning of 6 September, **Maemi (0314)** formed as a tropical depression over the Pacific, about 130 km west-northwest of Guam. It strengthened into a tropical storm the same day. While tracking northwestwards in the next couple of days, Maemi intensified into a severe tropical storm on the early morning of 8 September and further intensified into a typhoon the next day. On 10 September, the maximum sustained wind speed near its centre reached 220 km/h. Maemi turned to the north-northeast on 11 September and passed through the seas west of Okinawa, resulting in at least one death and 71 injuries. After moving across the East China Sea, Maemi made landfall near Busan in South Korea on the night of 12 September. Moving northeastwards, it weakened into a severe tropical storm on the early morning of 13 September and entered the Sea of Japan. Maemi then became an extratropical cyclone the same day. In South Korea, Maemi killed at least 113 people and caused 14 other missing. About 34 000 hectares of farmland were inundated and 5 000 houses were destroyed. Hundreds of roads and bridges were damaged. The economic loss was estimated to be over USD 1.3 billions.

**Choi-wan (0315)** developed as a tropical depression about 1 100 km northeast of Manila on the early morning of 18 September. It moved mainly to the north-northwest and intensified into a tropical storm the same day. Choi-wan intensified into a severe tropical storm on 19 September and then moved across Ryukyu Islands. On 20 September, it further intensified into a typhoon and moved east-northeast towards the seas south of Japan. Choi-wan accelerated towards the northeast on 21 September and weakened into a severe tropical storm the next night. It transformed into an extratropical cyclone on the early morning of 23 September.

**Koppu (0316)** formed as a tropical depression about 1 030 km west-northwest of Guam over the Pacific on 25 September. Koppu intensified into a tropical storm on 27 September and further intensified into a severe tropical storm that night. It attained typhoon strength on 29 September and accelerated towards the northeast. Koppu weakened into a severe tropical storm on 30 September and became an extratropical cyclone later the same day.

### OCTOBER

**Ketsana (0317)** developed as a tropical depression about 1 000 km east of Manila on the morning of 19 October and intensified into a tropical storm the same day. While moving slowly, it intensified into a severe tropical storm on 20 October and further intensified into a typhoon the next day. Ketsana turned northeastwards on 22 October and speeded up in the next few days. It weakened into a severe tropical storm on the early morning of 26 October and then became an extratropical cyclone the same day.

[Parma \(0318\)](#) formed as a tropical depression about 500 km south-southeast of Iwo Jima on the early morning of 21 October. Tracking northeastwards, it intensified into a tropical storm the same day. Parma intensified into a severe tropical storm on 22 October and further intensified into a typhoon the same day. Parma turned southeastwards on 25 October and then towards the west the next day after weakening into a severe tropical storm. It strengthened into a typhoon again on 28 October and tracked northeastwards again on the night of 29 October. Parma gradually weakened into a tropical storm on 31 October and became an extratropical cyclone that night.

[Melor \(0319\)](#) formed as a tropical depression about 750 km east-southeast of Manila on the night of 30 October. It tracked northwestwards and intensified into a tropical storm on the early morning of 31 October. It further intensified into a severe tropical storm the same day and headed towards Luzon. Melor moved across the northern part of Luzon on 1 November. The next day, it entered Luzon Strait and tracked northeastwards. Melor weakened into a tropical storm while skirting the southeastern part of Taiwan on the early morning of 3 November. It weakened into a tropical depression on 4 November and then dissipated over the seas east of Taiwan the same day. The approach of Melor resulted in one death, three people missing and two injuries in Taiwan.

### NOVEMBER

[Nepartak \(0320\)](#) formed as a tropical depression about 530 km west-northwest of Yap on the night of 12 November. Tracking westwards, it intensified into a tropical storm on 13 November. On 14 November, Nepartak moved across the central part of the Philippines and entered the South China Sea. On 15 November, it intensified into a severe tropical storm and tracked northwestwards. Nepartak attained typhoon strength on the early morning of 18 November. It skirted western Hainan the same day and weakened gradually into a severe tropical storm that night. Nepartak weakened further and became an area of low pressure over Beibu Wan on 19 November. Nepartak caused four deaths in the Philippines.

### DECEMBER

[Lupit \(0321\)](#) formed as a tropical depression over the Pacific about 1200 km south-southwest of Wake Island on 19 November and moved generally westwards. It intensified into a tropical storm on 21 November and strengthened into a severe tropical storm the next day. Lupit further strengthened into a typhoon on 23 November and tracked northwestwards on 24 November. It attained a maximum sustained wind speed of 230 km/h on the night of 26 November. Lupit turned northeastwards on 29 November and started to accelerate the next day. It weakened into a severe tropical storm on 1 December. Lupit further weakened into a tropical storm on 2 December and became an extratropical cyclone the same day.

A tropical depression formed at about 990 km east of Manila on the night of 25 December and was slow-moving. It weakened into an area of low pressure over the seas east of the Philippines the next day.

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

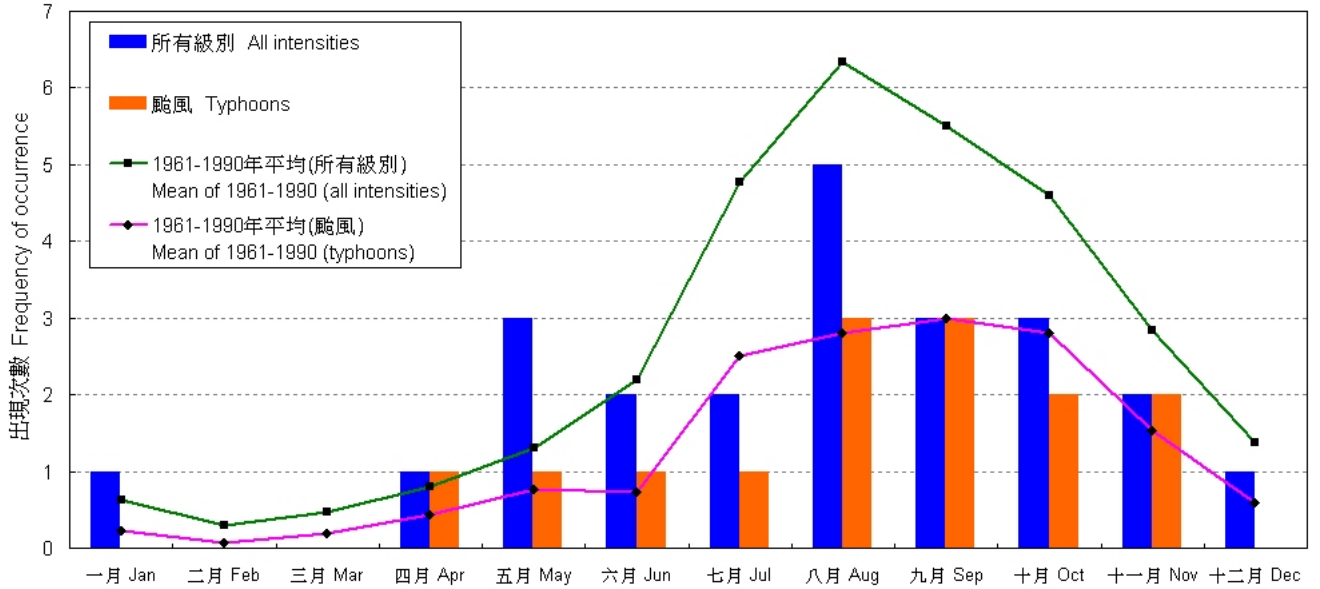


圖 2.1 二零零三年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈 (以熱帶氣旋在該月初次出現為準)。

Figure 2.1 Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2003 (based on the first occurrence of the tropical cyclone in the month).

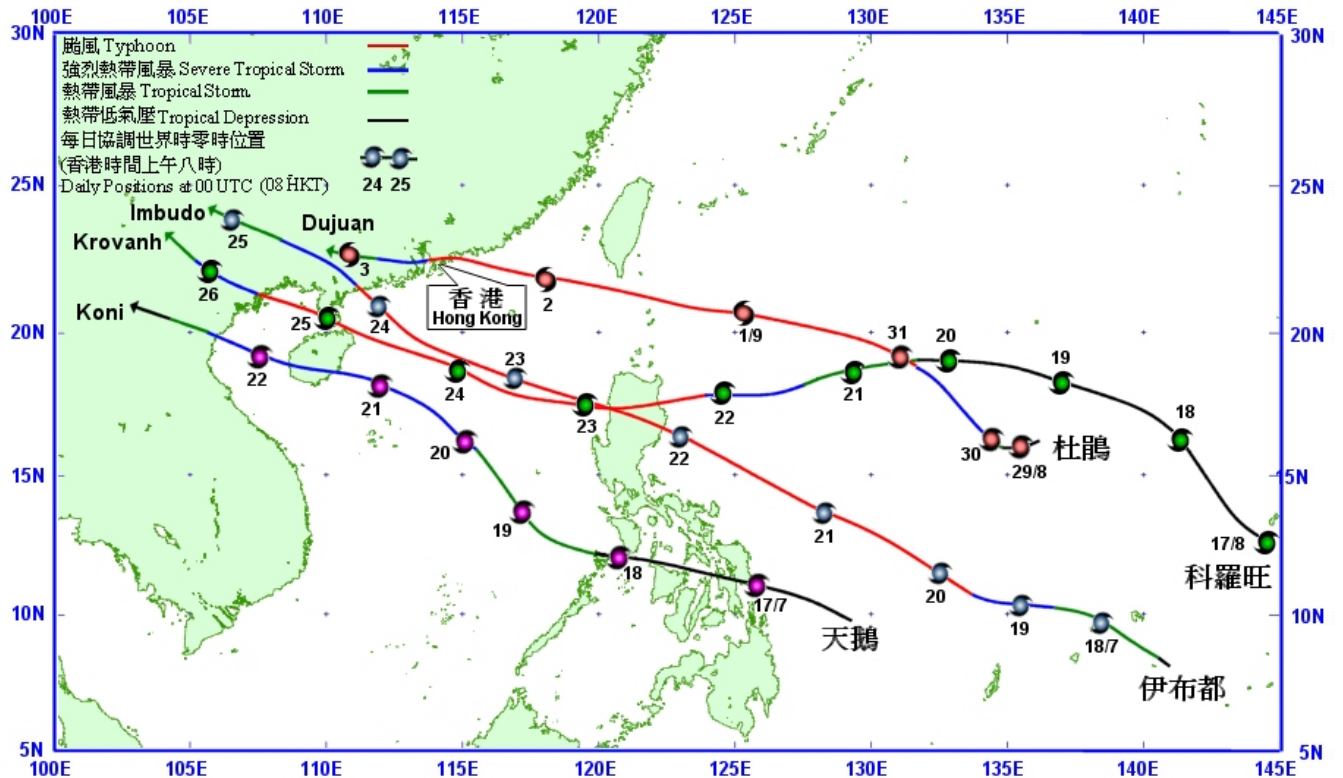


圖 2.2 二零零三年四個影響香港的熱帶氣旋的路徑圖。

Figure 2.2 Tracks of the four tropical cyclones affecting Hong Kong in 2003.

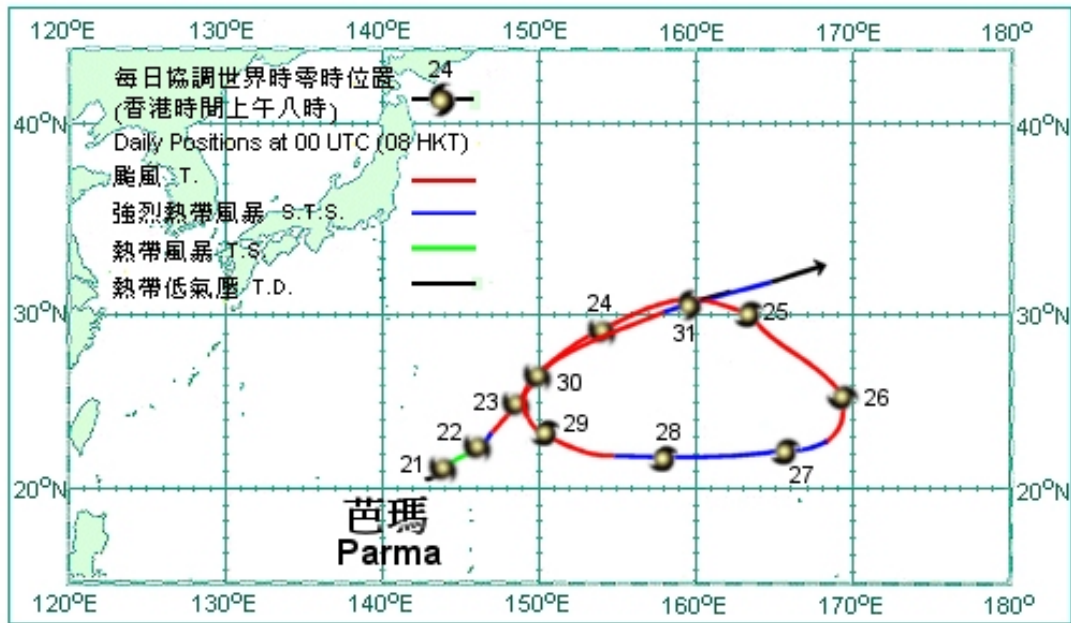


圖 2.3.a 芭瑪(0318)的路徑圖。  
Figure 2.3.a Track of Parma (0318).

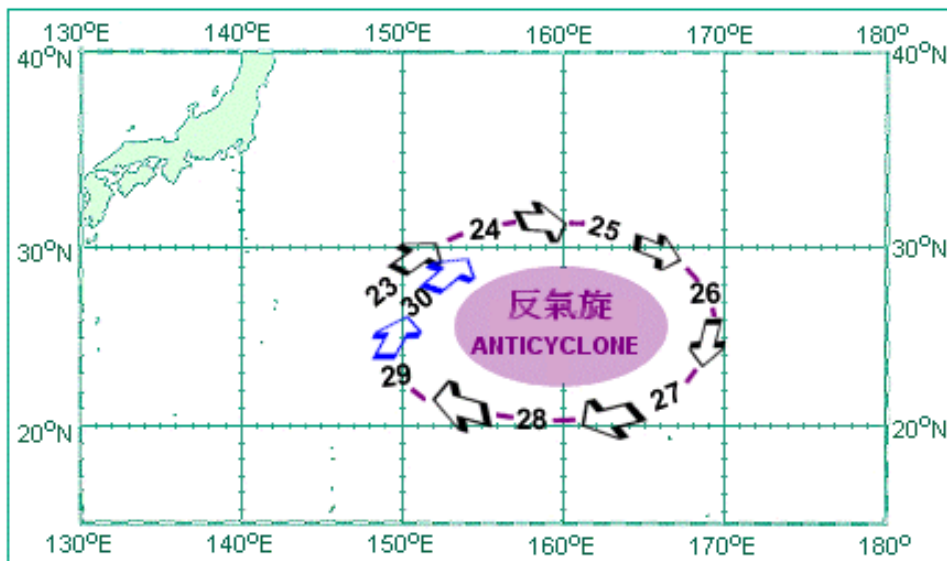


圖 2.3.b 芭瑪在二零零三年十月二十三日至三十日期間沿著高空反氣旋邊緣引導氣流移動的示意圖。  
Figure 2.3.b A diagram explaining the movement of Parma following the steering flow at the periphery of an upper-air anticyclone from 23 to 30 October 2003.

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	二月	三月	四月	五月	六月	七月	八月	九月	十月	十一月	十二月	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1961					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
正常 Normal	0.2	0.0	0.1	0.1	0.8	1.6	2.8	3.2	2.7	2.3	1.8	0.6	16.4



表 2.2 影響香港的熱帶氣旋之每月分佈

TABLE 2.2 MONTHLY DISTRIBUTION OF TROPICAL CYCLONES AFFECTING HONG KONG

年份 Year	月份 # Month #												共 Total
	一月	二月	三月	四月	五月	六月	七月	八月	九月	十月	十一月	十二月	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	
1961					1		3		2				6
1962							2	1		1			4
1963						1	1	1	1				4
1964					1	1		1	4	3			10
1965						1	2		2		1		6
1966					1		3	1	1				6
1967				1		1	1	3		1	1		8
1968							1	3	2				6
1969							1		2	1			4
1970							1	2	1	2			6
1971					1	2	3	1	1	1			9
1972						2	1	1			1		5
1973							2	3	2	2			9
1974						2	1		2	4	1	1	11
1975						1		1	2	3			7
1976						1	1	2	1				5
1977						1	3	1	3				8
1978				1			1	2	2	2			8
1979							2	2	2				6
1980					1	1	4	1	2	1			10
1981						1	2	1	1				5
1982						1	2		1	1			5
1983							3		2	2			7
1984						1	1	2	1				5
1985						1	1		2	1			5
1986							1	2		1			4
1987						1		2	1	1			5
1988					1	1	1		1	2			6
1989					1	1	2		1	2			7
1990					1	2	1	1	1				6
1991							3	1	2				6
1992						1	3	1					5
1993						1	1	2	3	1	1		9
1994						2		1	1				4
1995							1	4	2	1			8
1996							2	2	2	1			7
1997							1	1					2
1998								2	1	2			5
1999				1		1	1	1	3	1			8
2000						1	2	2	1		1		7
2001						2	2	1	1				6
2002								2	1				3
2003							2	1	1				4
正常 Normal	0.0	0.0	0.0	0.1	0.3	0.8	1.6	1.1	1.4	1.0	0.1	0.0	6.4

# 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.

表 2.3 香港各熱帶氣旋警告信號之意義

TABLE 2.3 MEANING OF ALL TROPICAL CYCLONE WARNING SIGNALS IN HONG KONG

信號 Signal		顯示符號 Symbol Display	信號之意義 Meaning of the Signal
戒備 Standby	1	<b>T1</b>	<p>有一熱帶氣旋集結於香港約800公里之範圍內，稍後可能影響香港。</p> <p>A tropical cyclone is centred within about 800 kilometres (km) of Hong Kong and may later affect Hong Kong.</p>
強風 Strong Wind	3	<b>L3</b>	<p>維多利亞港內吹強風或將有強風，持續風力每小時41-62公里，陣風可能超過每小時110公里。</p> <p>Strong wind is expected or blowing in the Victoria harbour, with a sustained speed of 41-62 kilometres per hour (km/h), and gusts which may exceed 110 km/h.</p>
西北 烈風或暴風 NW'LY Gale or Storm	8 西北 NW	<b>▲8 NW 西北</b>	<p>維多利亞港內風力已達或將達每小時63-117公里之烈風或暴風程度，由所指之方向吹襲，而陣風可能超過每小時180公里。</p> <p>Gale or storm force wind is expected or blowing in the Victoria harbour, with a sustained wind speed of 63-117 km/h from the quarter indicated and gusts which may exceed 180 km/h.</p>
西南 烈風或暴風 SW'LY Gale or Storm	8 西南 SW	<b>▼8 SW 西南</b>	
東北 烈風或暴風 NE'LY Gale or Storm	8 東北 NE	<b>▲8 NE 東北</b>	
東南 烈風或暴風 SE'LY Gale or Storm	8 東南 SE	<b>▼8 SE 東南</b>	
烈風或暴風 風力增強 Increasing Gale or Storm	9	<b>⊠9</b>	
颶風 Hurricane	10	<b>+10</b>	<p>風力已達或將達颶風程度。即持續風力每小時118公里或以上，而陣風可能超過每小時220公里。</p> <p>Hurricane force wind is expected or blowing, with sustained speed reaching upwards from 118 km/h and with gusts that may exceed 220 km/h.</p>

### 3.1 強烈熱帶風暴天鵝（0308）：二零零三年七月十六日至二十三日

天鵝是本年度香港天文台首次發出一號戒備信號的熱帶氣旋。

天鵝於七月十六日在馬尼拉東南偏東約1 000公里發展成爲一個熱帶低氣壓。它向西北偏西移動，於七月十七日橫過菲律賓中部。在菲律賓，天鵝共引致兩人死亡及兩人失蹤。天鵝在七月十八日進入南海後增強爲一個熱帶風暴，同日下午一班由馬來西亞哥達基納巴盧抵港的航機在距離天鵝西北偏西約300公里處遇上強烈湍流，15人受傷。

天鵝於七月十九日轉向西北，翌日進一步增強爲一個強烈熱帶風暴，當時其中心風力約爲每小時100公里。它於七月二十一日向西北偏西推進，並於當晚橫過海南島，七月二十二日進入北部灣。天鵝在橫過海南島期間導致多人受傷。與天鵝相關的惡劣天氣令當地28班航機取消，另有35班航機延遲。

天鵝於七月二十二日晚上在越南北部登陸後減弱爲一個熱帶風暴，翌日清晨在內陸進一步減弱爲一個熱帶低氣壓，稍後在河內以西約100公里消散。天鵝在越南北部引致三人死亡及18人受傷。超過1 000間房屋和數千公頃的農作物被狂風暴雨破壞。電力供應及通訊網絡亦一度中斷。另外，共有19艘漁船及客船在越南北部岸邊沉沒。

在香港，一號戒備信號在七月二十日上午5時40分發出，當時天鵝位於香港以南約710公里。天鵝於七月二十一日清晨最接近香港，當時它位於香港西南偏南約500公里，本港普遍吹清勁東至東南風，離岸地區及高地間中吹強風。天鵝的外圍雨帶亦爲香港帶來零散狂風驟雨，本港多處地區在七月二十至二十一日期間共錄得超過40毫米雨量。天文台於七月二十日下午約4時錄得最低瞬時海平面氣壓1003.9百帕斯卡。隨著天鵝遠離香港，一號戒備信號在七月二十一日晚上8時15分取消。

表3.1.1-3.1.3分別是天鵝影響香港時各站錄得的最高風速、日雨量及最高潮汐資料。圖3.1.1-3.1.3則分別是天鵝的路徑圖、香港雨量分佈圖及衛星圖像。

### **3.1 Severe Tropical Storm Koni (0308) : 16 - 23 July 2003**

Koni was the first tropical cyclone necessitating the issuance of the Standby Signal No. 1 by the Hong Kong Observatory this year.

Koni developed as a tropical depression at about 1 000 km east-southeast of Manila on 16 July. Tracking to the west-northwest, it moved across the central part of the Philippines on 17 July. In the Philippines, Koni caused two deaths and two others missing during its passage. Koni entered the South China Sea and intensified into a tropical storm on 18 July. An aircraft enroute from Kota Kinabalu of Malaysia to Hong Kong encountered severe turbulence that afternoon the same day when it passed about 300 km west-northwest of Koni. Fifteen persons were injured.

On 19 July, Koni turned to the northwest and intensified further into a severe tropical storm the next day with a maximum wind speed of about 100 km/h near its centre. While moving towards west-northwest on 21 July, it traversed Hainan that night and entered Beibu Wan the next day. In Hainan, several people were injured during the passage of Koni. 35 flights were suspended and 28 flights were cancelled due to the inclement weather associated with Koni.

On the night of 22 July, Koni weakened into a tropical storm after making landfall in northern Vietnam. Over land, it further weakened into a tropical depression on the early morning of 23 July and dissipated about 100 km west of Hanoi. Three people were killed and 18 were injured in northern Vietnam. The torrential rain and high winds damaged more than 1 000 houses and thousands of hectares of crops. Power supplies and telecommunication network were also temporarily cut off. 19 fishing and passenger boats were sank near the northern coast of Vietnam.

In Hong Kong, the Standby Signal No. 1 was issued at 5.40 a.m. on 20 July when Koni was about 710 km to the south. Koni was closest to Hong Kong on the early morning of 21 July when it was about 500 km to the south-southwest, local winds became fresh east to southeasterly winds with occasional strong winds offshore and on high ground. The outer rain bands of Koni also brought scattered squally showers and over 40 mm of rainfall to parts of the territory on 20-21 July. The lowest instantaneous mean sea-level pressure of 1003.9 hPa was recorded at the Hong Kong Observatory at about 4 p.m. on 20 July. As Koni moved away from Hong Kong, the Standby Signal No. 1 was canceled at 8.15 p.m. on 21 July.

Information on maximum wind, daily rainfall and maximum sea level during the passage of Koni is given in Tables 3.1.1 – 3.1.3. Figures 3.1.1 – 3.1.3 show the track of Koni, rainfall distribution in Hong Kong and satellite imagery respectively.

表 3.1.1.1 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 3.1.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations during the issuing of the tropical cyclone warning signals for Koni

站 (參閱圖1.1)	Station (see Fig. 1.1)	最高陣風 Maximum Gust		日期/月份 Date/Month	時間 Time	最高每小時平均風速 Maximum Hourly Wind		日期/月份 Date/Month	時間 Time		
		風向 Direction	風速(公里/時) Speed (km/h)			風向 Direction	風速(公里/時) Speed (km/h)				
中環	Central	東南偏東	ESE	47	21/7	09:36	東 E	20	21/7	19:00	
中環廣場	Central Plaza	東南	SE	75	21/7	12:58	東 E	47	21/7	02:00	
香港國際機場	Hong Kong International Airport	東南偏東	ESE	58	21/7	11:40	東南偏東	ESE	36	21/7	11:00
長洲	Cheung Chau	東南偏南	SSE	75	21/7	18:56	東南偏東	ESE	52	21/7	03:00
長沙灣	Cheung Sha Wan	東北偏東	ENE	40	21/7	01:32	東北偏東	ENE	19	20/7	19:00
青洲	Green Island	南	S	70	21/7	19:20	東北偏東	ENE	36	20/7	15:00
啓德	Kai Tak	東南	SE	63	21/7	12:44	東南	SE	30	21/7	11:00
京士柏	King's Park	東	E	45	21/7	00:25	東 E	20	21/7	02:00	
		東	E	45	21/7	01:38					
		東北	NE	45	21/7	02:15					
流浮山	Lau Fau Shan	東南偏南	SSE	52	21/7	13:20	東南偏東	ESE	23	20/7	15:00
北角	North Point	東北偏東	ENE	54	21/7	00:31	東北偏東	ENE	25	21/7	01:00
平洲	Ping Chau	東	E	31	21/7	01:28	東 E	12	20/7	15:00	
西貢	Sai Kung	東南偏南	SSE	67	21/7	15:11	東北	NE	25	20/7	14:00
沙螺灣	Sha Lo Wan	東北偏東	ENE	70	21/7	11:44	東 E	31	21/7	02:00	
沙田	Sha Tin	東南偏南	SSE	45	21/7	13:34	西南偏南	SSW	16	21/7	14:00
石崗	Shek Kong	東	E	49	20/7	13:35	東 E	22	20/7	15:00	
九龍天星碼頭	Star Ferry, Kowloon	東	E	54	21/7	12:45	東 E	30	21/7	03:00	
打鼓嶺	Ta Kwu Ling	南	S	43	21/7	15:46	東 E	19	21/7	04:00	
大帽山	Tai Mo Shan	東南偏東	ESE	87	21/7	00:41	東南偏東	ESE	59	21/7	03:00
塔門	Tap Mun	東南偏東	ESE	47	21/7	02:43	東南偏東	ESE	25	21/7	04:00
大老山	Tate's Cairn	東北偏東	ENE	75	21/7	00:27	東 E	43	21/7	00:00	
		東北偏東	ENE	75	21/7	01:52					
鯽魚湖	Tsak Yue Wu	東	E	47	20/7	13:23	東北偏東	ENE	14	20/7	13:00
將軍澳	Tseung Kwan O	東南偏南	SSE	38	21/7	10:08	東北偏東	ENE	14	20/7	14:00
青衣	Tsing Yi	東南偏東	ESE	72	21/7	05:19	東南	SE	38	21/7	11:00
屯門	Tuen Mun	東南	SE	67	21/7	11:12	東南	SE	22	21/7	12:00
橫瀾島	Waglan Island	南	S	65	21/7	12:27	東南偏東	ESE	45	21/7	03:00
黃竹坑	Wong Chuk Hang	東南	SE	72	21/7	01:32	東南偏東	ESE	25	21/7	01:00

表 3.1.2 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（單位為毫米）

Table 3.1.2 Daily rainfall amounts in millimetres recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Koni

站 (參閱圖3.1.2) Station (See Fig. 3.1.2)	七月二十日 20 July	七月二十一日 21 July	總雨量 Total
香港天文台 Hong Kong Observatory	9.9	27.3	37.2
H12 半山區 Mid Levels	15.5	30.0	45.5
H19 筲箕灣 Shau Kei Wan	6.5	27.5	34.0
H21 淺水灣 Repulse Bay	13.0	16.0	29.0
K04 佐敦谷 Jordan Valley	17.5	64.0	81.5
K06 蘇屋邨 So Uk Estate	13.0	28.5	41.5
N05 粉嶺 Fanling	3.5	28.0	31.5
N06 葵涌 Kwai Chung	6.5	30.0	36.5
N09 沙田 Sha Tin	5.0	37.5	42.5
N12 元朗 Yuen Long	0.5	19.0	19.5
N13 糧船灣 High Island	16.5	30.5	47.0
N17 東涌 Tung Chung	0.0	33.5	33.5
R21 踏石角 Tap Shek Kok	3.0	16.0	19.0
R26 石崗 Shek Kong	11.0	35.5	46.5
R31 大尾篤 Tai Mei Tuk	3.5	20.0	23.5

表 3.1.3 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 3.1.3 Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Koni

站 (參閱圖 1.1) Station (See Fig. 1.1)	最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time
鯪魚涌 Quarry Bay	1.84	20/7	12:37	0.15	21/7	06:47
石壁 Shek Pik	1.93	20/7	12:39	0.16	21/7	13:34
大埔滘 Tai Po Kau	1.79	20/7	11:23	0.26	20/7	23:57
尖鼻咀 Tsim Bei Tsui	2.25	20/7	13:51	0.31	21/7	03:03
橫瀾島 Waglan Island	1.82	20/7	11:51	0.05	20/7	23:58

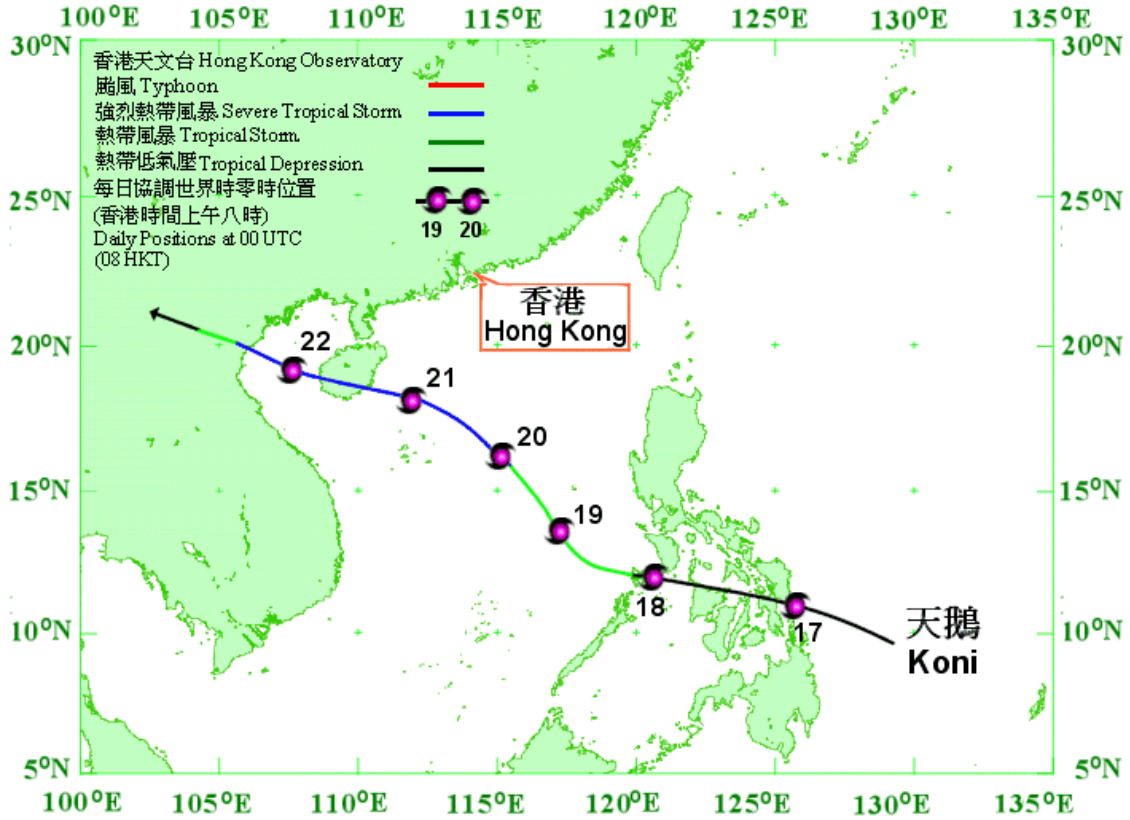


圖 3.1.1 二零零三年七月十六日至二十三日天鵝 (0308) 的路徑圖。  
Figure 3.1.1 Track of Koni (0308) : 16 – 23 July 2003.

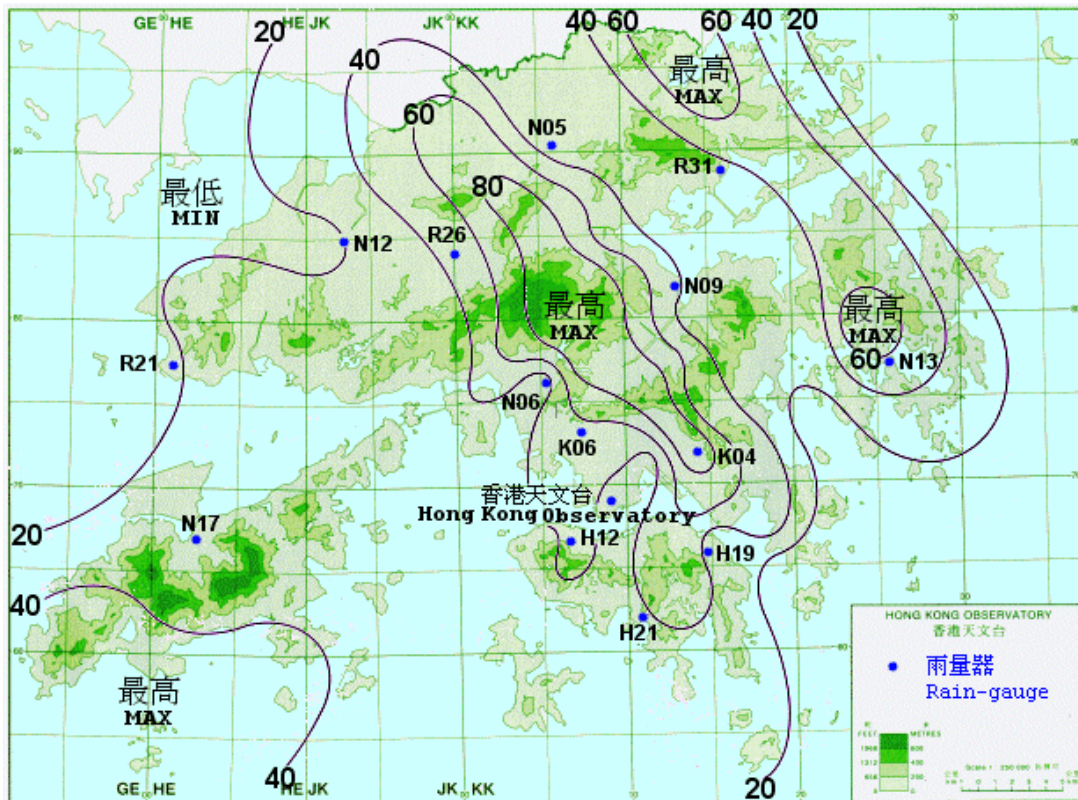


圖 3.1.2 二零零三年七月二十日至二十一日之雨量分佈 (等雨量線單位為毫米)。  
Figure 3.1.2 Rainfall distribution on 20 - 21 July 2003 (isohyets are in millimetres).

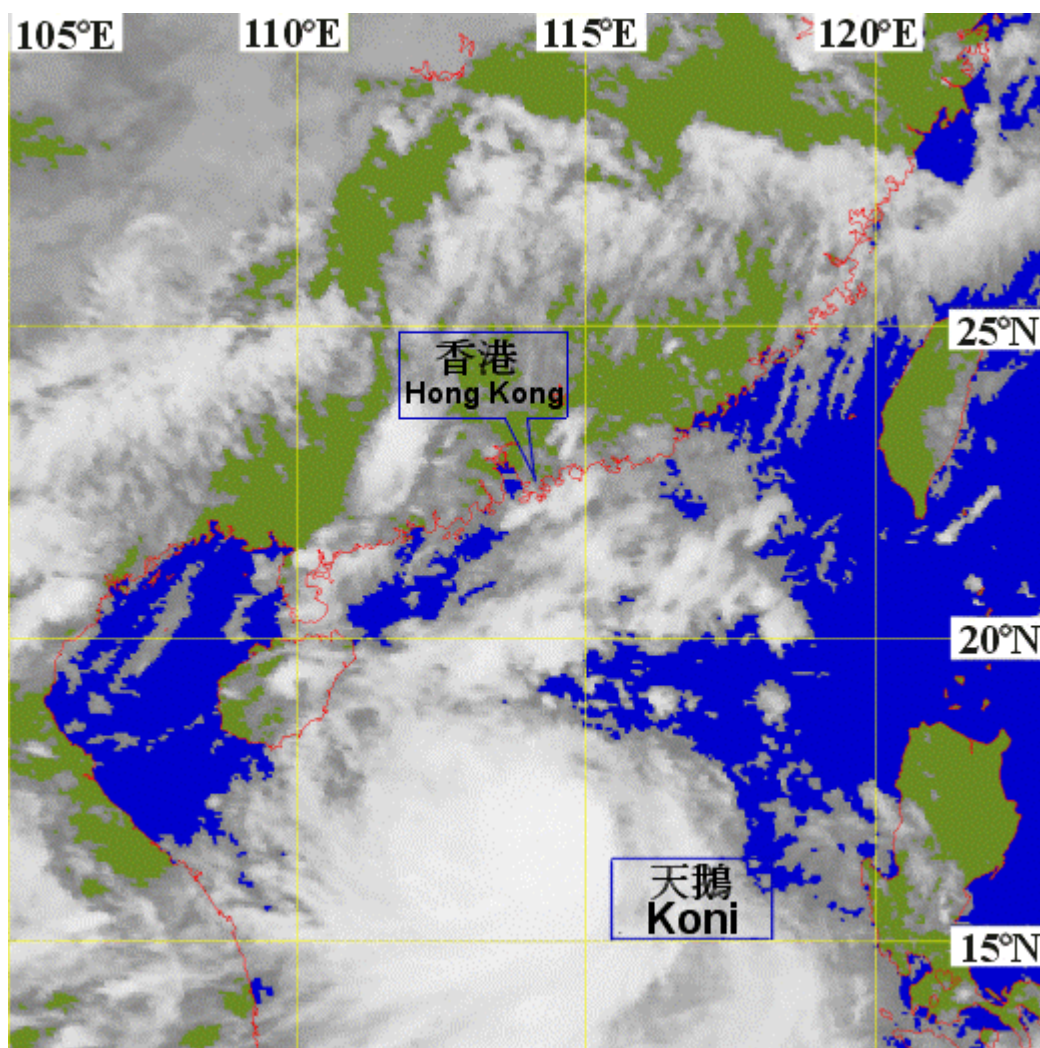


圖 3.1.3 二零零三年七月二十日約下午1時30分的紅外線衛星圖片，顯示當時天鵝位於香港以南約710公里。

〔此衛星圖像接收自地球同步業務環境衛星(GOES-9)。GOES-9是日本氣象廳(JMA)和美國國家海洋及大氣管理局(NOAA)轄下的國家環境衛星數據及資訊服務處(NESDIS)合作下的成果〕

Figure 3.1.3 Infra-red imagery at around 1.30 p.m. on 20 July 2003 showing that Koni was located at about 710 km south of Hong Kong.

[The satellite imagery was originally captured with Geostationary Operational Environmental Satellite (GOES-9) which is operated by the joint effort of Japan Meteorological Agency (JMA) and National Environmental Satellite Data and Information Service (NESDIS) of US National Oceanic and Atmospheric Administration (NOAA)]



### 3.2 颱風伊布都（0307）：二零零三年七月十七日至二十五日

伊布都是本年度香港天文台首次發出八號烈風或暴風信號的熱帶氣旋。

伊布都於七月十七日在關島西南約730公里處發展為一個熱帶低氣壓，大致向西北偏西移動，於當晚增強為一個熱帶風暴。伊布都於七月十九日清晨增強為一個強烈熱帶風暴後，翌日清晨進一步增強為一個颱風，中心附近的最高持續風速在七月二十一日達每小時185公里。伊布都在七月二十二日橫過呂宋期間引致22人死亡及數百人受傷，超過14 000人需要遷離家園，部分地區的通訊和電力供應中斷，大量農作物被洪水淹沒，農作物損失超過3 500萬美元。

七月二十二日晚上伊布都進入南海後繼續向西北偏西移動，趨向華南海岸，七月二十四日早上在廣東西部陽江附近登陸，並在當日下午減弱為一個強烈熱帶風暴。伊布都於七月二十五日清晨在內陸減弱為一個熱帶風暴，同日稍後在廣西消散。在廣東及廣西，伊布都導致20人死亡，三人失蹤，接近6 000間房屋倒塌和超過一千萬公頃的農作物被損。受災人數超過740萬，直接經濟損失逾19億人民幣。另外，廣州白雲國際機場共有16班機航取消，54班航機延誤。

在香港，天文台在七月二十二日晚上8時20分發出一號戒備信號，當時伊布都位於香港東南約760公里。隨著伊布都移近華南海岸，本港風力逐漸增強，天文台於七月二十三日下午1時40分發出三號強風信號。當晚伊布都繼續移近香港，離岸海域及高地吹烈風程度東至東北風，天文台在晚上10時40分發出本年度首次的八號東北烈風或暴風信號。伊布都在七月二十四日上午5時左右最接近香港，當時它位於香港西南約280公里，本港吹強風至烈風程度東南風，長洲風力更達暴風程度。天文台在七月二十四日上午5時15分改發八號東南烈風或暴風信號。在伊布都最接近香港期間，橫瀾島及長洲錄得的最高每小時平均風速分別為83公里及101公里。天文台於七月二十四日上午4時33分及4時34分錄得的最低瞬時海平面氣壓為997.5百帕斯卡。

七月二十四日早上伊布都開始移離香港，本港風力逐漸減弱，八號東南烈風或暴風信號在上午8時15分由三號強風信號取代。隨著伊布都當日早上於陽江附近登陸，本港風力進一步轉弱，所有熱帶氣旋警告於同日正午12時40分取消。

在伊布都的吹襲下，香港一名男子被強風從六米高的工作台上吹倒墮海死亡。市面發生多宗高處墮物及83宗大樹倒塌事故，共導致11人受傷。一艘開往澳門的噴射船在大嶼山附近海面遭遇巨浪，34人受傷。另一艘大陸貨船因機件失靈，在大亞灣附近海面漂流，16名船員由香港飛行服務隊救出。本港機場有超過20班航機取消及十多班航機延誤，往離島的小輪以及部份巴士線亦一度停止服務。

表3.2.1-3.2.3分別是伊布都影響香港時各站錄得的最高風速、日雨量及最高潮汐資料。圖3.2.1和3.2.2分別是伊布都的路徑圖及香港雨量分佈圖，圖3.2.3顯示橫瀾島風速的變化情形，圖3.2.4和3.2.5是伊布都的衛星圖像及雷達回波圖。

### 3.2 Typhoon Imbudo (0307) : 17-25 July 2003

Imbudo was the first tropical cyclone that necessitated the issuance of the No. 8 Gale or Storm Signal this year.

Imbudo developed as a tropical depression about 730 km southwest of Guam on 17 July. Tracking mainly towards the west-northwest, it intensified into a tropical storm the same night. Imbudo attained severe tropical storm intensity on the morning of 19 July and further strengthened into a typhoon the next morning. The maximum sustained wind speed near its centre reached 185 km/h on 21 July. Imbudo swept through Luzon on 22 July, killing 22 people and injuring hundreds. More than 14 000 people were evacuated. Power supplies and telecommunication network in some places were temporarily cut off. Over USD 35 millions of crops were ruined by flash floods.

Imbudo entered the South China Sea on the night of 22 July and continued to move west-northwestwards towards the South China coast. On the morning of 24 July, it made landfall near Yangjiang of western Guangdong and weakened into a severe tropical storm that afternoon. Imbudo weakened into a tropical storm over land on the morning of 25 July and then dissipated in Guangxi the same day. In Guangdong and Guangxi, the death toll due to Imbudo reached 20, with three people missing. Near 6 000 houses collapsed and more than 10 millions hectares of crops were damaged. More than 7.4 million people were affected. The estimated economic loss was over 1.9 billion RMB. 16 flights were cancelled and 54 flights were delayed in Guangzhou Baiyun International Airport.

In Hong Kong, the Standby Signal No. 1 was issued at 8.20 p.m. on 22 July when Imbudo was located about 760 km to the southeast of Hong Kong. As Imbudo moved towards the South China coast, local winds began to strengthen on the morning of 23 July. The Strong Wind Signal No. 3 was issued at 1.40 p.m. Imbudo moved closer to Hong Kong that night with gale force east to northeasterly winds blowing offshore and on high ground. The Hong Kong Observatory issued the first No. 8 NORTHEAST Gale or Storm Signal this year at 10.40 p.m. on 23 July. Imbudo was closest to Hong Kong at about 5 a.m. on 24 July when it was about 280 km to the southwest. Locally, winds were strong to gale southeasterlies reaching storm force in Cheung Chau. The No. 8 SOUTHEAST Gale or Storm Signal was issued at 5.15 a.m. on 24 July. During the approach of Imbudo, maximum hourly wind speed of 83 km/h and 101 km/h were recorded at Waglan Island and Cheung Chau respectively. The lowest instantaneous mean sea-level pressure of 997.5 hPa was recorded at the Hong Kong Observatory at 4.33 a.m. and 4.34 a.m. on 24 July.

As Imbudo started to move away from Hong Kong and local winds began to weaken, the No. 8 SOUTHEAST Gale or Storm Signal was replaced by the Strong Wind Signal No. 3 at 8.15 a.m. on 24 July. Following the landfall of Imbudo near Yangjiang, local winds subsided further. All tropical cyclone warnings were cancelled at 12.40 p.m. the same day.

Locally, one man was killed after being blown by high winds into the sea from a 6-metre high working stage. Several cases of falling objects and 83 cases of fallen trees injured 11 people. Another 34 people aboard a jetfoil bound for Macau were injured when the boat travelled through the rough sea near Lantau Island. The Government Flying Services rescued 16 crew members from a mainland container vessel which suffered a loss of power near Daya Bay. At the airport, over 20 flights were cancelled and more than ten flights were delayed. Ferry services to outlying islands and bus services for some routes were also suspended.

Information on maximum wind, daily rainfall and maximum sea level during the passage of Imbudo is given in Tables 3.2.1 - 3.2.3. Figures 3.2.1 and 3.2.2 show the track of Imbudo and the rainfall distribution in Hong Kong respectively. The time series of the wind speed recorded at Waglan Island is given in Figure 3.2.3. Figures 3.2.4 and 3.2.5 are the satellite and radar imagery of Imbudo.

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

Table 3.2.1 Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations during the issuing of the tropical cyclone warning signals for Imbudo

站 (參閱圖1.1)	Station (see Fig. 1.1)	最高陣風 Maximum Gust		日期/月份 Date/Month	時間 Time	最高每小時平均風速 Maximum Hourly Wind		日期/月份 Date/Month	時間 Time
		風向 Direction	風速(公里/時) Speed (km/h)			風向 Direction	風速(公里/時) Speed (km/h)		
中環	Central	東 E	94	23/7	22:47	東 E	40	24/7	00:00
中環廣場	Central Plaza	東北偏東 ENE	137	23/7	23:09	東北 NE	79	23/7	20:00
香港國際機場	Hong Kong International Airport	東南偏東 ESE	108	24/7	03:35	東南偏東 ESE	67	24/7	05:00
長洲	Cheung Chau	東南偏東 ESE	144	24/7	03:37	東南偏東 ESE	101	24/7	05:00
長沙灣	Cheung Sha Wan	東北 NE	115	23/7	22:13	東北 NE	47	23/7	23:00
青洲	Green Island	東 E	142	24/7	04:01	東北偏東 ENE	75	23/7	23:00
啓德	Kai Tak	東 E	103	24/7	00:34	東南偏東 ESE	45	24/7	06:00
京士柏	King's Park	東北偏東 ENE	101	23/7	23:12	東 E	40	24/7	05:00
流浮山	Lau Fau Shan	東南 SE	103	24/7	04:31	東 E	51	23/7	23:00
北角	North Point	東北偏東 ENE	110	23/7	23:02	東北偏東 ENE	52	24/7	00:00
平洲	Ping Chau	東 E	88	23/7	20:31	東 E	27	23/7	21:00
西貢	Sai Kung	東 E	103	23/7	15:47	東北 NE	58	23/7	22:00
沙螺灣	Sha Lo Wan	東 E	146	24/7	04:16	東 E	67	24/7	05:00
沙田	Sha Tin	東北偏東 ENE	90	23/7	22:44	東北 NE	34	24/7	00:00
石崗	Shek Kong	東 E	96	24/7	05:57	東 E	43	24/7	03:00
九龍天星碼頭	Star Ferry, Kowloon	東 E	96	24/7	01:30	東 E	54	24/7	02:00
打鼓嶺	Ta Kwu Ling	東南偏東 ESE	79	24/7	02:52	東南偏東 ESE	31	24/7	05:00
大尾篤	Tai Mei Tuk	東北偏東 ENE	130	24/7	00:29	東北偏東 ENE	81	24/7	00:00
大帽山	Tai Mo Shan	東南 SE	164	24/7	05:10	東南偏東 ESE	108	24/7	03:00
塔門	Tap Mun	東北偏東 ENE	103	23/7	20:17	東 E	49	23/7	21:00
大老山	Tate's Cairn	東 E	144	23/7	15:51	東 E	99	24/7	00:00
鯽魚湖	Tsak Yue Wu	東北 NE	67	23/7	19:35	東北偏東 ENE	22	23/7	22:00
將軍澳	Tseung Kwan O	東北 NE	92	23/7	18:52	東南偏東 ESE	30	24/7	08:00
						東南偏東 ESE	30	24/7	09:00
青衣	Tsing Yi	東南偏東 ESE	140	23/7	23:41	東南偏東 ESE	67	24/7	02:00
						東南偏東 ESE	67	24/7	04:00
屯門	Tuen Mun	東南 SE	121	24/7	05:18	東南 SE	41	24/7	06:00
橫瀾島	Waglan Island	東 E	117	23/7	23:54	東 E	83	24/7	00:00
黃竹坑	Wong Chuk Hang	東 E	113	24/7	01:58	東南偏東 ESE	49	24/7	05:00

表 3.2.2 伊布都影響香港期間，香港天文台總部及其他各站所錄得的日雨量 (單位為毫米)

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

站 (參閱圖3.2.2) Station (see Fig. 3.2.2)	七月二十二日 22 July	七月二十三日 23 July	七月二十四日 24 July	總雨量 Total
香港天文台 Hong Kong Observatory	微量 Trace	31.2	5.4	36.6
H12 半山區 Mid Levels	0.0	29.5	8.5	38.0
H19 筲箕灣 Shau Kei Wan	0.0	27.5	4.0	31.5
H21 淺水灣 Repulse Bay	0.5	37.0	6.5	44.0
K04 佐敦谷 Jordan Valley	0.0	39.5	5.5	45.0
K06 蘇屋邨 So Uk Estate	0.0	39.0	7.0	46.0
N05 粉嶺 Fanling	0.0	23.0	25.0	48.0
N06 葵涌 Kwai Chung	0.5	43.5	9.5	53.5
N09 沙田 Sha Tin	0.0	36.0	10.0	46.0
N12 元朗 Yuen Long	0.0	25.0	11.0	36.0
N13 糧船灣 High Island	0.0	43.0	7.0	50.0
N17 東涌 Tung Chung	0.5	17.5	4.5	22.5
R21 踏石角 Tap Shek Kok	[ 0.0 ]	25.5	6.5	[ 32.0 ]
R26 石崗 Shek Kong	[ 0.5 ]	28.0	12.5	[ 41.0 ]
R31 大尾篤 Tai Mei Tuk	[ 0.0 ]	7.5	13.0	[ 20.5 ]

註： [ ] 基於不完整的每小時雨量數據。

Note: [ ] based on incomplete hourly data.

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

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

站 (參閱圖 1.1) Station (see Fig. 1.1)	最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time
鯽魚涌 Quarry Bay	2.75	24/7	04:00	1.02	24/7	02:31
石壁 Shek Pik	3.05	24/7	05:41	1.09	24/7	05:41
大埔滘 Tai Po Kau	2.66	24/7	02:45	1.05	24/7	02:27
尖鼻咀 Tsim Bei Tsui	3.15	24/7	07:22	1.13	24/7	07:22

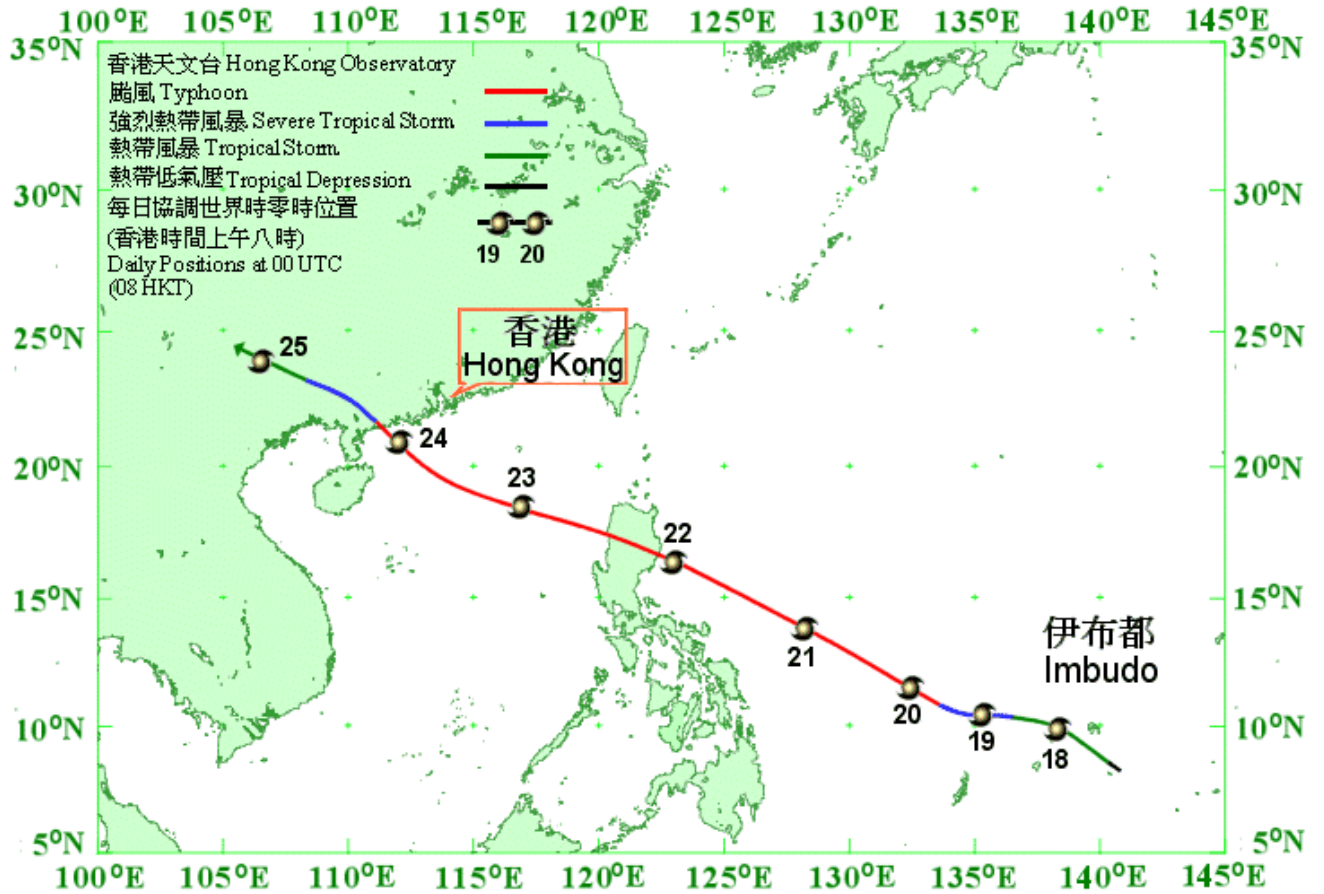


圖 3.2.1.a 二零零三年七月十七日至二十五日伊布都 (0307) 的路徑圖。

Figure 3.2.1.a Track of Imbudo (0307) : 17 - 25 July 2003.

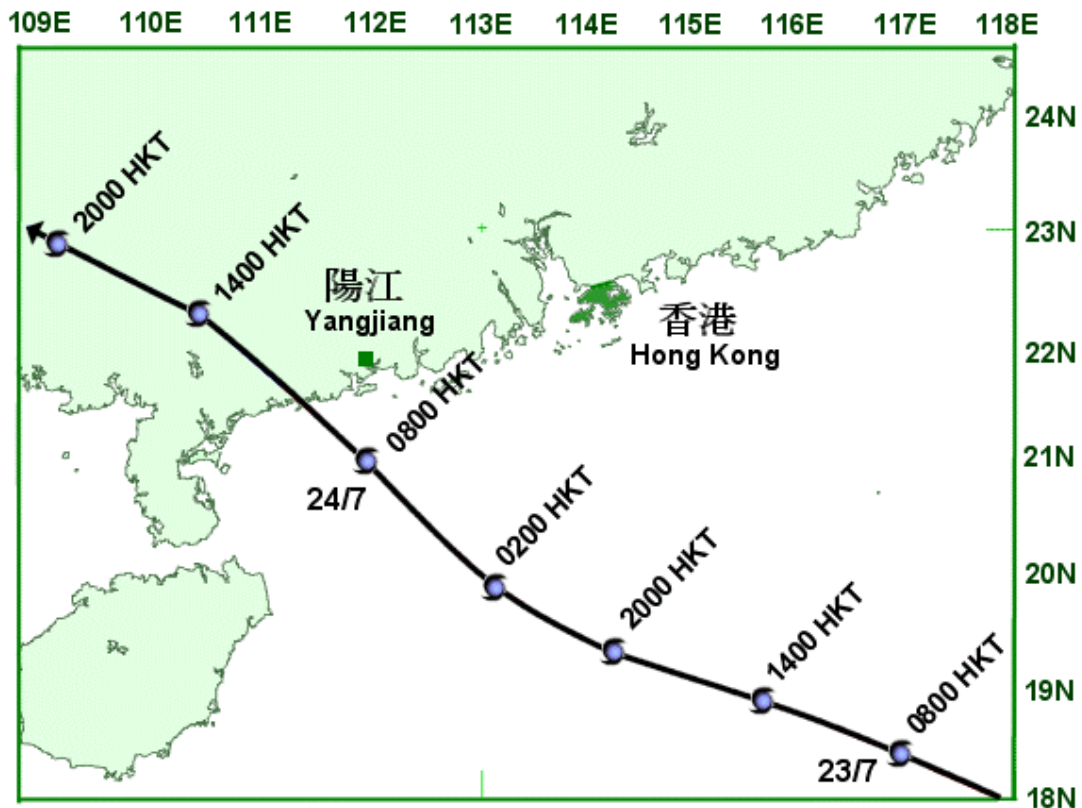


圖 3.2.1.b 伊布都接近香港時的路徑圖。

Figure 3.2.1.b Track of Imbudo near Hong Kong.

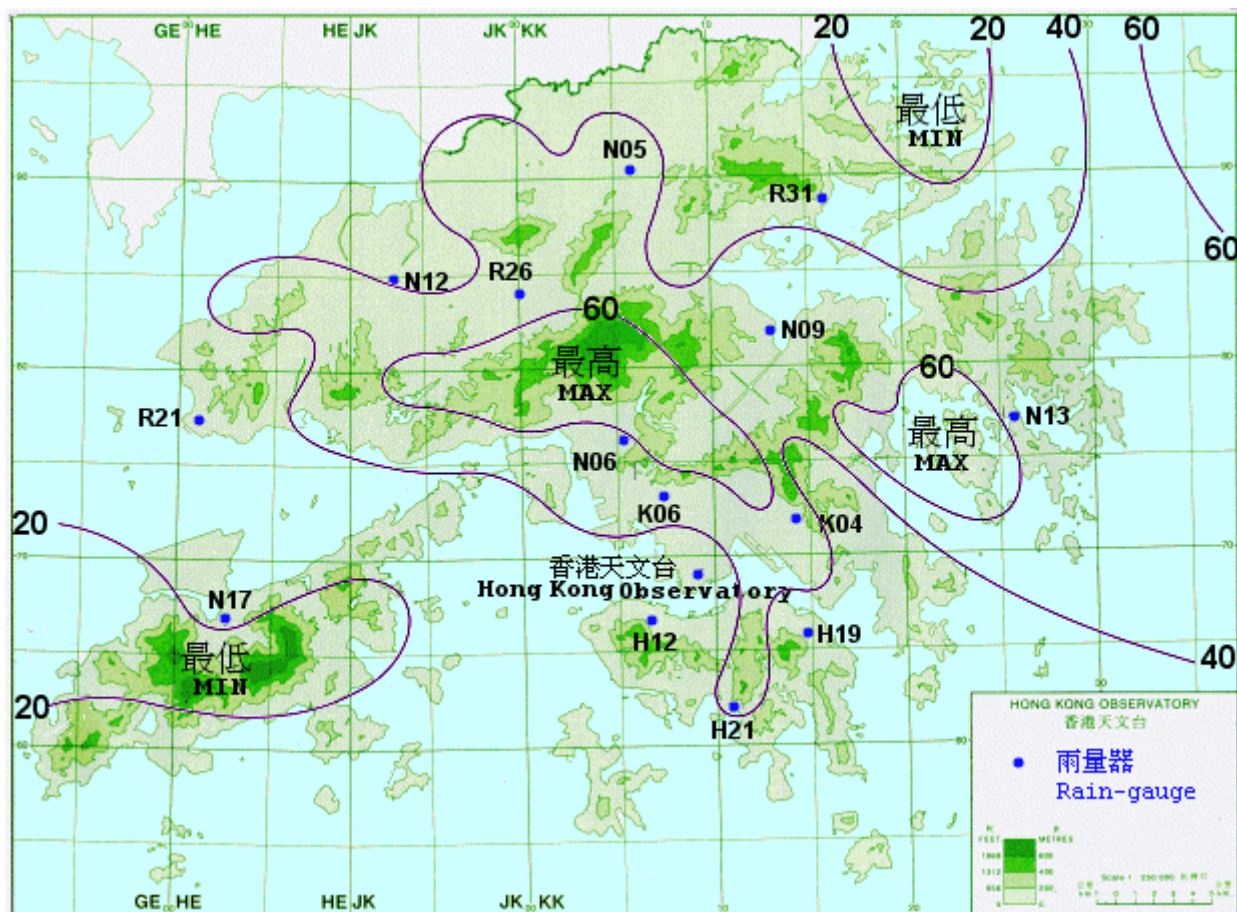


圖 3.2.2 二零零三年七月二十二日至二十四日的雨量分佈 (等雨量線單位為毫米)。  
Figure 3.2.2 Rainfall distribution on 22-24 July 2003 (isohyets are in millimetres).

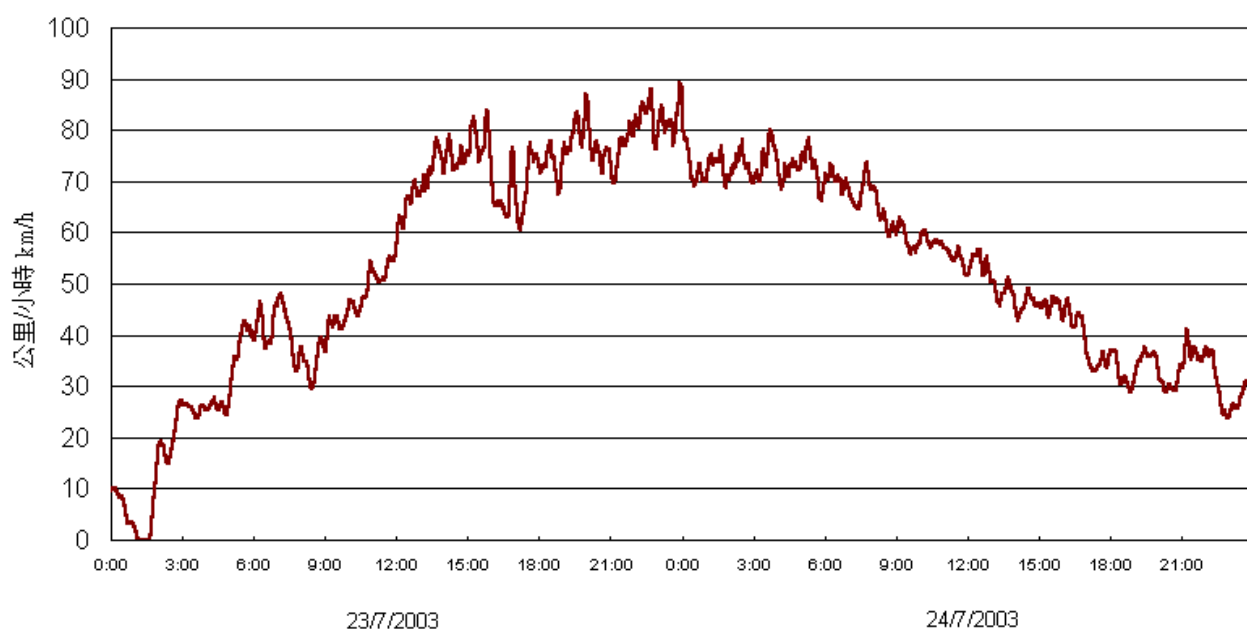


圖 3.2.3 橫瀾島錄得的十分鐘平均風速的變化情形。  
Figure 3.2.3 Trace of the 10-minute mean wind speed recorded at Waglan Island.

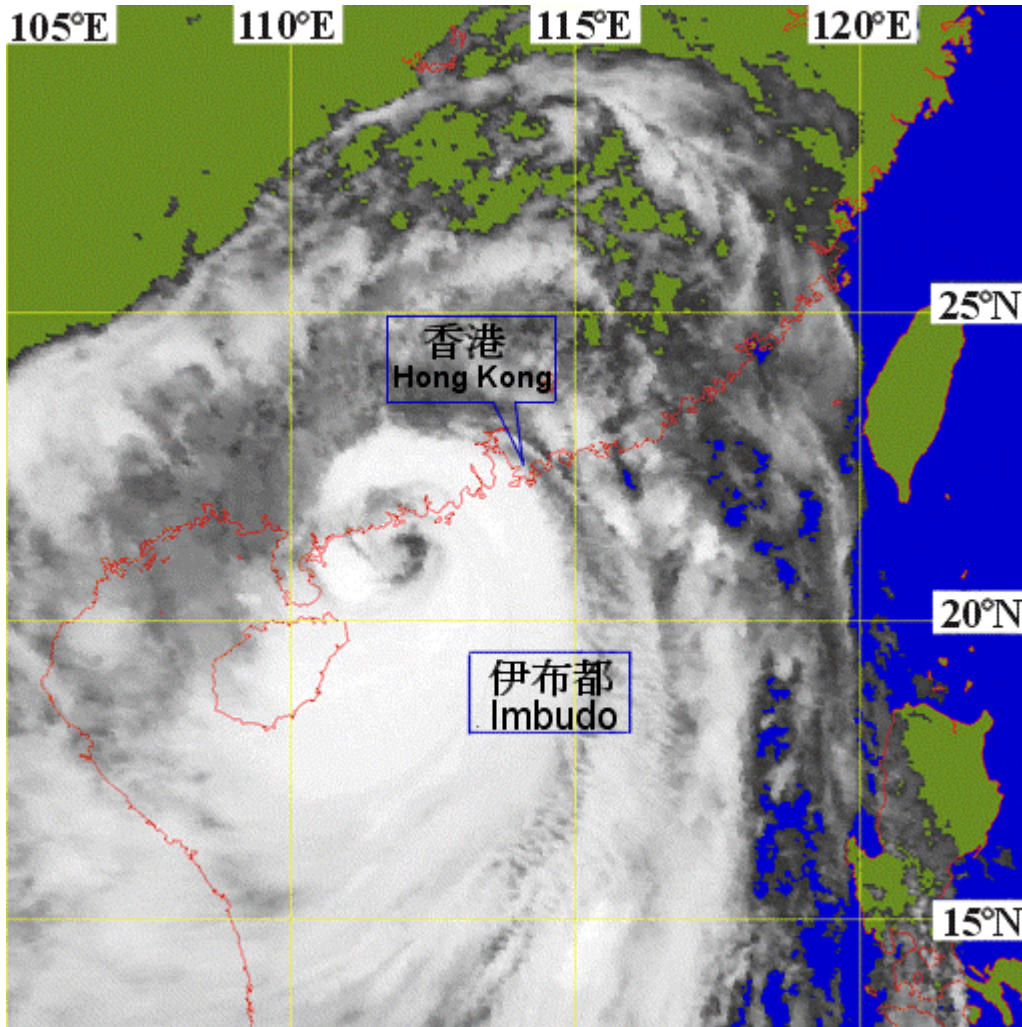


圖 3.2.4 二零零三年七月二十四日約上午7時30分的紅外線衛星圖片，當時伊布都在廣東西部陽江附近快將登陸。

[此衛星圖像接收自地球同步業務環境衛星(GOES-9)。GOES-9是日本氣象廳(JMA)和美國國家海洋及大氣管理局(NOAA)轄下的國家環境衛星數據及資訊服務處(NESDIS)合作下的成果]

Figure 3.2.4 Infra-red imagery at around 7.30 a.m. on 24 July 2003 when Imbudo was close to landfall near Yangjiang of western Guangdong.

[The satellite imagery was originally captured with Geostationary Operational Environmental Satellite (GOES-9) which is operated by the joint effort of Japan Meteorological Agency (JMA) and National Environmental Satellite Data and Information Service (NESDIS) of US National Oceanic and Atmospheric Administration (NOAA)]

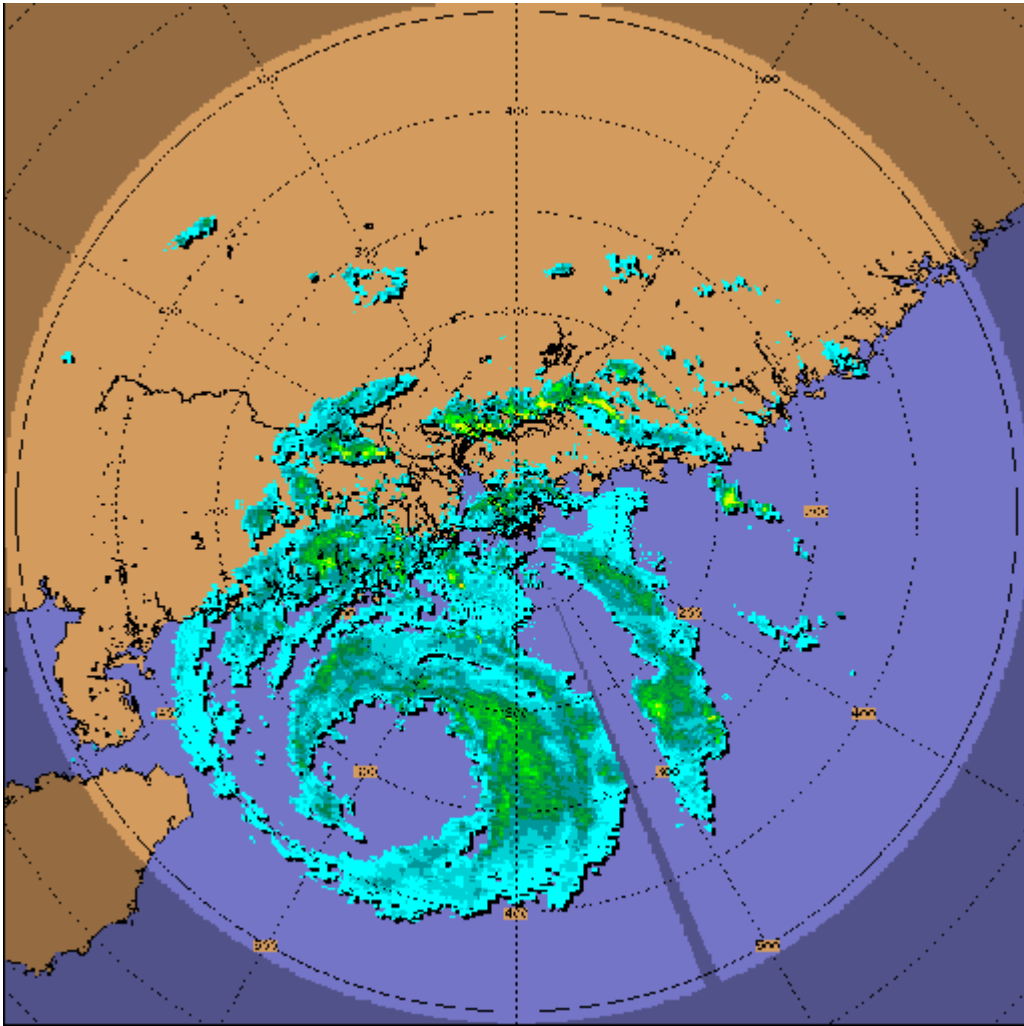


圖 3.2.5 二零零三年七月二十四日上午2時05分的雷達回波圖像，當時伊布都的外圍雨帶正影響香港。

Figure 3.2.5 Radar echoes captured at 2.05 a.m. on 24 July 2003. At that time, Hong Kong was being affected by the outer rainbands of Imbudo.



### 3.3 颱風科羅旺（0312）：二零零三年八月十七日至二十六日

科羅旺於八月十七日在關島西南偏南約110公里處發展為一個熱帶低氣壓。最初兩天它向西北推進，八月十九日轉向西移。科羅旺於八月二十日晚增強為一個熱帶風暴，八月二十一日晚進一步增強為一個強烈熱帶風暴，八月二十二日更增強為一個颱風，並於當晚橫過呂宋。在菲律賓，科羅旺帶來的大雨引致一名女孩死亡，上千家庭需要遷離。它在八月二十三日早上進入南海後向西北偏西推進，翌日橫過南海北部。科羅旺八月二十五日掠過海南島東北部後進入北部灣。科羅旺在廣東、廣西及海南島導致最少二人死亡及五人受傷，接近13 000間房屋倒塌和14萬公頃的農作物受損，直接經濟損失逾21億人民幣。科羅旺於七月二十六日清晨在越南北部登陸後減弱為一個強烈熱帶風暴，同日進一步減弱為一個熱帶風暴，並於當晚在內陸消散。在越南北部，科羅旺導致一人死亡及五人受傷，約1 000間房屋被毀。

在香港，天文台在八月二十三日早上9時30分發出一號戒備信號，當時科羅旺位於香港東南約760公里。八月二十四日早上科羅旺移近華南海岸，本地風力亦隨著科羅旺的移近而逐漸增強，天文台於上午11時30分發出三號強風信號。科羅旺的外圍雨帶為本港帶來狂風大雨及雷暴，天文台在早上4時20分發出黃色暴雨警告信號，當日本港大部份地區均錄得超過70毫米的雨量。天文台於八月二十四日下午3時48分錄得的最低瞬時海平面氣壓為1001.6百帕斯卡。科羅旺在八月二十四日晚上最接近香港，當時它位於香港西南偏南約340公里。

在三號強風信號發出期間，本地普遍吹東至東南強風，離岸海域及高地間中吹烈風。八月二十五日早上科羅旺移離香港並進入北部灣，本港風力逐漸減弱，所有熱帶氣旋警告於上午11時30分取消。受到科羅旺的外圍雨帶影響，本港當日間中有狂風大驟雨及雷暴，大部份地區錄得超過30毫米雨量，其中大嶼山及屯門的雨量更超過100毫米。

在科羅旺的吹襲下，本港共有11人受傷。另有68宗大樹被吹倒及多宗高處墮物的報告。在牛頭角上邨，一幅大面積的棚架受強風吹襲倒塌，一條來往離島的小輪航線及四條巴士線一度停止服務。

表3.3.1-3.3.3分別是科羅旺影響香港時各站錄得的最高風速、日雨量及最高潮汐資料。圖3.3.1和3.3.2分別是科羅旺的路徑圖及香港雨量分佈圖，圖3.3.3是科羅旺的衛星圖像。

### **3.3 Typhoon Krovanh (0312) : 17 - 26 August 2003**

Krovanh developed as a tropical depression about 110 km south-southwest of Guam on 17 August. It tracked northwestwards in the first two days and turned westwards on 19 August. Krovanh intensified into a tropical storm on the night of 20 August and further intensified into a severe tropical storm the next night. It reached typhoon strength on 22 August and crossed Luzon that night. In the Philippines, the heavy rain brought by Krovanh killed a girl and caused over 1000 families to be displaced. Adopting a west-northwest track, Krovanh entered the South China Sea on 23 August morning and moved across the northern part of the South China Sea the next day. After skirting the northeastern part of Hainan, Krovanh entered Beibu Wan on 25 August. In Guangdong, Guangxi and Hainan, at least two people were killed and five were injured during the approach of Krovanh. About 13 000 houses collapsed and 140 thousands hectares of crops were affected. The estimated economic loss was over 2.1 billions RMB. Krovanh weakened into a severe tropical storm on the early morning on 26 August after making landfall over northern Vietnam. It further weakened into a tropical storm the same day and dissipated inland during the night. In northern Vietnam, one person was found dead and five were hurt during the passage of Krovanh. Krovanh also damaged about 1 000 houses.

In Hong Kong, the Standby Signal No. 1 was issued at 9.30 a.m. on 23 August when Krovanh was located about 760 km to the southeast of Hong Kong. As Krovanh moved towards the South China coast on the morning of 24 August, local winds began to strengthen. The Strong Wind Signal No. 3 was issued at 11.30 a.m. Its outer rainbands brought squally heavy rain and thunderstorms to Hong Kong. The Amber Rainstorm Warning Signal was issued at 4.20 a.m. and more than 70 millimetres of rainfall were recorded over most parts of the territory on that day. The lowest instantaneous mean sea-level pressure of 1001.6 hPa was recorded at the Hong Kong Observatory at 3.48 p.m. on 24 August. Krovanh was closest to Hong Kong on 24 August night when it was about 340 km to the south-southwest.

While the Strong Wind Signal No. 3 was in force, strong east to southeasterly winds were generally experienced in Hong Kong, with occasionally gales offshore and on high ground. As Krovanh moved away from Hong Kong and entered Beibu Wan on 25 August, local winds began to weaken gradually. All tropical cyclone warnings were cancelled at 11.30 a.m. the same day. Under the influence of outer rainbands of Krovanh, there were occasional heavy squally showers and thunderstorms in Hong Kong on 25 August. While over 30 millimetres of rainfall were recorded in most parts of the territory, rainfall in Lantau Island and Tuen Mun exceeded 100 millimetres.

The approach of Krovanh resulted in 11 people injured. There were 68 cases of uprooted trees and several cases of falling objects in Hong Kong. A large section of scaffolding in Ngau Tau Kok Upper Estate also collapsed under high winds. One ferry service to outlying island and four bus routes were suspended temporarily.

Information on maximum wind, daily rainfall and maximum sea level during the passage of Krovanh is given in Tables 3.3.1 – 3.3.3. Figures 3.3.1 and 3.3.2 show the track of Krovanh and the rainfall distribution in Hong Kong respectively. Figure 3.3.3 is the satellite imagery of Krovanh.

表 3.3.1 在科羅旺影響下，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 during the issuing of the tropical cyclone warning signals for Krovanh

站 (參閱圖1.1)	Station (see Fig. 1.1)	最高陣風 Maximum Gust		日期/月份 Date/Month	時間 Time	最高每小時平均風速 Maximum Hourly Wind		日期/月份 Date/Month	時間 Time
		風向 Direction	風速(公里/時) Speed (km/h)			風向 Direction	風速(公里/時) Speed (km/h)		
中環	Central	東 E	81	24/8	21:25	東 E	36	24/8	13:00
中環廣場	Central Plaza	-	118	25/8	04:49	-	76	24/8	13:00
香港國際機場	Hong Kong International Airport	東南 SE	88	25/8	04:55	東南偏東 ESE	52	25/8	05:00
長洲	Cheung Chau	東南偏東 ESE	144	24/8	22:22	東南偏東 ESE	87	24/8	24:00
長沙灣	Cheung Sha Wan	東北偏北 NNE	96	24/8	11:59	東北 NE	40	24/8	13:00
青洲	Green Island	東北偏東 ENE	104	24/8	12:32	東北偏東 ENE	67	24/8	13:00
啓德	Kai Tak	東南偏東 ESE	101	24/8	23:16	東南偏東 ESE	43	24/8	24:00
京士柏	King's Park	東北偏東 ENE	77	25/8	03:44	東 E	31	25/8	04:00
流浮山	Lau Fau Shan	東 E	81	24/8	13:53	東 E	40	24/8	14:00
北角	North Point	東北偏東 ENE	87	24/8	12:22	東北偏東 ENE	41	24/8	13:00
平洲	Ping Chau	東南偏東 ESE	76	25/8	09:08	東 E	23	24/8	14:00
西貢	Sai Kung	東南偏東 ESE	94	25/8	00:05	東北 NE	47	24/8	13:00
						東南 SE	47	25/8	09:00
沙螺灣	Sha Lo Wan	東北偏東 ENE	122	25/8	03:05	東 E	54	24/8	13:00
沙田	Sha Tin	東 E	77	24/8	12:21	東北偏東 ENE	23	24/8	13:00
石崗	Shek Kong	東 E	85	24/8	23:25	東 E	31	24/8	17:00
						東 E	31	24/8	23:00
九龍天星碼頭	Star Ferry, Kowloon	東 E	90	25/8	00:05	東 E	45	24/8	24:00
打鼓嶺	Ta Kwu Ling	-	79	24/8	15:19	-	30	24/8	24:00
大尾篤	Tai Mei Tuk	東北偏東 ENE	115	24/8	19:45	東北偏東 ENE	68	24/8	13:00
大帽山	Tai Mo Shan	東南偏東 ESE	130	25/8	03:53	東南 SE	79	25/8	07:00
大老山	Tate's Cairn	東北 NE	130	24/8	11:45	東北偏東 ENE	70	24/8	13:00
鯽魚湖	Tsak Yue Wu	東北偏東 ENE	68	24/8	18:44	東北偏東 ENE	19	24/8	12:00
將軍澳	Tseung Kwan O	東南偏東 ESE	72	25/8	05:36	東南偏東 ESE	23	25/8	09:00
青衣	Tsing Yi	東南 SE	118	25/8	09:57	東南偏東 ESE	58	25/8	01:00
屯門	Tuen Mun	東南 SE	96	25/8	00:07	東南 SE	30	25/8	02:00
橫瀾島	Waglan Island	東 E	122	24/8	14:30	東北偏東 ENE	77	24/8	13:00
黃竹坑	Wong Chuk Hang	東南偏東 ESE	92	24/8	20:13	東南偏東 ESE	36	24/8	13:00
						東南偏東 ESE	36	24/8	20:00

表 3.3.2 科羅旺影響香港期間，香港天文台總部及其他各站所錄得的日雨量 (單位為毫米)

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

站 (參閱圖3.3.2) Station (see Fig. 3.3.2)	八月二十三日 23 August	八月二十四日 24 August	八月二十五日 25 August	總雨量 Total
香港天文台 Hong Kong Observatory	2.0	77.5	60.9	140.4
H12 半山區 Mid Levels	4.5	93.0	52.0	149.5
H19 筲箕灣 Shau Kei Wan	4.0	93.5	30.0	127.5
H21 淺水灣 Repulse Bay	1.0	84.5	55.5	141.0
K04 佐敦谷 Jordan Valley	0.0	108.5	39.5	148.0
K06 蘇屋邨 So Uk Estate	1.5	103.5	55.0	160.0
N05 粉嶺 Fanling	1.0	50.5	56.0	107.5
N06 葵涌 Kwai Chung	0.5	122.0	69.0	191.5
N09 沙田 Sha Tin	0.0	65.5	64.5	130.0
N12 元朗 Yuen Long	0.0	62.5	32.0	94.5
N13 糧船灣 High Island	0.5	28.5	23.5	52.5
N17 東涌 Tung Chung	4.0	70.0	157.5	231.5
R21 踏石角 Tap Shek Kok	3.5	53.0	134.5	191.0
R26 石崗 Shek Kong	1.0	77.0	63.5	141.5
R31 大尾篤 Tai Mei Tuk	1.0	[26.0]	54.0	[81.0]

註： [ ] 基於不完整的每小時雨量數據。

Note : [ ] based on incomplete hourly data.

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

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

站 (參閱圖 1.1) Station (see Fig. 1.1)	最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time
鯽魚涌 Quarry Bay	2.59	25/8	05:52	0.57	24/8	18:09
石壁 Shek Pik	2.69	25/8	05:36	0.66	24/8	22:53
大埔滘 Tai Po Kau	2.53	25/8	05:41	0.69	24/8	15:10
尖鼻咀 Tsim Bei Tsui	2.96	25/8	07:14	0.69	24/8	16:59

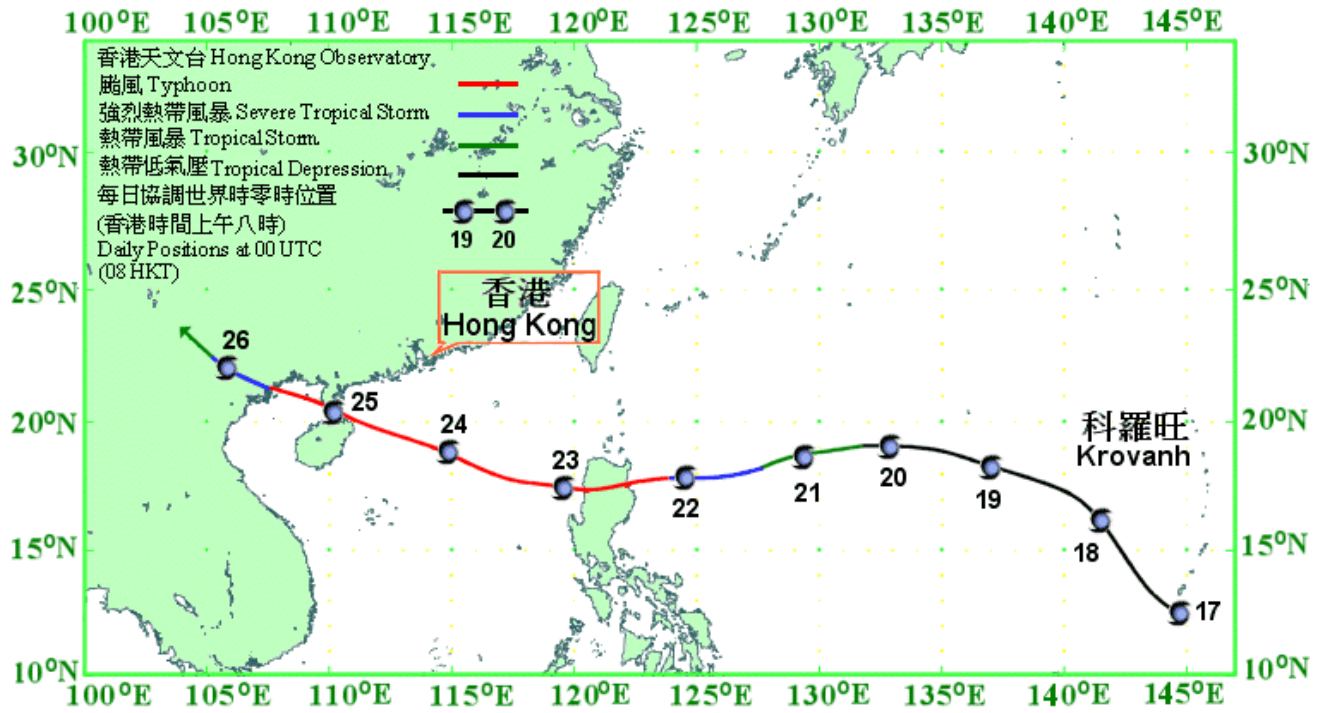


圖 3.3.1 二零零三年八月十七日至二十六日科羅旺 (0312) 的路徑圖。  
 Figure 3.3.1 Track of Krovanh (0312) : 17 – 26 August 2003.

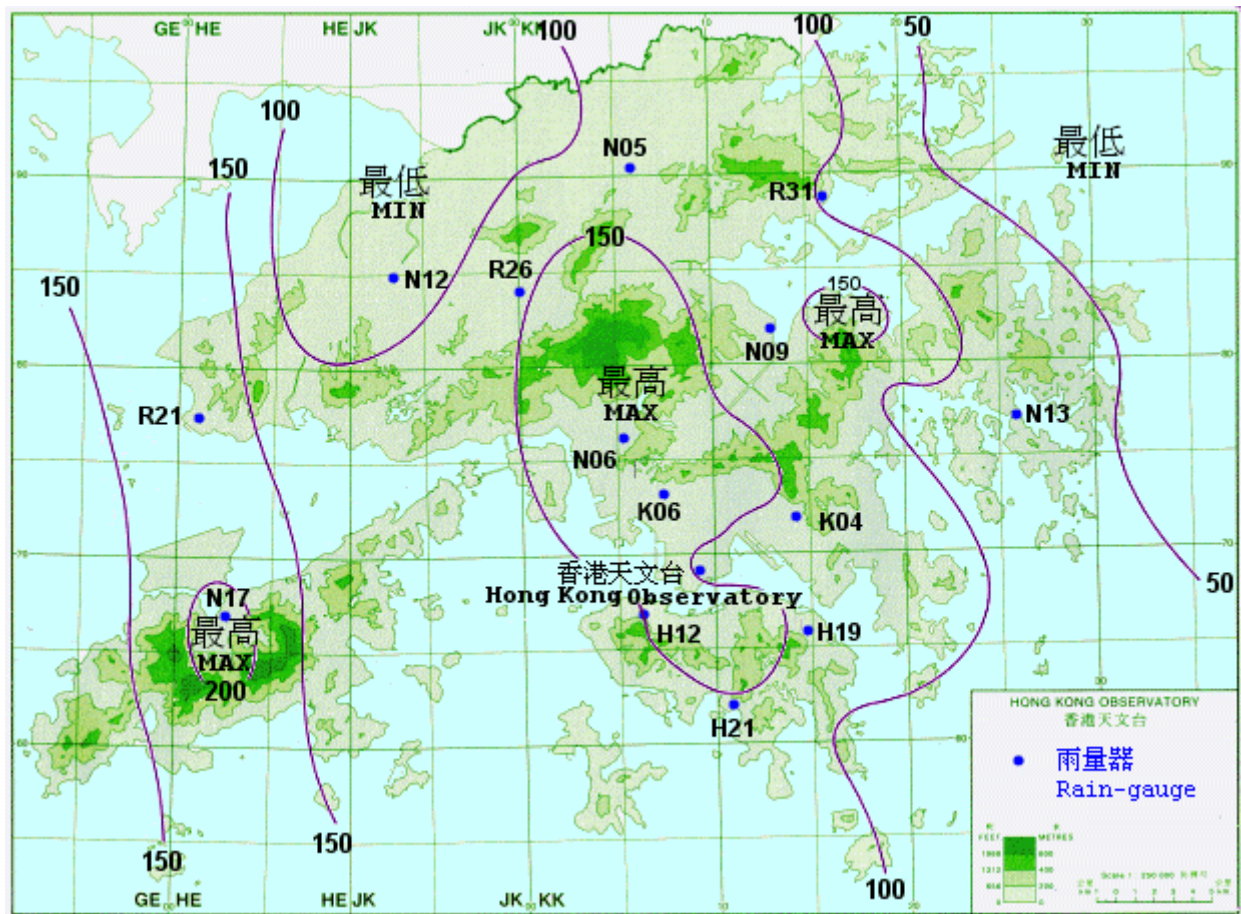


圖 3.3.2 二零零三年八月二十三日至二十五日的雨量分佈 (等雨量線單位為毫米)。  
 Figure 3.3.2 Rainfall distribution on 23 - 25 August 2003 (isohyets are in millimetres).

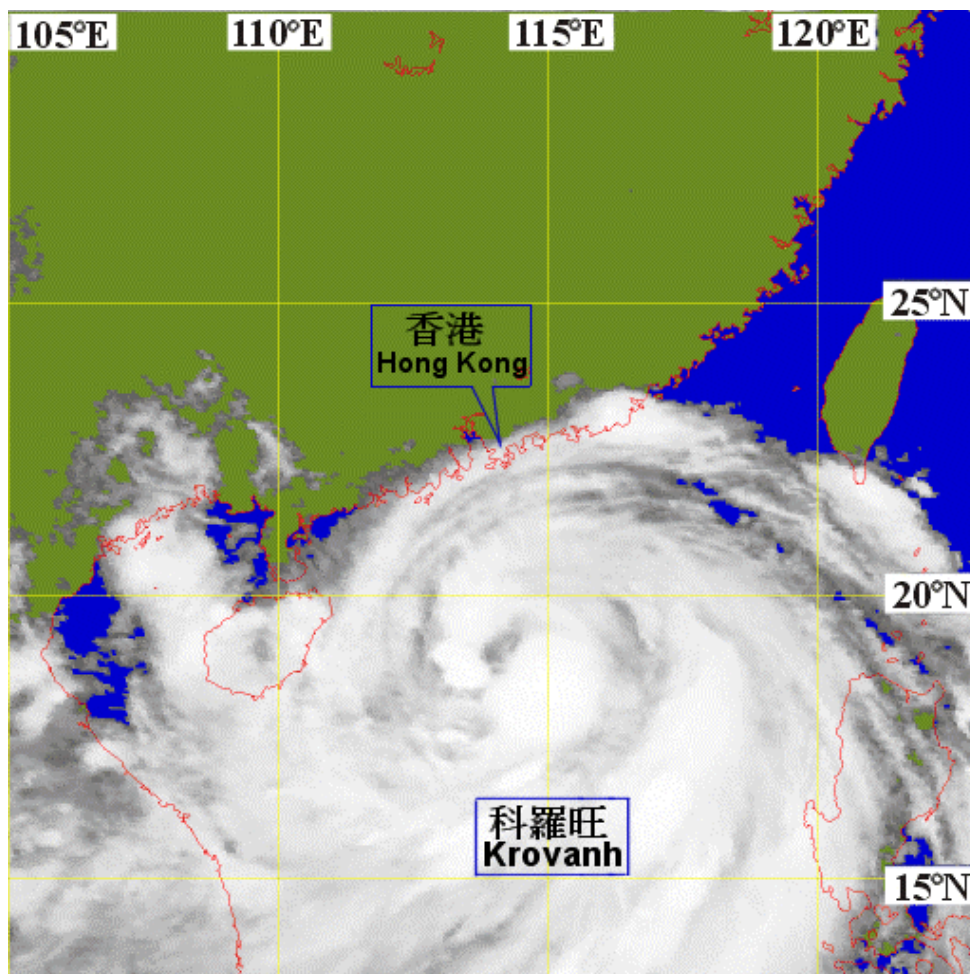


圖 3.3.3 二零零三年八月二十四日約上午10時30分的紅外線衛星圖片，顯示當時科羅旺位於香港以南約380公里。

[此衛星圖像接收自地球同步業務環境衛星(GOES-9)。GOES-9是日本氣象廳(JMA)和美國國家海洋及大氣管理局(NOAA)轄下的國家環境衛星數據及資訊服務處(NESDIS)合作下的成果]

Figure 3.3.3 Infra-red imagery at around 10.30 a.m. on 24 August 2003 showing that Krovanh was located at about 380 km south of Hong Kong.

[The satellite imagery was originally captured with Geostationary Operational Environmental Satellite (GOES-9) which is operated by the joint effort of Japan Meteorological Agency (JMA) and National Environmental Satellite Data and Information Service (NESDIS) of US National Oceanic and Atmospheric Administration (NOAA)]

### 3.4 颱風杜鵑（0313）：二零零三年八月二十九日至九月三日

杜鵑是自一九九九年以來香港天文台首次發出九號烈風或暴風風力增強信號的熱帶氣旋。

杜鵑於八月二十九日清晨在太平洋上發展成一個熱帶低氣壓。它初時移動緩慢，在八月三十日清晨增強為一個熱帶風暴，並在當日進一步增強為一個強烈熱帶風暴。八月三十一日它向西北偏西加速移動，同日增強為一個颱風並移向台灣南部海域。九月一日，杜鵑橫過台灣以南海域後向西推進趨向華南海岸，期間它中心附近的最高持續風速達每小時175公里。杜鵑掠過台灣南部期間造成三人死亡、一人失蹤及八人受傷，近59萬戶停電。杜鵑令台灣南部的海陸空交通完全癱瘓，並造成高達二億元新台幣的農業損失。

杜鵑於九月二日清晨進入南海，並向西移近廣東沿岸。它在橫過南海北部期間曾出現雙重眼壁結構（圖3.4.5），當時它的內眼及外眼直徑分別約為20公里及100公里。九月二日晚上，杜鵑在香港以北掠過，正面吹襲深圳市。隨後杜鵑繼續向西移動橫過廣東，於九月三日早上減弱為一個熱帶風暴，並稍後在廣西減弱為一個低壓區。杜鵑吹襲廣東期間，共造成40人死亡，接近1 000人受傷，深圳市逾九成地區停電。直接經濟損失接近二十三億人民幣。

在香港，天文台在九月一日晚上10時15分發出一號戒備信號，當時杜鵑位於香港以東約750公里。隨著杜鵑向西移近華南海岸，天文台於九月二日上午10時40分發出三號強風信號。由於杜鵑從東面迅速移近香港，天文台在同日下午2時20分發出八號西北烈風或暴風信號。當時杜鵑集結在香港以東約230公里，本港下午普遍吹西北強風，風力在接近黃昏時增強至烈風程度。

杜鵑於九月二日晚上在香港天文台北面約30公里掠過，天文台於晚上8時10分發出九號烈風或暴風風力增強信號。本港風力，特別是在新界北部，由烈風程度顯著增強至暴風程度。期間在流浮山的風力更短暫時間達到颶風程度。另外，本港多處地方，包括維多利亞港內，均錄得烈風或暴風程度的風速。

在杜鵑的影響下，本港部份地區錄得的最低瞬時海平面氣壓如下：

站	最低瞬時海平面氣壓 (百帕斯卡)	時間	日期/月份
香港天文台總部	981.2	20:53, 20:54, 20:59, 21:01, 21:04	2/9
橫瀾島	980.5	20:06	2/9
流浮山	973.8	21:33	2/9
打鼓嶺	972.1	21:11, 21:12	2/9

杜鵑移往香港西面後，本港大部份地區轉吹強風至烈風程度的偏南風。天文台於晚上10時10分改發八號西南烈風或暴風信號。杜鵑午夜後在廣東西部迅速減弱，本地風力普遍下降，八號西南烈風或暴風信號在九月三日清晨1時30分由三號強風信號取代。隨著杜鵑進一步遠離香港，本地風勢進一步減弱，所有熱帶氣旋警告於同日上午3時20分取消。

杜鵑的外圍雨帶為本港帶來狂風大驟雨及雷暴。天文台在九月二日晚上9時05分發出黃色暴雨警告信號，於翌日早上5時正取消，期間本港大部份地區均錄得超過50毫米的雨量，大嶼山的雨量更超過90毫米。

在杜鵑的吹襲下，本港共有24人受傷。一艘載有四名內地船員的蝦艇於西貢對出海面失蹤。全港多個地區共有85宗塌樹及數宗高空墮物報告。元朗多處地區停電，約300戶居民受影響。本港機場有221班航機取消及139班航機延誤。

表3.4.1-3.4.3分別是杜鵑影響香港時各站錄得的最高風速、日雨量及最高潮汐資料。圖3.4.1和3.4.2分別是杜鵑的路徑圖及香港雨量分佈圖，圖3.4.3.a和3.4.3.b分別顯示流浮山及九龍天星碼頭風速的變化情形，圖3.4.3.c和3.4.3.d分別顯示打鼓嶺及流浮山氣壓的變化情形，圖3.4.4和3.4.5是杜鵑的衛星圖像及雷達回波圖。



### **3.4 Typhoon Dujuan (0313) : 29 August - 3 September 2003**

Dujuan was the first tropical cyclone that necessitated the issuance of the Increasing Gale or Storm Signal No. 9 since 1999.

When Dujuan developed as a tropical depression over the Pacific on the early morning of 29 August, it was slow-moving. It intensified into a tropical storm on the early morning of 30 August and strengthened further into a severe tropical storm the same day. Accelerating towards the west-northwest on 31 August, Dujuan attained typhoon strength and moved towards the seas near southern Taiwan. After crossing the seas south of Taiwan on 1 September, Dujuan headed westwards towards the South China coast. The maximum sustained wind speed near its centre reached 175 km/h. In southern Taiwan, three people were killed, one found missing and eight injured during the approach of Dujuan. Electricity supply to about 590 000 families were interrupted. All transportation services in southern Taiwan were temporarily suspended and the agricultural loss reached NT\$200 millions.

Dujuan entered the South China Sea on the early morning of 2 September and moved westwards towards the coast of Guangdong. While crossing the northern part of the South China Sea, it exhibited a double eye wall structure (Figure 3.4.5). The diameter of the inner and outer eyes were about 20 km and 100 km respectively. On the night of 2 September, Dujuan skirted the north of Hong Kong and hit Shenzhen. It then continued to move westwards crossing Guangdong. Dujuan weakened rapidly into a tropical storm on the morning of 3 September and became an area of low pressure over Guangxi afterward. 40 people were killed and about 1 000 were injured as Dujuan rampaged across Guangdong. Power supplies in 90 % of the area in Shenzhen were interrupted. The direct economic loss caused by Dujuan was some 2.3 billions RMB.

In Hong Kong, the Standby Signal No. 1 was issued at 10.15 p.m. on 1 September when Dujuan was located about 750 km to the east of Hong Kong. With Dujuan moving towards the South China coast, the Strong Wind Signal No. 3 was issued at 10.40 a.m. on 2 September. As Dujuan moved quickly towards Hong Kong from the east, the Hong Kong Observatory issued the No. 8 NORTHWEST Gale or Storm Signal at 2.20 p.m. the same day. Dujuan was about 230 km to the east of Hong Kong at that time. Local winds were strong northwesterlies in the afternoon, reaching gale force towards the evening.

On the night of 2 September, Dujuan skirted 30 km to the north of the Hong Kong Observatory Headquarters. The Hong Kong Observatory issued the Increasing Gale or Storm Signal No. 9 at 8.10 p.m. Local winds, in particular those over the northern part of the New Territories, strengthened from gale to storm force. Winds at Lau Fau Shan even reached hurricane force for a short period of time. Gale to storm force winds were also recorded in other parts of the territory, including Victoria Harbour.

The lowest instantaneous mean sea-level pressures recorded at some places of Hong Kong during the passage of Dujuan were as follows:

Station	Lowest instantaneous mean sea-level pressure (hPa)	Time	Date/Month
Hong Kong Observatory Headquarters	981.2	20:53, 20:54, 20:59, 21:01, 21:04	2/9
Waglan Island	980.5	20:06	2/9
Lau Fau Shan	973.8	21:33	2/9
Ta Kwu Ling	972.1	21:11, 21:12	2/9

Strong to gale southerly winds prevailed over the territory when Dujuan moved to the west of Hong Kong. The signal No. 9 was replaced by the No. 8 SOUTHWEST Gale or Storm Signal at 10.10 p.m. the same night. As Dujuan weakened rapidly over Guangdong overnight, local winds abated generally. The Strong Wind Signal No. 3 was issued at 1.30 a.m. on 3 September to replace the signal No. 8. Local winds subsided further as Dujuan moved further away from Hong Kong. All tropical cyclone warning signals were cancelled at 3.20 a.m. the same day.

The outer rainbands of Dujuan also brought squally heavy rain and thunderstorms to Hong Kong. The Amber Rainstorm Warning Signal was issued at 9.05 p.m. on 2 September and cancelled at 5.00 a.m. the next day. More than 50 millimetres of rainfall were recorded over most parts of the territory, the rainfall in Lantau Island exceeded 90 millimetres.

The approach of Dujuan resulted in 24 people injured. Four mainland fishermen in a boat were found missing off Sai Kung. A total of 85 cases of fallen trees and a few cases of falling objects were reported. A power failure in Yuen Long area affected about 300 households. At the Hong Kong International Airport, 221 flights were cancelled and 139 flights were delayed.

Information on maximum wind, daily rainfall and maximum sea level during the passage of Dujuan is given in Tables 3.4.1 – 3.4.3. Figures 3.4.1 and 3.4.2 show the track of Dujuan and the rainfall distribution in Hong Kong respectively. The time series of the wind speed recorded at Lau Fau Shan and Star Ferry, Kowloon are given in Figures 3.4.3.a and 3.4.3.b. The time series of the pressure recorded at Ta Kwu Ling and Lau Fau Shan are given in Figures 3.4.3.c and 3.4.3.d. Figures 3.4.4 and 3.4.5 are the satellite and radar imageries of Dujuan.

表 3.4.1 在杜鵑影響下，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 during the issuing of the tropical cyclone warning signals for Dujan

站 (參閱圖1.1)	Station (see Fig. 1.1)	最高陣風 Maximum Gust		日期/月份 Date/Month	時間 Time	最高每小時平均風速 Maximum Hourly Wind		日期/月份 Date/Month	時間 Time
		風向 Direction	風速(公里/時) Speed (km/h)			風向 Direction	風速(公里/時) Speed (km/h)		
中環	Central	西北 NW	72	2/9	19:33	西 W	25	2/9	20:00
中環廣場	Central Plaza	-	171	2/9	19:59	-	103	2/9	21:00
香港國際機場	Hong Kong International Airport	西北偏西 WNW	115	2/9	21:26	西 W	83	2/9	22:00
長洲	Cheung Chau	西北偏西 WNW	157	2/9	19:09	西北 NW	88	2/9	20:00
長沙灣	Cheung Sha Wan	南 S	85	2/9	22:53	西南 SW	31	2/9	22:00
青洲	Green Island	西南偏西 WSW	137	2/9	20:56	西 W	88	2/9	21:00
啓德	Kai Tak	西北偏西 WNW	115	2/9	19:22	西 W	62	2/9	21:00
京士柏	King's Park	西南偏西 WSW	99	2/9	21:01	西 W	38	2/9	21:00
流浮山	Lau Fau Shan	西北偏西 WNW	166	2/9	21:28	西北偏西 WNW	99	2/9	21:00
北角	North Point	西南偏西 WSW	110	2/9	19:59	西南偏西 WSW	62	2/9	21:00
西貢	Sai Kung	西南偏西 WSW	117	2/9	20:30	東南偏南 SSE	58	2/9	24:00
沙螺灣	Sha Lo Wan	西南偏西 WSW	104	2/9	21:53	西南 SW	58	2/9	23:00
沙田	Sha Tin	西北偏西 WNW	77	2/9	20:06	西南偏南 SSW	31	2/9	22:00
石崗	Shek Kong	西 W	94	2/9	21:07	西 W	38	2/9	21:00
九龍天星碼頭	Star Ferry, Kowloon	西 W	110	2/9	21:01	西 W	76	2/9	21:00
打鼓嶺	Ta Kwu Ling	西北偏西 WNW	99	2/9	20:47	西北偏西 WNW	38	2/9	21:00
塔門	Tap Mun	西北偏西 WNW	153	2/9	19:32	西北偏西 WNW	87	2/9	20:00
大尾篤	Tai Mei Tuk	西南偏西 WSW	148	2/9	20:53	西 W	76	2/9	21:00
大帽山	Tai Mo Shan	西北偏西 WNW	167	2/9	21:06	西北偏西 WNW	81	2/9	21:00
大老山	Tate's Cairn	西 W	169	2/9	19:07	西 W	101	2/9	20:00
鯽魚湖	Tsak Yue Wu	西北偏西 WNW	72	2/9	19:51	西北 NW	22	2/9	20:00
將軍澳	Tseung Kwan O	西南偏南 SSW	87	2/9	23:26	南 S	27	2/9	24:00
青衣	Tsing Yi	西北偏西 WNW	146	2/9	19:45	南 S	72	2/9	24:00
屯門	Tuen Mun	西北 NW	155	2/9	21:22	西北偏西 WNW	51	2/9	22:00
橫瀾島	Waglan Island	西北 NW	118	2/9	18:20	西 W	81	2/9	21:00
黃竹坑	Wong Chuk Hang	西北 NW	108	2/9	20:12	西北 NW	40	2/9	19:00

表 3.4.2 杜鵑影響香港期間，香港天文台總部及其他各站所錄得的日雨量 (單位為毫米)

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

站 (參閱圖3.4.2) Station (see Fig. 3.4.2)	九月一日 1 Sep	九月二日 2 Sep	九月三日 3 Sep	總雨量 Total
香港天文台 Hong Kong Observatory	0.2	75.6	27.0	102.8
H12 半山區 Mid Levels	1.0	85.0	38.0	124.0
H19 筲箕灣 Shau Kei Wan	0.0	74.5	71.0	145.5
H21 淺水灣 Repulse Bay	0.0	76.5	22.5	99.0
K04 佐敦谷 Jordan Valley	0.0	66.0	47.5	113.5
K06 蘇屋邨 So Uk Estate	0.0	106.5	26.0	132.5
N05 粉嶺 Fanling	0.0	[ 62.0]	22.5	[ 84.5]
N06 葵涌 Kwai Chung	0.0	108.5	32.5	141.0
N09 沙田 Sha Tin	0.0	101.0	36.0	137.0
N12 元朗 Yuen Long	1.0	39.0	35.0	75.0
N13 糧船灣 High Island	0.0	74.5	54.5	129.0
N17 東涌 Tung Chung	0.0	66.5	71.5	138.0
R21 踏石角 Tap Shek Kok	2.5	30.0	31.5	64.0
R26 石崗 Shek Kong	0.0	77.5	36.0	113.5
R31 大尾篤 Tai Mei Tuk	0.0	[ 79.0]	12.5	[ 91.5]

註： [ ] 基於不完整的每小時雨量數據。

Note : [ ] based on incomplete hourly data.

表 3.4.3 杜鵑影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

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

站 (參閱圖 1.1) Station (See Fig. 1.1)	最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time	高度 (米) Height (m)	日期/月份 Date/Month	時間 Time
鯪魚涌 Quarry Bay	2.59	2/9	22:40	0.72	2/9	22:40
石壁 Shek Pik	2.63	2/9	23:37	0.55	2/9	23:37
大埔滘 Tai Po Kau	3.54	2/9	22:08	1.69	2/9	22:08
尖鼻咀 Tsim Bei Tsui	3.12	3/9	01:22	1.02	2/9	23:08

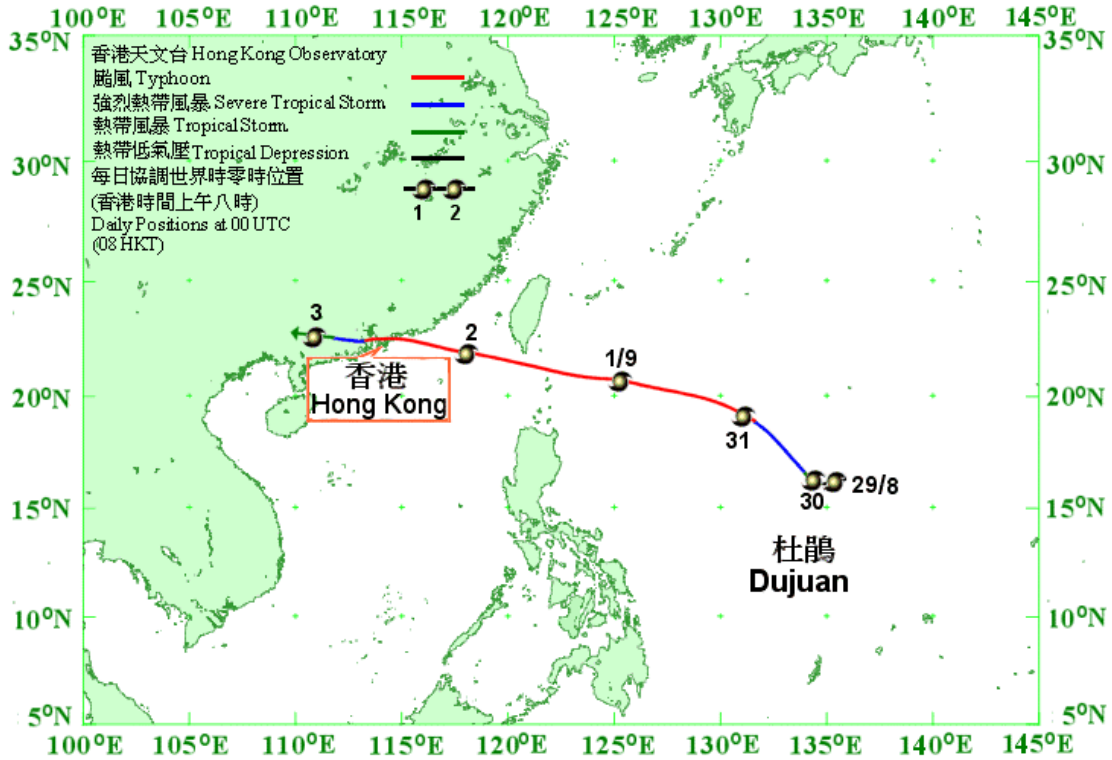


圖 3.4.1.a 二零零三年八月二十九日至九月三日杜鵑 (0313) 的路徑圖。  
 Figure 3.4.1.a Track of Dujan (0313) : 29 August – 3 September 2003.

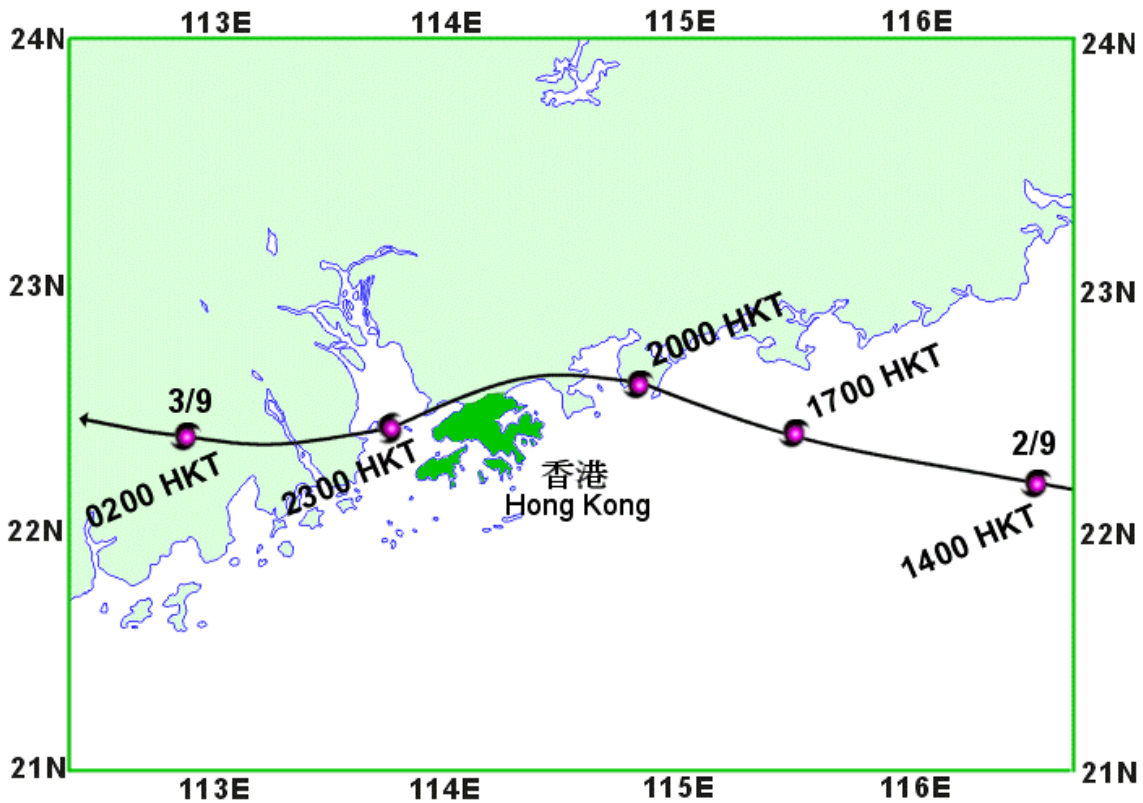


圖 3.4.1.b 杜鵑接近香港時的路徑圖。  
 Figure 3.4.1.b Track of Dujan near Hong Kong.

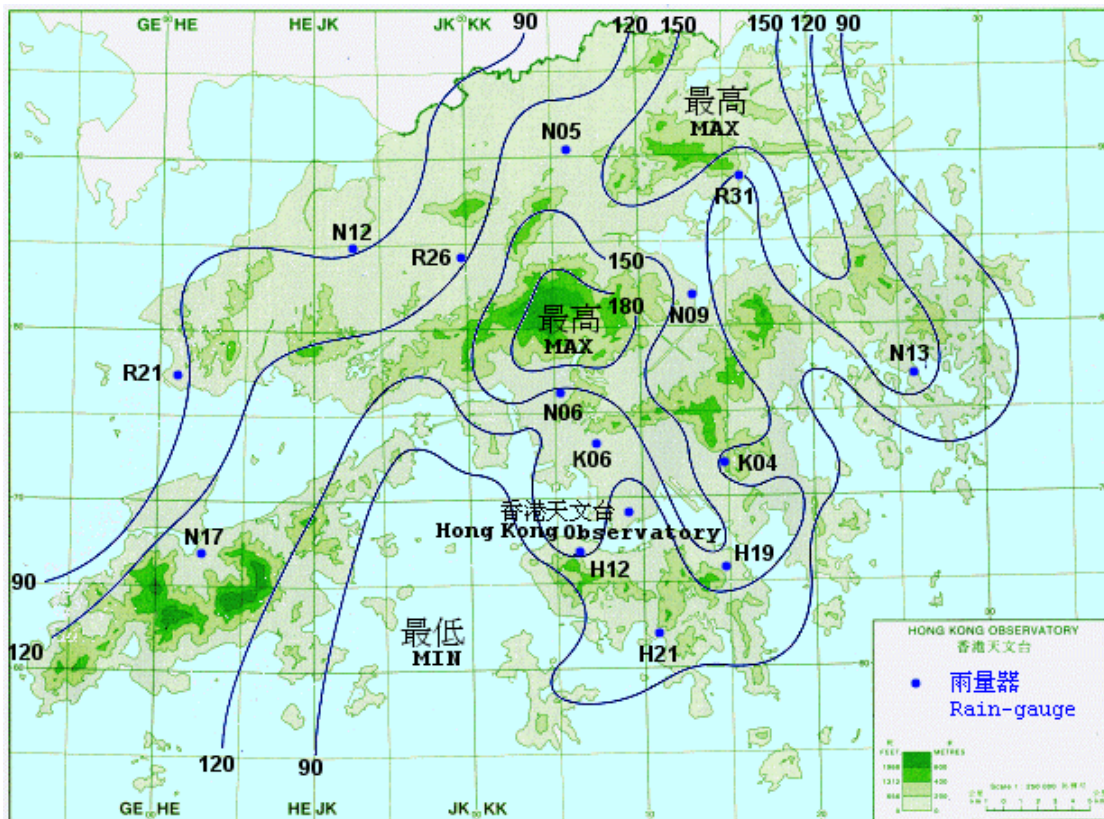


圖 3.4.2 二零零三年九月一日至三日的雨量分佈 (等雨量線單位為毫米)。  
 Figure 3.4.2 Rainfall distribution on 1 - 3 September 2003 (isohyets are in millimetres).

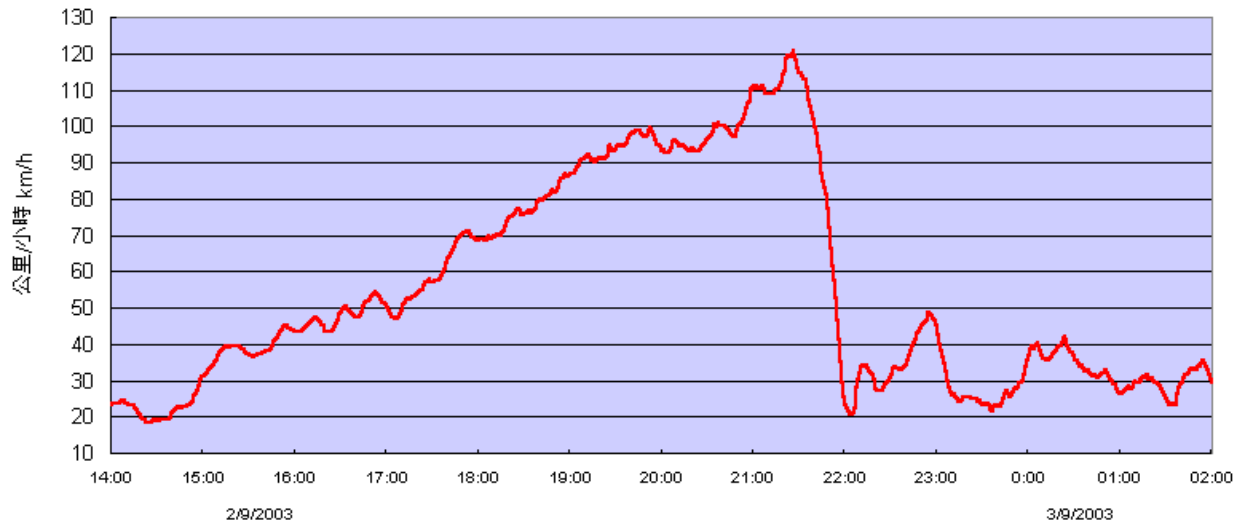


圖 3.4.3.a 流浮山錄得的十分鐘平均風速的變化情形。

Figure 3.4.3.a Trace of the 10-minute mean wind speed recorded at Lau Fau Shan.

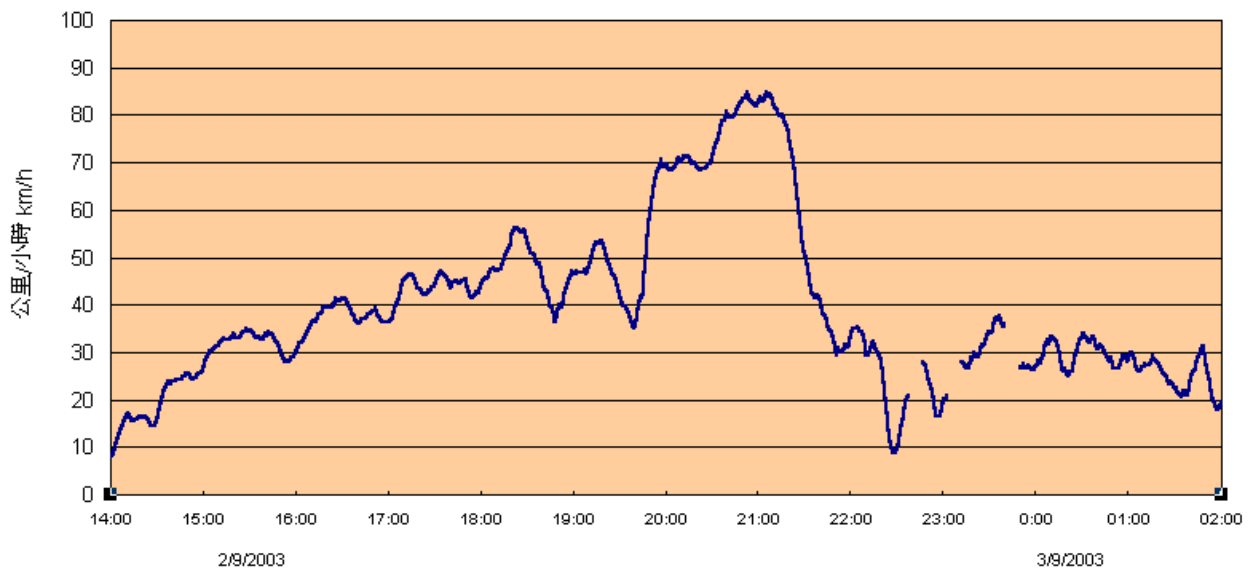


圖 3.4.3.b 九龍天星碼頭錄得的十分鐘平均風速的變化情形。

Figure 3.4.3.b Trace of the 10-minute mean wind speed recorded at Star Ferry, Kowloon.

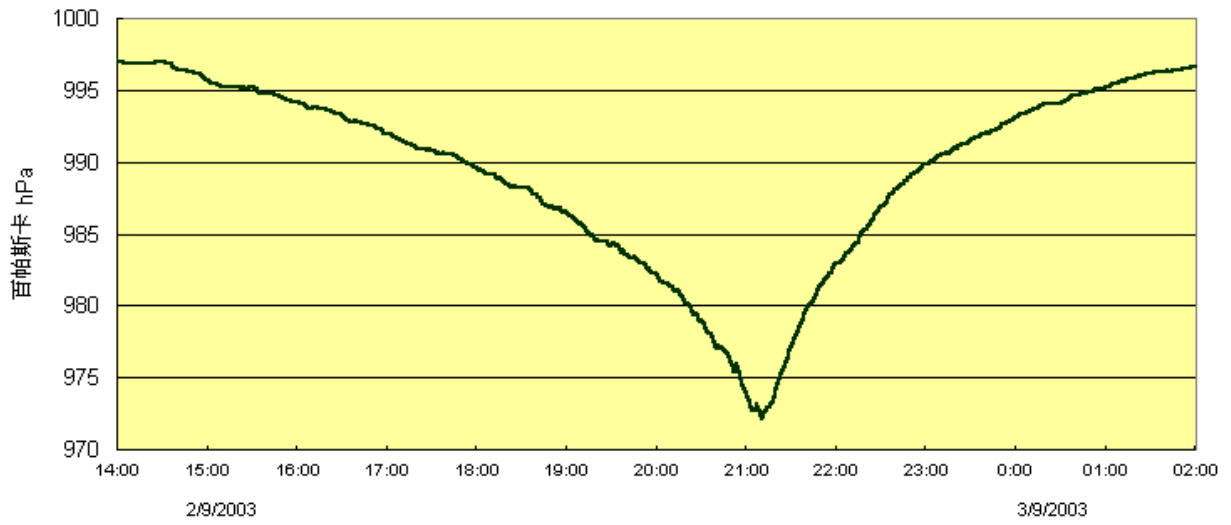


圖 3.4.3.c 打鼓嶺錄得的氣壓變化情形。

Figure 3.4.3.c Trace of pressure recorded at Ta Kwu Ling.

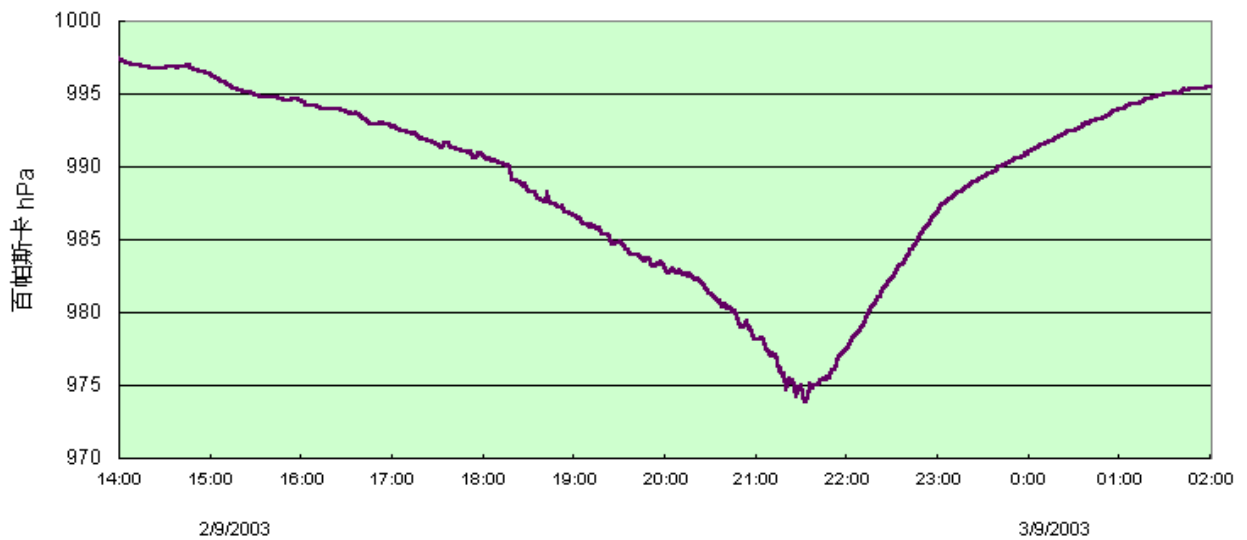


圖 3.4.3.d 流浮山錄得的氣壓變化情形。

Figure 3.4.3.d Trace of pressure recorded at Lau Fau Shan.



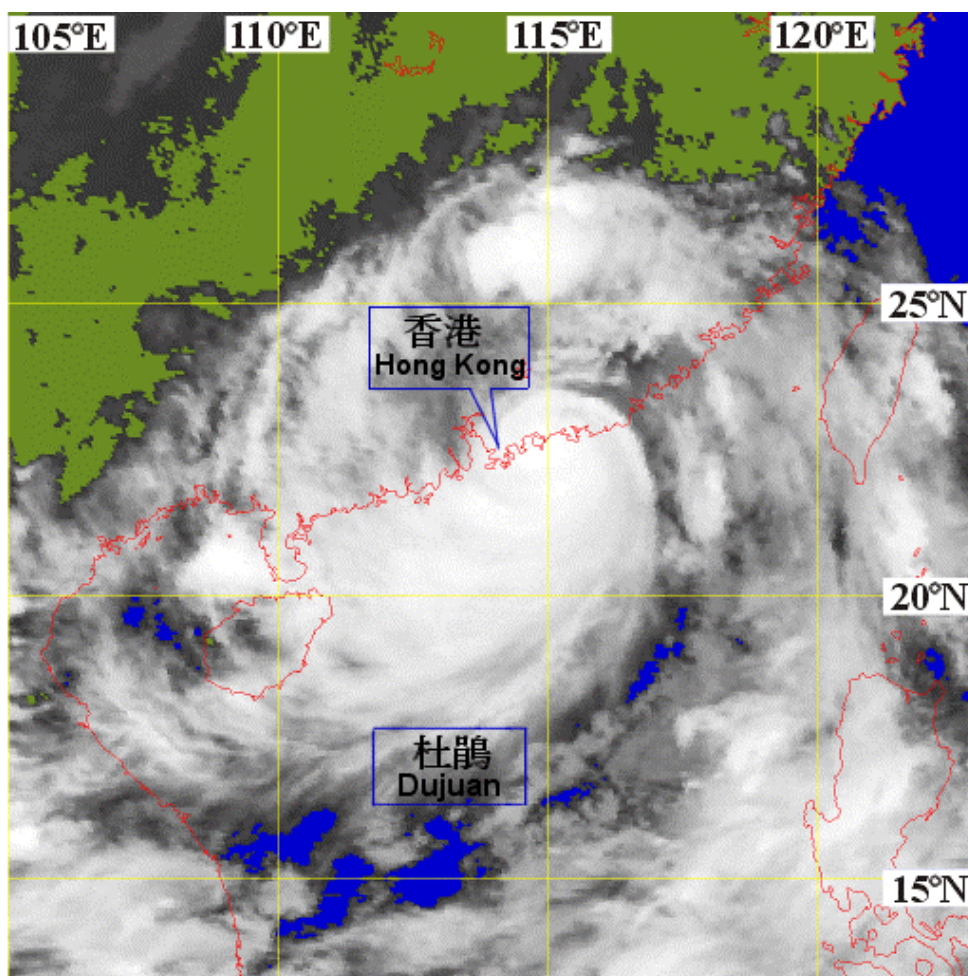


圖 3.4.4 二零零三年九月二日約下午7時30分的紅外線衛星圖片，顯示當時杜鵑位於香港以東附近登陸。

[此衛星圖像接收自地球同步業務環境衛星(GOES-9)。GOES-9是日本氣象廳(JMA)和美國國家海洋及大氣管理局(NOAA)轄下的國家環境衛星數據及資訊服務處(NESDIS)合作下的成果]

Figure 3.4.4 Infra-red imagery at around 7.30 p.m. on 2 September 2003 showing that Dujuan made landfall close to the east of Hong Kong.

[The satellite imagery was originally captured with Geostationary Operational Environmental Satellite (GOES-9) which is operated by the joint effort of Japan Meteorological Agency (JMA) and National Environmental Satellite Data and Information Service (NESDIS) of US National Oceanic and Atmospheric Administration (NOAA)]

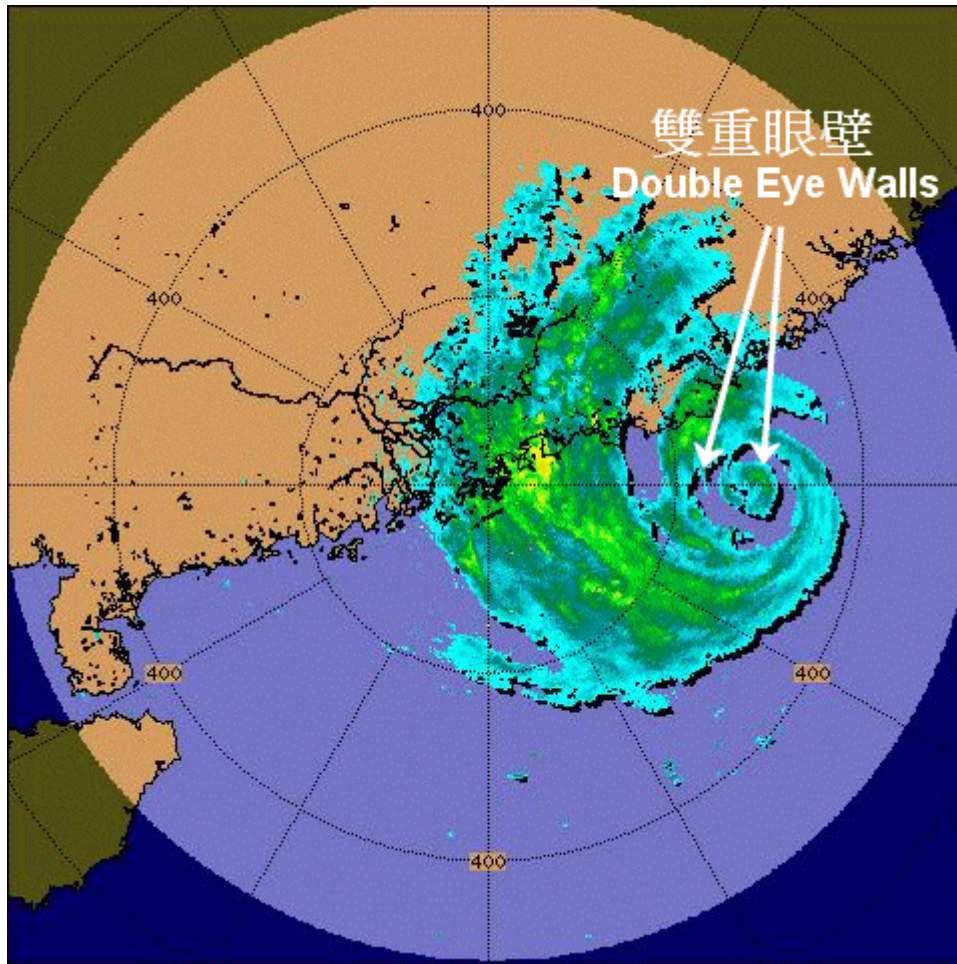


圖 3.4.5 二零零三年九月二日下午1時05分的雷達回波圖像，當時杜鵑曾出現雙重眼壁結構。內眼及外眼的直徑分別約為20公里及100公里。

Figure 3.4.5 Radar echoes captured at 1.05 p.m. on 2 September 2003. At that time, Dujan exhibited a double eye wall structure. The diameter of the inner and outer eyes are about 20 km and 100 km respectively.

## 第四節

### 熱帶氣旋統計表

#### **Section 4**

#### **TROPICAL CYCLONE STATISTICS AND TABLES**

表4.1是二零零三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是天文台在二零零三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是二零零三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是一九五六至二零零三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是一九五六至二零零三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是一九五六至二零零三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是二零零三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是二零零三年位於香港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二零零三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。內容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是二零零三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是一九六零至二零零三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。

TABLE 4.1 is a list of tropical cyclones in 2003 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 2003, 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 2003. 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 2003 inclusive.

TABLE 4.5 gives the annual number of tropical cyclones in Hong Kong's area of responsibility between 1956 and 2003 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 1956-2003.

TABLE 4.7 is a summary of meteorological information for each tropical cyclone affecting Hong Kong in 2003. Information on the nearest approach together with an estimate of the minimum central pressure of each tropical cyclone during its closest approach, the maximum winds at King's Park 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 are included.

TABLE 4.8.1 tabulates the amount of rainfall associated with each tropical cyclone that came within 600 km of Hong Kong in 2003.

TABLE 4.8.2 highlights the 10 wettest tropical cyclones in Hong Kong for the period 1884-1939 and 1947-2003.

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 2003. 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 : 1960-2003. The information is based on reports from various government departments, public utility companies and local newspapers.

表 4.1 二零零三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 2003

熱帶氣旋名稱	Name of tropical cyclone	編號 Code	路徑起點 Beginning of track		最高強度 (估計) Peak intensity (estimated)		路徑終點 End of track				DISP: 消散 Dissipated XT: 變為溫帶氣旋 Became Extratropical
			日期/月份 時間 <sup>+</sup> Date/Month Time <sup>+</sup>	位置 Position 北緯 東經 °N °E	風力 (公里每小時) Winds (km/h)	氣壓 (百帕斯卡) Pressure (hPa)	日期/月份 時間 <sup>+</sup> Date/Month Time <sup>+</sup>	位置 Position 北緯 東經 °N °E			
熱帶風暴欣欣	Tropical Storm Yanyan	(0301)	15 / 1 1800	7.3 161.0	75	994	20 / 1 1200	17.5 154.7	DISP		
颱風鯨魚	Typhoon Kujira	(0302)	9 / 4 1200	4.5 160.6	215	920	25 / 4 0000	29.0 127.3	XT		
熱帶低氣壓	Tropical Depression		17 / 5 1800	7.4 127.6	55	1002	22 / 5 0000	14.8 129.9	DISP		
颱風燦鴻	Typhoon Chan-hom	(0303)	19 / 5 0600	6.8 149.7	150	955	27 / 5 0000	33.8 166.7	XT		
強烈熱帶風暴蓮花	Severe Tropical Storm Linfa	(0304)	25 / 5 1800	17.0 118.4	90	980	31 / 5 0000	34.1 133.8	XT		
強烈熱帶風暴浪卡	Severe Tropical Storm Nangka	(0305)	1 / 6 0000	17.2 117.0	90	985	4 / 6 0000	29.4 135.4	XT		
颱風蘇迪羅	Typhoon Soudelor	(0306)	13 / 6 0000	10.7 132.3	140	960	19 / 6 1200	37.1 132.7	XT		
強烈熱帶風暴天鵝	Severe Tropical Storm Koni	(0308)	16 / 7 0600	9.8 129.2	100	980	22 / 7 1800	20.7 103.6	DISP		
颱風伊布都	Typhoon Imbudo	(0307)	17 / 7 0600	8.2 140.9	185	930	25 / 7 0000	23.9 106.5	DISP		
熱帶風暴莫拉克	Tropical Storm Morakot	(0309)	2 / 8 0000	18.2 125.7	85	990	4 / 8 1200	24.6 118.5	DISP		
颱風艾濤	Typhoon Etau	(0310)	3 / 8 0600	13.5 139.3	160	945	9 / 8 1800	42.8 143.6	XT		
颱風科羅旺	Typhoon Krovanh	(0312)	17 / 8 0000	12.6 144.6	140	960	26 / 8 0600	22.9 104.7	DISP		
熱帶風暴環高	Tropical Storm Vamco	(0311)	19 / 8 0600	22.5 124.8	65	992	20 / 8 0600	28.6 119.3	DISP		
颱風杜鵑	Typhoon Dajuan	(0313)	28 / 8 1800	16.2 136.0	175	940	3 / 9 0000	22.7 110.8	DISP		
颱風鳴蟬	Typhoon Maemi	(0314)	5 / 9 1800	13.9 143.7	220	910	13 / 9 0600	40.5 134.6	XT		
颱風彩雲	Typhoon Choi-wan	(0315)	17 / 9 1800	20.3 129.2	150	955	22 / 9 1800	39.5 151.2	XT		
颱風巨爵	Typhoon Koppu	(0316)	25 / 9 0000	16.7 135.8	130	965	30 / 9 0000	32.9 147.0	XT		
颱風凱薩娜	Typhoon Ketsana	(0317)	19 / 10 0000	14.8 130.2	165	945	26 / 10 0600	34.4 147.7	XT		
颱風芭瑪	Typhoon Parma	(0318)	20 / 10 1800	20.7 143.2	165	945	31 / 10 1200	32.3 166.9	XT		
強烈熱帶風暴茉莉	Severe Tropical Storm Melor	(0319)	30 / 10 1200	13.2 128.0	100	980	4 / 11 0000	24.3 124.6	DISP		
颱風尼伯特	Typhoon Nepartak	(0320)	12 / 11 1200	12.0 134.0	130	965	19 / 11 0600	21.0 109.0	DISP		
颱風盧碧	Typhoon Lupit	(0321)	19 / 11 1200	8.8 163.6	230	905	2 / 12 0000	34.4 146.1	XT		
熱帶低氣壓	Tropical Depression		25 / 12 1200	13.7 130.1	55	1000	26 / 12 1200	13.4 127.9	DISP		

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

表 4.2 二零零三年為船舶發出的熱帶氣旋警告  
TABLE 4.2 TROPICAL CYCLONE WARNINGS FOR SHIPPING ISSUED IN 2003

熱帶氣旋	Tropical cyclone	發出警告 的次數 No. of warnings issued	發出的日期及時間 Date and time of issue of				時段 (小時) Duration (hours)
			首次警告 First warning		末次警告 Last warning		
			日期/月份 Date/Month	時間 <sup>+</sup> Time <sup>+</sup>	日期/月份 Date/Month	時間 <sup>+</sup> Time <sup>+</sup>	
颱風鯨魚	Typhoon Kujira	35	20 / 4	2100	24 / 4	1800	93
強烈熱帶風暴蓮花	Severe Tropical Storm Linfa	27	25 / 5	1200	28 / 5	1500	75
強烈熱帶風暴浪卡	Severe Tropical Storm Nangka	18	1 / 6	0000	3 / 6	0000	48
颱風蘇妲羅	Typhoon Soudelor	23	15 / 6	1800	18 / 6	0900	63
* 強烈熱帶風暴天鵝	* Severe Tropical Storm Koni	44	17 / 7	0600	22 / 7	0900	123
* 颱風伊布都	* Typhoon Imbudo	28	21 / 7	1800	24 / 7	1800	72
熱帶風暴莫拉克	Tropical Storm Morakot	22	2 / 8	0600	4 / 8	1800	60
熱帶風暴環高	Tropical Storm Vamco	9	19 / 8	0600	20 / 8	0600	24
* 颱風科羅旺	* Typhoon Krovanh	34	22 / 8	0000	25 / 8	2100	93
* 颱風杜鵑	* Typhoon Dujan	18	1 / 9	0300	3 / 9	0300	48
強烈熱帶風暴茉莉	Severe Tropical Storm Melor	34	31 / 10	0600	4 / 11	0600	96
颱風尼伯特	Typhoon Nepartak	50	13 / 11	1800	19 / 11	1200	138
共 Total		342					918 <sup>#</sup>

<sup>#</sup> 當中共有15小時在同一時間內為兩個不同的熱帶氣旋發出警告。

<sup>#</sup> Including 15 hours with warnings issued concurrently for two different tropical cyclones.

\* 這些熱帶氣旋引致天文台需要發出熱帶氣旋警告信號。

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

<sup>+</sup> 時間為協調世界時。

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

表 4.3 二零零三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 2003

## 摘要 SUMMARY

信號 Signal	次數 No. of occasions	總時段 Total duration	
		時 h	分 min
1	4	94	20
3	5	42	55
8 西北 NW	1	5	50
8 西南 SW	1	3	20
8 東北 NE	1	6	35
8 東南 SE	1	3	0
9	1	2	0
10	0	-	-
共 Total	14	158	0

## 詳情 DETAILS

熱帶氣旋 Tropical cyclone	警報發出的次數 No. of warning bulletins issued	信號 Signal	發出 Issued		取消 Cancelled	
			日期/月份 Date/Month	時間* Time*	日期/月份 Date/Month	時間* Time*
強烈熱帶風暴天鵝 Severe Tropical Storm Koni	43	1	20 / 7	0540	21 / 7	2015
颱風伊布都 Typhoon Imbudo	48	1	22 / 7	2020	23 / 7	1340
		3	23 / 7	1340	23 / 7	2240
		8 東北 NE	23 / 7	2240	24 / 7	0515
		8 東南 SE	24 / 7	0515	24 / 7	0815
		3	24 / 7	0815	24 / 7	1240
颱風科羅旺 Typhoon Krovanh	53	1	23 / 8	0930	24 / 8	1130
		3	24 / 8	1130	25 / 8	1130
颱風杜鵑 Typhoon Dujan	46	1	1 / 9	2215	2 / 9	1040
		3	2 / 9	1040	2 / 9	1420
		8 西北 NW	2 / 9	1420	2 / 9	2010
		9	2 / 9	2010	2 / 9	2210
		8 西南 SW	2 / 9	2210	3 / 9	0130
		3	3 / 9	0130	3 / 9	0320

\* 香港時間（協調世界時加八小時）

\* Hong Kong Time (UTC + 8 hours)



表 4.4 一九五六至二零零三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 : 1956-2003

年份 Year	信號 Signals								總時段 Total duration	
	1	3	8 西北 NW	8 西南 SW	8 東北 NE	8 東南 SE	9	10	時 h	分 min
1956	5	4	0	0	0	0	0	0	191	25
1957	4	9	1	1	2	2	0	1	295	45
1958	4	5	0	0	1	0	0	0	214	5
1959	1	1	0	0	0	0	0	0	36	35
1960	11	7	0	2	2	2	1	1	432	35
1961	6	7	1	2	1	0	1	1	192	55
1962	4	3	0	1	1	0	1	1	158	10
1963	4	5	0	0	1	0	0	0	175	50
1964	11	14	1	3	5	3	3	2	570	15
1965	7	6	0	0	1	1	0	0	239	40
1966	6	5	0	0	2	2	0	0	284	40
1967	8	6	0	0	2	1	0	0	339	10
1968	7	7	0	1	1	0	1	1	290	10
1969	4	2	0	0	0	0	0	0	110	15
1970	6	8	2	1	2	0	0	0	286	45
1971	9	10	1	3	2	2	1	1	323	25
1972	8	6	0	0	1	1	0	0	288	20
1973	8	6	1	1	1	0	1	0	416	50
1974	12	10	0	0	2	1	1	0	525	20
1975	8	6	1	0	0	1	1	1	292	20
1976	6	6	0	0	1	2	0	0	351	30
1977	8	6	0	0	1	0	0	0	395	10
1978	8	9	1	1	3	2	0	0	462	10
1979	5	5	1	0	2	2	1	1	281	15
1980	10	8	0	0	1	1	0	0	414	5
1981	5	4	0	0	1	1	0	0	202	20
1982	7	4	0	0	0	0	0	0	247	35
1983	8	7	0	1	2	2	1	1	289	42
1984	6	6	0	0	1	0	0	0	280	2
1985	5	4	1	0	0	1	0	0	193	35
1986	6	7	0	1	1	0	0	0	305	0
1987	6	1	0	0	0	0	0	0	165	45
1988	6	4	0	0	0	0	0	0	204	10
1989	7	8	0	0	2	2	0	0	306	10
1990	6	4	0	0	0	0	0	0	245	10
1991	8	6	0	0	1	1	0	0	349	55
1992	5	5	0	0	1	1	0	0	167	5
1993	8	9	0	0	2	4	0	0	325	40
1994	4	3	0	0	0	0	0	0	138	10
1995	8	6	2	2	1	1	0	0	348	50
1996	7	2	0	0	0	1	0	0	189	0
1997	2	3	0	1	1	0	1	0	97	30
1998	5	2	0	0	0	0	0	0	188	35
1999	10	13	4	3	2	0	2	1	520	0
2000	7	3	0	0	0	0	0	0	329	5
2001	6	6	1	1	2	1	0	0	253	35
2002	3	2	0	0	0	1	0	0	144	25
2003	4	5	1	1	1	1	1	0	158	0
共 Total	309	275	19	26	53	40	17	12	13217	59
平均 Mean	6.4	5.7	0.4	0.5	1.1	0.8	0.4	0.3	275	22

表 4.5 一九五六至二零零三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 : 1956-2003

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
共 Total	761	294
平均 Mean	15.9	6.1

表 4.6 一九五六至二零零三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 : 1956-2003

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	306	43 12	161 0	4 30	275 22	570 15	36 35
三號或以上 3 or higher	206	30 31	124 15	4 30	130 57	306 35	17 15
八號或以上 8 or higher	71	15 29	66 50	2 40	22 55	100 55	0 0
8 西北 NW	19	6 13	15 45	1 30	2 28	18 0	0 0
8 西南 SW	26	5 0	10 45	2 30	2 42	16 10	0 0
8 東北 NE	53	8 9	35 35	2 35	9 0	40 20	0 0
8 東南 SE	40	7 20	21 45	0 20	6 7	31 15	0 0
九號或以上 9 or higher	18	7 1	12 25	2 0	2 38	19 25	0 0
10	12	6 34	11 0	2 30	1 38	12 10	0 0

表 4.7 二零零三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 2003

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	大埔滘 Tai Po Kau	尖鼻咀 Tsim Bei Tsui	橫瀾島 Waglan Island
強烈熱帶風暴天鵝 S.T.S. Koni	7	21	6	西南偏南 SSW	500	西北偏西 WNW 15	980	7	20	15:51 15:53-15:56 15:58 16:32 16:51-17:05	1003.9	0.15	0.16	0.26	0.31	0.05
								7	20	16:00 17:00						
颱風伊布都 T. Imbudo	7	24	5	西南 SW	280	西北 NW 25	940	7	24	04:33 04:34	997.5	1.02	1.09	1.05	1.13	-
								7	24	05:00						
颱風科羅旺 T. Krovanh	8	24	20	西南偏南 SSW	340	西北偏西 WNW 20	960	8	24	15:48	1001.6	0.57	0.66	0.69	0.69	-
								8	24	17:00						
颱風杜鵑 T. Dujan	9	2	21	北 N	30	西 W 30	955	9	2	20:53 20:54 20:59 21:01 21:04	981.2	0.72	0.55	1.69	1.02	-
								9	2	21:00						

\* 香港時間 (協調世界時加八小時)

\* Hong Kong Time (UTC + 8 hours)

表 4.7 (續)  
TABLE 4.7 (cont'd)

熱帶氣旋 名稱 Name of tropical cyclone	月份 Month	最高60分鐘平均風向及風速 (公里每小時) Maximum 60-min mean wind in points and km/h			最高10分鐘平均風向及風速 (公里每小時) Maximum 10-min mean wind in points and km/h			最高陣風風向及風速 (公里每小時) Maximum gust peak speed in km/h with direction in points		
		京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island
強烈熱帶風暴天鵝 S.T.S. Koni	7	東 E 22	東南偏東 ESE 36	東南偏東 ESE 47	東 E 25	東南偏東 ESE 38	南 S 54	東, 東北偏東 E, ENE 45	東南偏東 ESE 58	南 S 65
颱風伊布都 T. Imbudo	7	東 E 40	東南偏東 ESE 67	東 E 83	東北偏東, 東 ENE, E 45	東, 東南偏東 E, ESE 72	東 E 90	東北偏東 ENE 101	東南偏東 ESE 108	東 E 117
颱風科羅旺 T. Krovanh	8	東 E 31	東南偏東, 東南 ESE, SE 54	東北偏東 ENE 77	東 E 38	東南 SE 63	東北偏東 ENE 81	東北偏東 ENE 77	東南 SE 88	東 E 122
颱風杜鵑 T. Dujan	9	西 W 40	西 W 83	西南偏西 WSW 83	西 W 43	西北偏西 WNW 87	西 W 92	西南偏西 WSW 99	西北偏西 WNW 115	西北 NW 118

表 4.8.1 二零零三年位於香港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 2003

熱帶氣旋 名稱 Name of tropical cyclone	熱帶氣旋位於 香港600公里 範圍內的時期 Period when tropical cyclone within 600 km of Hong Kong (T <sub>1</sub> → T <sub>2</sub> )		香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm)				
	日期/月份 Date/Month	時間* Time*	(i) 在香港600公里內 within 600 km of Hong Kong (T <sub>1</sub> → T <sub>2</sub> )	(ii) 在 T <sub>2</sub> 之後 的24小時內 24-hour period after T <sub>2</sub>	(iii) 在 T <sub>2</sub> 之後 的48小時內 48-hour period after T <sub>2</sub>	(iv) 在 T <sub>2</sub> 之後 的72小時內 72-hour period after T <sub>2</sub>	(i) + (iv) 共 Total T <sub>1</sub> → (T <sub>2</sub> +72 小時 hours)
強烈熱帶風暴浪卡 # S.T.S. Nangka #	(T <sub>1</sub> ) 1 / 6	2300	-	-	-	-	-
	-	-					
	(T <sub>2</sub> ) 2 / 6	0800					
強烈熱帶風暴天鵝 S.T.S. Koni	(T <sub>1</sub> ) 20 / 7	1400	28.9	微量 Trace	30.4	36.1 <sup>+</sup>	65.0
	-	-					
	(T <sub>2</sub> ) 21 / 7	2100					
颱風伊布都 T. Imbudo	(T <sub>1</sub> ) 23 / 7	0400	36.1 <sup>+</sup>	4.9	4.9	4.9	41.0
	-	-					
	(T <sub>2</sub> ) 24 / 7	2200					
熱帶風暴莫拉克 T.S. Morakot	(T <sub>1</sub> ) 4 / 8	0600	31.0	13.7	15.6	15.6	46.6
	-	-					
	(T <sub>2</sub> ) 4 / 8	2000					
颱風科羅旺 T. Krovanh	(T <sub>1</sub> ) 23 / 8	1800	138.4	微量 Trace	微量 Trace	微量 Trace	138.4
	-	-					
	(T <sub>2</sub> ) 25 / 8	1600					
颱風杜鵑 T. Dajuan	(T <sub>1</sub> ) 2 / 9	0300	92.9	9.7	10.6	17.1	110.0
	-	-					
	(T <sub>2</sub> ) 3 / 9	0800					
颱風尼伯特 # T. Nepartak #	(T <sub>1</sub> ) 19 / 11	1100	-	0.8	0.8	0.8	0.8
	-	-					
	(T <sub>2</sub> ) 19 / 11	1400					
						共 Total	365.7 <sup>+</sup>

\* 香港時間（協調世界時加八小時）

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

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

# 該熱帶氣旋並未導致天文台需要發出熱帶氣旋警告信號。

+ 欄(iv)有關強烈熱帶風暴天鵝的雨量與欄(i)有關颱風伊布都的雨量出現了36.1毫米的重疊部份。

\* Hong Kong Time (UTC + 8 hours)

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

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

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

+ Figure in column (iv) of S.T.S. Koni overlaps the rainfall amount in column (i) of T. Imbudo by 36.1mm.

表 4.8.2 一八八四至一九三九年及一九四七至二零零三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, 1947-2003)

熱帶氣旋 Tropical Cyclone			香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm)				
年份 Year	月份 Month	名稱 Name	(i) 在香港600公里內 within 600 km of Hong Kong (T <sub>1</sub> →T <sub>2</sub> )	(ii) 在 T <sub>2</sub> 之後的 24 小時內 24-hour period after T <sub>2</sub>	(iii) 在 T <sub>2</sub> 之後的 48 小時內 48-hour period after T <sub>2</sub>	(iv) 在 T <sub>2</sub> 之後的 72 小時內 72-hour period after T <sub>2</sub>	(i) + (iv) 共 Total T <sub>1</sub> → (T <sub>2</sub> +72 小時 hours)
1999	8	森姆 Sam	368.1	178.9	248.1	248.4	616.5
1926	7	-	34.8 #	534.0 #	561.1 #	562.2 #	597.0
1916	6	-	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	-	446.5 #	- #	3.7 #	26.7 #	473.2

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

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

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

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

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

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

表 4.9 一九四六至二零零三年間引致天文台需要發出十號颶風信號的颶風

TABLE 4.9 TYPHOONS REQUIRING THE ISSUING OF THE HURRICANE SIGNAL NO. 10 DURING THE PERIOD 1946-2003

颶風名稱 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	-	-	-	-	-	-	-	-	-	-	-	-	-	-													
姬羅利亞 Gloria	22 / 9	1957	西南 SW	55	986.2	984.3	東南偏東 115 ESE	-	東南偏東 72 ESE	東 113 E	-	-	東 187 E	-	東北偏東 158 ENE	東北偏東 185 ENE	-	-	-	-														
瑪麗 Mary	9 / 6	1960	西北偏西 WNW	10	974.3	973.8	東南偏南 96 SSE	-	東南偏南 92 SSE	西南偏南 112 SSW	-	-	東南偏南 191 SSE	-	東南 164 SE	西南偏南 194 SSW	-	-	-	-														
愛麗斯 Alice	19 / 5	1961		0	981.6	981.1	東北偏東 83 ENE	-	東 70 E	東南偏東 90 ESE	東北偏東 76 ENE	-	東 166 E	-	東北偏東 139 ENE	西南 128 SW	東北偏東 135 ENE	-	-	-														
溫黛 Wanda	1 / 9	1962	西南偏南 SSW	20	955.1	953.2	北 N	133	北 N	108	西北 NW	148	西北 NW	118	東南 SE	189	北 N	259	-	北 N	229	西北偏北 NNW	216	西北 NW	232	東南偏東 ESE	284	-						
露比 Ruby	5 / 9	1964	西南 SW	30	971.0	968.2	東 E	110	北 N	118	東北偏東 ENE	148	東北 NE	113	東南偏東 ESE	167	東北偏北 NNE	227	-	西北 NW	203	東 E	230	東北偏北 NNE	216	東 E	268	-						
黛蒂 Dot	13 / 10	1964	東 E	35	978.9	977.3	西北偏北 NNW	88	北 N	67	北 N	117	西北偏北 NNW	96	東北偏北 NNE	157	北 N	175	-	北 N	198	北 N	184	西北偏西 WNW	205	東北 NE	220	-						
雪麗 Shirley	21 / 8	1968		0	968.7	968.6	北 N	68	北 N	75	東北偏北 NNE	124	西南偏南 SSW	90	東北偏北 NNE	126	北 N	133	-	北 N	151	東北 NE	209	西南偏南 SSW	167	東北偏北 NNE	203	-						
露絲 Rose	17 / 8	1971	西南偏西 WSW	20	984.5	982.8	東南 SE	103	-	東南 SE	122	東南偏東 ESE	140	東南 SE	131	南 S	148	-	東南偏東 ESE	224	-	東南偏東 ESE	211	東南偏東 ESE	189	東南 SE	194	南 S	221	-				
愛茜 Elsie	14 / 10	1975	南 S	50	996.4	996.2	東北偏東 ENE	58	北 N	75	西北偏北 NNW	67	東北偏北 NNE	118	北 N	106	東北 NE	130	西北偏北 NNW	118	東北 NE	140	北 N	137	北 N	140	東北偏東 ENE	176	東北 NE	158	東北偏北 NNE	180	東北 NE	167
荷貝 Hope	2 / 8	1979	西北偏北 NNW	10	961.8	961.6	西 W	75	西北偏西 WNW	79	西 W	115	西南 SW	144	西南偏南 SSW	117	西北 NW	115	西 W	108	西 W	175	西北偏西 WNW	166	西北偏西 WNW	182	西南 SW	198	西南偏西 WSW	185	西北偏西 WNW	229	西 W	167
愛倫 Ellen	9 / 9	1983	西南 SW	45	983.9	983.1	東 E	92	東 E	88	東 E	112	東南偏東 ESE	169	東南偏東 ESE	171	東 E	126	南 S	137	東 E	185	東 E	167	東 E	203	東 E	227	東南偏南 SSE	238	東北偏東 ENE	218	南 S	220*
約克 York	16 / 9	1999	西南偏南 SSW	20	976.8	976.1	東 E	63	北 N	68	東北偏北 NNE	59	東北偏北 NNE	153	東北偏北 NNE	113	-	-	東 E	137	東北偏北 NNE	149	東北偏東 ENE	142	東北偏北 NNE	234	東北 NE	182	-	-	-			

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



表 4.10 二零零三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 2003

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
颱風伊布都 T. Imbudo	7	農地: 1.8 公頃 farmland: 1.8 hectares 穀物: 23.4 噸 crops: 23.4 tons 果園: 1.7 公頃 fruit plants: 1.7 hectares	渡輪碼頭: 1 處 ferry pier: 1 site	-	1	-	0.069	-	-	-	-	0.069
颱風杜鵑 T. Dajuan	9	農地: 2.41 公頃 farmland: 2.41 hectares 魚: 14.9 噸 fish: 14.9 tons 穀物: 29.9 噸 crops: 29.9 tons	-	-	1	-	0.955	-	-	-	-	0.955

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 一九六零至二零零三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 : 1960-2003

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 <sup>+</sup>	0	0	0	0	0
	8 / 9 - 14 / 9	T. Georgia	喬治亞	0	0	0	2	0	*
1971	15 / 6 - 18 / 6	T. Freda	法妮黛	2	0	30	8	0	0
	16 / 7 - 22 / 7	T. Lucy	露茜	0	0	38	10	2	13
	10 / 8 - 17 / 8	T. Rose	露絲	110	5	286	33	303	*
1972	4 / 11 - 9 / 11	T. Pamela	柏美娜	1	0	8	3	0	0
1973	14 / 7 - 20 / 7	T. Dot	黛蒂	1	0	38	14	*	*
1974	7 / 6 - 14 / 6	T. Dinah	戴娜	0	0	0	1	*	*
	18 / 7 - 22 / 7	T. Ivy	艾菲	0	0	0	2	*	*
	15 / 10 - 19 / 10	T. Carmen	嘉曼	1	0	0	5	*	*
	21 / 10 - 27 / 10	T. Della	黛娜	0	0	0	2	*	*
1975	10 / 8 - 14 / 8	T.D. -	-	2	1	0	3	1	*
	9 / 10 - 14 / 10	T. Elsie	愛茜	0	0	46	7	2	1
	16 / 10 - 23 / 10	S.T.S. Flossie	霍蘿茜	0	0	0	1	*	*
1976	22 / 6 - 4 / 7	T. Ruby	露比	3	2	2	0	0	0
	21 / 7 - 26 / 7	S.T.S. Violet	維奧莉	2	1	1	0	0	0
	5 / 8 - 6 / 8	S.T.S. Clara	嘉麗	0	0	4	0	0	0
	21 / 8 - 24 / 8	T.S. Ellen	愛倫	27	3	65	0	4	7
	15 / 9 - 21 / 9	T. Iris	愛莉斯	0	0	27	6	0	1
1977	4 / 7 - 6 / 7	T.D. -	-	0	0	2	0	0	0
	3 / 9 - 5 / 9	T.S. Carla	嘉娜	0	0	1	1	0	0
	22 / 9 - 25 / 9	S.T.S. Freda	法妮黛	1	0	37	2	0	0
1978	24 / 7 - 30 / 7	S.T.S. Agnes	愛娜斯	3	0	134	0	25	42
	9 / 8 - 12 / 8	T.S. Bonnie	邦妮	0	0	0	2	0	0
	23 / 8 - 28 / 8	S.T.S. Elaine	伊蘭	1	0	51	8	5	8
	22 / 9 - 26 / 9	S.T.S. Kit	吉蒂	0	7	0	0	1	0
	7 / 10 - 16 / 10	S.T.S. Nina	蓮娜	0	0	2	0	0	0
17 / 10 - 29 / 10	T. Rita	麗姐	0	0	3	1	5	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
1979	1 / 7 - 6 / 7	T. Ellis	艾利斯	0	0	0	0	2	0
	26 / 7 - 30 / 7	T.S. Gordon	戈登	0	0	0	0	2	0
	28 / 7 - 3 / 8	T. Hope	荷貝	12	0	260	29	167	207
	6 / 8 - 9 / 8	T.D. -	-	0	0	0	0	3	0
	16 / 9 - 24 / 9	S.T.S. Mac	麥克	1	0	67	2	12	0
1980	5 / 7 - 12 / 7	S.T.S. Ida	艾黛	0	0	0	1	0	0
	18 / 7 - 23 / 7	T. Joe	喬伊	2	1	59	4	0	1
	20 / 7 - 28 / 7	T. Kim	甘茵	0	0	0	0	2	1
	29 / 10 - 2 / 11	T.S. Cary	卡里	0	0	0	0	0	2
1981	3 / 7 - 7 / 7	S.T.S. Lynn	林茵	0	0	32	0	0	3
1982	27 / 6 - 2 / 7	T.S. Tess	戴絲	0	0	16	0	1	0
	22 / 7 - 30 / 7	T. Andy	安迪	0	0	0	0	0	1
	5 / 9 - 16 / 9	T. Irving	伊文	0	0	0	0	0	2
1983	12 / 7 - 19 / 7	T. Vera	維娜	0	0	0	0	1	0
	29 / 8 - 9 / 9	T. Ellen	愛倫	10	12	333	44	135	225
	10 / 10 - 14 / 10	T. Joe	喬伊	0	0	58	2	0	3
	20 / 10 - 26 / 10	S.T.S. Lex	力士	0	0	0	0	0	1
1984	27 / 8 - 7 / 9	T. Ike	艾克	0	0	1	0	0	0
1985	19 / 6 - 25 / 6	T. Hal	哈爾	0	1	13	0	4	2
	1 / 9 - 7 / 9	T. Tess	戴絲	2	0	12	6	1	3
	13 / 10 - 22 / 10	T. Dot	黛蒂	0	0	1	0	0	0
1986	3 / 7 - 12 / 7	T. Peggy	蓓姬	1	0	26	3	0	3
	9 / 8 - 12 / 8	T.D. -	-	0	0	3	0	1	5
	18 / 8 - 6 / 9	T. Wayne	韋恩	3	1	15 <sup>+</sup>	0	3	0
	11 / 10 - 19 / 10	T. Ellen	愛倫	0	0	4	1	2	1
1987	16 / 10 - 27 / 10	T. Lynn	林茵	0	0	1	0	0	0
1988	14 / 7 - 20 / 7	T. Warren	華倫	0	1	12	1	2	1
	19 / 9 - 22 / 9	T. Kit	吉蒂	0	0	0	0	0	1
	18 / 10 - 23 / 10	T. Pat	帕特	2	0	1	0	0	0
	21 / 10 - 29 / 10	T. Ruby	露比	0	0	4	0	0	0
1989	16 / 5 - 21 / 5	T. Brenda	布倫達	6	1	119	0	3	5
	11 / 7 - 19 / 7	T. Gordon	戈登	2	0	31	1	0	8
	8 / 10 - 14 / 10	T. Dan	丹尼	0	0	0	1	0	1
1990	15 / 5 - 19 / 5	T. Marian	瑪麗安	0	0	0	0	0	1
	15 / 6 - 19 / 6	S.T.S. Nathan	彌敦	5	1	1	1	0	2
	21 / 6 - 30 / 6	T. Percy	珀西	1	0	0	0	0	0
	27 / 7 - 31 / 7	S.T.S. Tasha	泰莎	0	0	1	0	1	0
	25 / 8 - 30 / 8	T. Becky	貝姬	0	1	0	0	0	0
	10 / 9 - 20 / 9	T. Ed	義德	0	0	1	0	0	0
1991	15 / 7 - 20 / 7	T. Amy	艾美	0	0	1	1	0	2
	20 / 7 - 24 / 7	S.T.S. Brendan	布倫登	0	0	17	1	1	13
	13 / 8 - 18 / 8	T. Fred	法雷德	0	0	0	0	1	0
1992	9 / 7 - 14 / 7	T. Eli	艾里	0	0	23	0	0	1
	17 / 7 - 18 / 7	T.S. Faye	菲爾	2	0	24	1	0	3
	19 / 7 - 23 / 7	S.T.S. Gary	加里	0	0	18	2	0	0

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
1993	21 / 6 - 28 / 6	T. Koryn	高蓮	0	0	183	0	0	2
	16 / 8 - 21 / 8	T. Tasha	泰莎	0	0	35	0	0	7
	9 / 9 - 14 / 9	T. Abe	艾貝	1	0	0	0	0	0
	15 / 9 - 17 / 9	S.T.S. Becky	貝姬	1	0	130	0	0	10
	23 / 9 - 27 / 9	T. Dot	黛蒂	0	1	48	0	1	0
	28 / 10 - 5 / 11	T. Ira	艾拉	2	0	30	0	1	0
1994	23 / 6 - 25 / 6	T.S. Sharon	莎朗	0	0	5	0	1	1
	25 / 8 - 29 / 8	S.T.S. Harry	夏里	1	0	2	0	0	2
1995	7 / 8 - 12 / 8	S.T.S. Helen	海倫	3	0	35	0	0	0
	25 / 8 - 1 / 9	T. Kent	肯特	0	0	5	0	0	0
	28 / 9 - 4 / 10	T. Sibyl	斯寶	0	0	14	0	0	0
1996	5 / 9 - 10 / 9	T. Sally	莎莉	2	0	4	0	0	0
	18 / 9 - 23 / 9	S.T.S. Willie	威利	0	1	0	0	0	0
1997	31 / 7 - 3 / 8	T. Victor	維克托	1	0	58	0	0	0
	20 / 8 - 23 / 8	T. Zita	思蒂	0	0	3	0	0	0
1998	7 / 8 - 11 / 8	S.T.S. Penny	彭妮	1	0	1	0	0	0
	12 / 9 - 14 / 9	T.D. -	-	0	0	10	0	0	0
	15 / 10 - 27 / 10	T. Babs	寶絲	0	0	14	0	0	0
1999	28 / 4 - 2 / 5	T. Leo	利奧	0	0	14	0	0	0
	2 / 6 - 8 / 6	T. Maggie	瑪姬	0	0	5	0	2	0
	25 / 7 - 28 / 7	T.S. -	-	0	0	18	0	0	0
	19 / 8 - 23 / 8	T. Sam	森姆	4	0	328	0	0	0
	12 / 9 - 17 / 9	T. York	約克	2	0	500	3	*	*
	24 / 9 - 26 / 9	S.T.S. Cam	錦雯	1	0	23	0	0	0
2000	15 / 7 - 16 / 7	T.D. -	-	0	1	6	0	0	0
	27 / 8 - 1 / 9	S.T.S. Maria	瑪莉亞	2	0	0	0	0	0
	5 / 9 - 10 / 9	T. Wukong	悟空	0	0	1	0	0	1
2001	30 / 6 - 3 / 7	T. Durian	榴槤	0	0	1	0	0	0
	1 / 7 - 8 / 7	T. Utor	尤特	1	0	1	0	1	0
	23 / 7 - 26 / 7	T. Yutu	玉兔	0	0	10	0	0	0
	28 / 8 - 1 / 9	T.S. Fitow	菲特	2	0	0	0	0	0
2002	15 / 8 - 20 / 8	S.T.S. Vongfong	黃蜂	0	0	2	0	0	1
	10 / 9 - 13 / 9	S.T.S. Hagupit	黑格比	0	0	32	0	0	3
2003	16 / 7 - 23 / 7	S.T.S. Koni	天鵝	0	0	15	0	0	0
	17 / 7 - 25 / 7	T. Imbudo	伊布都	1	0	45	0	2	8
	17 / 8 - 26 / 8	T. Krovanh	科羅旺	0	0	11	0	0	2
	29 / 8 - 3 / 9	T. Dujuan	杜鵑	0	4	24	0	1	4

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

二零零三年熱帶氣旋的位置及強度數據

### **Section 5**

**TROPICAL CYCLONE POSITION AND  
INTENSITY DATA, 2003**

以下是二零零三年位於北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋。其每六小時之位置及強度刊於本節。

熱帶氣旋名稱	頁
熱帶風暴欣欣 (0301)	88
颱風鯨魚 (0302)	89
熱帶低氣壓：五月十八日至二十二日	90
颱風燦鴻 (0303)	91
強烈熱帶風暴蓮花 (0304)	92
強烈熱帶風暴浪卡 (0305)	93
颱風蘇妲羅 (0306)	94
強烈熱帶風暴天鵝 (0308)	95
颱風伊布都 (0307)	96
熱帶風暴莫拉克 (0309)	97
颱風艾濤 (0310)	98
颱風科羅旺 (0312)	99
熱帶風暴環高 (0311)	100
颱風杜鵑 (0313)	101
颱風鳴蟬 (0314)	102
颱風彩雲 (0315)	103
颱風巨爵 (0316)	104
颱風凱薩娜 (0317)	105
颱風芭瑪 (0318)	106
強烈熱帶風暴茉莉 (0319)	107
颱風尼伯特 (0320)	108
颱風盧碧 (0321)	109
熱帶低氣壓：十二月二十五日至二十六日	110

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

Six-hourly position and intensity data are tabulated in this section for the following tropical cyclones in 2003 over the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°).

Name of tropical cyclone	Page
Tropical Storm Yanyan (0301)	88
Typhoon Kujira (0302)	89
Tropical Depression of 18 - 22 May	90
Typhoon Chan-hom (0303)	91
Severe Tropical Storm Linfa (0304)	92
Severe Tropical Storm Nangka (0305)	93
Typhoon Soudelor (0306)	94
Severe Tropical Storm Koni (0308)	95
Typhoon Imbudo (0307)	96
Tropical Storm Morakot (0309)	97
Typhoon Etau (0310)	98
Typhoon Krovanh (0312)	99
Tropical Storm Vamco (0311)	100
Typhoon Dujan (0313)	101
Typhoon Maemi (0314)	102
Typhoon Choi-wan (0315)	103
Typhoon Koppu (0316)	104
Typhoon Ketsana (0317)	105
Typhoon Parma (0318)	106
Severe Tropical Storm Melor (0319)	107
Typhoon Nepartak (0320)	108
Typhoon Lupit (0321)	109
Tropical Depression of 25 - 26 December	110

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

**熱帶風暴欣欣(0301)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TROPICAL STORM YANYAN (0301)**

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
一月 Jan	15	1800	T.D.	1002	16	7.3	161.0
		16	T.D.	1002	16	7.8	159.4
	16	0600	T.D.	1002	16	8.3	157.8
		1200	T.D.	1002	16	8.8	156.3
		1800	T.D.	1002	16	9.3	154.6
		0000	T.D.	1002	16	10.0	152.9
		0600	T.D.	1002	16	10.9	151.1
	17	1200	T.D.	1002	16	11.7	149.7
		1800	T.D.	1002	16	12.5	148.2
		0000	T.D.	1002	16	13.3	147.1
		0600	T.S.	998	18	13.8	146.7
		1200	T.S.	994	21	14.2	146.6
	18	1800	T.S.	994	21	14.7	147.1
		0000	T.S.	994	21	14.9	148.0
		0600	T.S.	998	18	15.1	148.8
		1200	T.S.	998	18	15.4	149.8
		1800	T.S.	998	18	15.9	150.9
	19	0000	T.S.	998	18	16.4	152.1
		0600	T.S.	998	18	17.0	153.4
		1200	T.D.	1002	16	17.5	154.7

消散  
Dissipated



颱風鯨魚(0302)的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TYPHOON KUJIRA (0302)**

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
四月 Apr	9	1200	T.D.	1002	13	4.5	160.6
		1800	T.D.	1000	16	5.6	160.5
	10	0000	T.D.	1000	16	6.6	160.2
		0600	T.D.	1000	16	7.5	159.6
	11	1200	T.D.	1000	16	8.0	159.1
		1800	T.S.	998	18	8.4	158.6
		0000	T.S.	998	18	9.0	157.8
		0600	T.S.	998	18	9.6	156.7
		1200	T.S.	998	18	9.8	155.9
		1800	T.S.	995	21	9.9	155.0
	12	0000	T.S.	995	21	10.0	154.1
		0600	T.S.	990	23	10.1	153.1
		1200	T.S.	990	23	10.1	152.2
	13	1800	S.T.S.	985	25	10.1	151.5
		0000	S.T.S.	980	28	10.1	150.7
		0600	S.T.S.	975	31	10.1	149.8
		1200	S.T.S.	975	31	10.2	149.0
		1800	T.	970	33	10.3	148.3
		0000	T.	965	36	10.4	147.3
	14	0600	T.	960	39	10.6	146.2
		1200	T.	955	41	10.8	145.2
		1800	T.	950	43	11.1	143.8
		0000	T.	945	46	11.5	142.3
		0600	T.	940	49	11.9	141.0
		1200	T.	935	51	12.2	139.5
	15	1800	T.	925	57	12.7	138.3
		0000	T.	920	59	13.1	137.0
		0600	T.	920	59	13.5	136.0
		1200	T.	925	57	13.7	135.2
		1800	T.	930	54	13.9	134.2
		0000	T.	940	49	14.0	133.7
	16	0600	T.	945	46	13.9	132.9
		1200	T.	950	43	13.7	132.1
		1800	T.	950	43	13.5	131.3
		0000	T.	945	46	13.5	130.6
		0600	T.	940	49	13.5	130.0
		1200	T.	940	49	13.6	129.5
	17	1800	T.	945	46	13.8	129.1
		0000	T.	950	43	14.1	128.8
		0600	T.	950	43	14.6	128.3
		1200	T.	955	41	15.1	127.9
		1800	T.	955	41	15.7	127.3
		0000	T.	960	39	16.2	126.8
	18	0600	T.	955	41	16.7	126.1
		1200	T.	950	43	17.2	125.7
		1800	T.	950	43	17.8	125.1
		0000	T.	955	41	18.3	124.6
		0600	T.	960	39	18.7	124.3
		1200	T.	965	36	19.2	124.2
	19	1800	T.	970	33	19.6	124.1
		0000	S.T.S.	975	31	19.9	123.8
		0600	S.T.S.	980	28	20.1	123.3
		1200	S.T.S.	985	25	20.5	123.1
		1800	T.S.	990	23	20.9	123.0
		0000	T.S.	995	21	20.9	122.6
	20	0600	T.S.	998	18	20.8	122.4
		1200	T.S.	998	18	21.1	122.3
		1800	T.S.	998	18	21.5	122.3
		0000	T.S.	998	18	22.0	122.5
		0600	T.S.	998	18	23.2	123.0
1200		T.S.	998	18	24.8	123.9	
21	1800	T.S.	998	18	26.8	125.4	
	0000	T.S.	998	18	29.0	127.3	

變為溫帶氣旋  
 Became Extratropical

熱帶低氣壓由五月十八日至二十二日的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 THE TROPICAL DEPRESSION OF 18 - 22 MAY**

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	17	1800	T.D.	1004	13	7.4	127.6
		18	0000	T.D.	1002	16	7.7
	0600		T.D.	1002	16	8.1	129.3
	1200		T.D.	1002	16	8.5	130.1
	1800		T.D.	1002	16	8.8	130.6
	19		0000	T.D.	1002	16	9.1
		0600	T.D.	1002	16	9.5	131.8
		1200	T.D.	1002	16	10.0	132.1
	20	1800	T.D.	1002	16	10.8	131.6
		0000	T.D.	1002	16	11.7	131.1
		0600	T.D.	1002	16	12.6	130.8
		1200	T.D.	1002	16	13.2	130.6
	21	1800	T.D.	1002	16	13.6	130.2
		0000	T.D.	1002	16	13.8	129.8
		0600	T.D.	1002	16	13.9	129.4
		1200	T.D.	1004	13	14.2	129.3
	22	1800	T.D.	1004	13	14.5	129.5
		0000	T.D.	1004	13	14.8	129.9

消散  
Dissipated

**颱風燦鴻(0303)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON CHAN-HOM(0303)**

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	19	0600	T.D.	1002	13	6.8	149.7
		1200	T.D.	1000	16	6.9	150.1
		1800	T.D.	1000	16	7.1	150.6
	20	0000	T.D.	1000	16	7.2	151.1
		0600	T.D.	1000	16	7.7	151.0
		1200	T.S.	998	18	8.0	150.7
	21	1800	T.S.	995	21	8.3	150.4
		0000	T.S.	990	23	8.8	150.2
		0600	S.T.S.	985	25	9.3	150.2
	22	1200	S.T.S.	980	28	10.0	150.4
		1800	S.T.S.	980	28	10.8	150.7
		0000	S.T.S.	980	28	11.6	150.9
	23	0600	S.T.S.	980	28	12.6	151.1
		1200	S.T.S.	980	28	13.2	151.2
		1800	S.T.S.	975	31	14.2	151.2
	24	0000	S.T.S.	975	31	14.9	151.2
		0600	T.	965	36	15.6	151.3
		1200	T.	960	39	16.4	151.4
	25	1800	T.	955	41	17.4	151.5
		0000	T.	955	41	18.2	151.6
		0600	T.	955	41	19.3	152.1
	26	1200	T.	955	41	20.0	152.6
		1800	T.	955	41	21.1	153.8
		0000	T.	960	39	22.3	154.8
	27	0600	T.	960	39	23.8	155.9
		1200	T.	960	39	25.2	156.8
		1800	T.	965	36	26.8	157.7
28	0000	T.	970	33	28.2	158.8	
	0600	S.T.S.	975	31	29.6	160.6	
	1200	S.T.S.	985	25	30.9	162.5	
29	1800	T.S.	990	23	32.3	164.5	
	0000	T.S.	995	21	33.8	166.7	

變為溫帶氣旋  
Became Extratropical

強烈熱帶風暴蓮花(0304)的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TROPICAL STORM LINFA (0304)**

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	25	1800	T.D.	1000	16	17.0	118.4
		26	0000	T.S.	995	18	16.5
	0600		T.S.	990	21	16.2	118.6
	1200		T.S.	985	23	16.1	119.0
	1800		T.S.	985	23	16.0	119.5
	27		0000	S.T.S.	980	25	16.0
		0600	T.S.	990	21	16.1	120.9
		1200	T.S.	990	21	16.5	121.9
		1800	T.S.	990	21	17.4	122.8
		28	0000	T.S.	995	18	18.5
	0600		T.S.	995	18	19.5	124.1
	1200		T.S.	995	18	20.4	124.5
	1800		T.S.	995	18	21.2	125.0
	29		0000	T.S.	995	18	21.9
		0600	T.S.	995	18	22.3	126.9
		1200	T.S.	990	21	22.6	128.2
		1800	T.S.	985	23	24.1	129.4
		30	0000	S.T.S.	980	25	25.6
	0600		S.T.S.	980	25	27.5	130.7
	1200		S.T.S.	980	25	30.0	131.5
	1800		T.S.	985	23	32.2	132.4
31	0000	T.S.	990	21	34.1	133.8	

變為溫帶氣旋  
 Became Extratropical

強烈熱帶風暴浪卡(0305)的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 SEVERE TROPICAL STORM NANGKA (0305)**

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
六月 Jun	1	0000	T.D.	998	16	17.2	117.0
		0600	T.S.	996	18	17.7	117.8
		1200	T.S.	994	21	18.3	118.3
		1800	T.S.	990	23	19.1	118.6
	2	0000	S.T.S.	985	25	19.9	119.3
		0600	S.T.S.	985	25	20.6	120.4
		1200	S.T.S.	985	25	21.3	121.6
		1800	T.S.	990	23	22.3	123.3
	3	0000	T.S.	994	21	22.7	125.2
		0600	T.S.	994	21	23.7	127.5
		1200	T.S.	994	21	25.6	130.6
		1800	T.S.	994	21	27.5	133.1
	4	0000	T.S.	994	21	29.4	135.4

變為溫帶氣旋  
 Became Extratropical

**颱風蘇迪羅(0306)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON SOUDELOR (0306)**

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
六月 Jun	13	0000	T.D.	1002	13	10.7	132.3
		0600	T.D.	1000	16	11.2	130.9
		1200	T.S.	998	18	11.4	129.2
		1800	T.S.	998	18	11.5	128.3
	14	0000	T.S.	998	18	11.8	127.6
		0600	T.S.	998	18	12.1	127.1
		1200	T.S.	998	18	12.6	126.6
		1800	T.S.	998	18	13.1	126.1
	15	0000	T.S.	995	21	13.9	125.7
		0600	T.S.	990	23	14.6	125.5
		1200	T.S.	990	23	15.3	125.3
		1800	S.T.S.	985	25	16.1	125.0
	16	0000	S.T.S.	980	28	16.8	124.6
		0600	S.T.S.	980	28	17.5	124.1
		1200	S.T.S.	980	28	18.2	123.6
		1800	S.T.S.	980	28	19.0	123.2
	17	0000	S.T.S.	975	31	19.7	123.1
		0600	T.	970	33	20.7	123.2
		1200	T.	970	33	22.0	123.6
		1800	T.	970	33	23.4	123.8
	18	0000	T.	965	36	25.0	124.0
		0600	T.	960	39	26.2	124.5
		1200	T.	960	39	27.8	125.5
		1800	T.	965	36	29.9	127.0
19	0000	T.	970	33	32.5	128.1	
	0600	S.T.S.	980	28	35.0	129.9	
	1200	T.S.	990	23	37.1	132.7	

變為溫帶氣旋  
Became Extratropical

**強烈熱帶風暴天鵝(0308)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**SEVERE TROPICAL STORM KONI (0308)**

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	16	0600	T.D.	1002	13	9.8	129.2
		1200	T.D.	1002	13	10.3	128.2
		1800	T.D.	1000	16	10.8	127.0
	17	0000	T.D.	1000	16	11.1	125.7
		0600	T.D.	1000	16	11.3	124.5
		1200	T.D.	1000	16	11.6	123.3
	18	1800	T.D.	1000	16	12.0	121.8
		0000	T.D.	1000	16	12.1	120.6
		0600	T.S.	998	18	12.2	119.4
	19	1200	T.S.	998	18	12.6	118.3
		1800	T.S.	998	18	13.0	117.7
		0000	T.S.	994	21	13.7	117.2
	20	0600	T.S.	994	21	14.4	116.8
		1200	T.S.	994	21	14.9	116.4
		1800	T.S.	990	23	15.5	115.9
	21	0000	S.T.S.	985	25	16.3	115.1
		0600	S.T.S.	980	28	16.9	114.3
		1200	S.T.S.	980	28	17.5	113.5
	22	1800	S.T.S.	980	28	17.9	112.8
		0000	S.T.S.	980	28	18.2	112.0
		0600	S.T.S.	980	28	18.5	111.1
	22	1200	S.T.S.	985	25	18.7	110.1
		1800	S.T.S.	985	25	18.8	109.0
		0000	S.T.S.	985	25	19.2	107.6
	0600	S.T.S.	985	25	19.8	106.3	
	1200	T.S.	994	21	20.3	104.9	
	1800	T.D.	1000	16	20.7	103.6	

消散  
Dissipated

颱風伊布都(0307)的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TYPHOON IMBUDO (0307)**

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	17	0600	T.D.	1000	16	8.2	140.9
		1200	T.S.	995	18	8.7	140.1
		1800	T.S.	995	18	9.2	139.4
	18	0000	T.S.	990	21	9.8	138.4
		0600	T.S.	990	21	10.1	137.6
		1200	T.S.	985	23	10.2	137.1
	19	1800	S.T.S.	980	25	10.3	136.2
		0000	S.T.S.	975	28	10.4	135.4
		0600	S.T.S.	970	31	10.4	134.7
	20	1200	S.T.S.	970	31	10.6	134.0
		1800	T.	965	33	10.9	133.3
		0000	T.	960	36	11.5	132.5
	21	0600	T.	950	41	12.1	131.6
		1200	T.	945	43	12.6	130.7
		1800	T.	940	46	13.2	129.6
	22	0000	T.	935	49	13.7	128.2
		0600	T.	930	51	14.3	127.1
		1200	T.	930	51	14.9	125.9
	23	1800	T.	930	51	15.6	124.6
		0000	T.	935	49	16.4	123.0
		0600	T.	945	43	17.0	121.5
	24	1200	T.	950	41	17.6	119.7
		1800	T.	945	43	17.9	118.4
		0000	T.	945	43	18.4	116.9
25	0600	T.	945	43	18.9	115.6	
	1200	T.	945	43	19.3	114.2	
	1800	T.	940	46	19.9	113.1	
26	0000	T.	940	46	21.0	111.9	
	0600	S.T.S.	970	31	22.3	110.3	
	1200	S.T.S.	980	25	22.9	109.0	
27	1800	T.S.	990	21	23.5	107.5	
	0000	T.S.	995	18	23.9	106.5	

消散  
Dissipated



**熱帶風暴莫拉克(0309)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TROPICAL STORM MORAKOT (0309)**

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	2	0000	T.D.	1000	13	18.2	125.7
		0600	T.S.	996	18	18.9	125.0
		1200	T.S.	994	21	19.5	124.3
		1800	T.S.	994	21	20.2	123.2
	3	0000	T.S.	990	23	20.8	122.2
		0600	T.S.	990	23	21.4	121.5
		1200	T.S.	990	23	22.1	121.0
		1800	T.S.	990	23	22.9	120.5
	4	0000	T.S.	990	23	23.5	119.6
		0600	T.S.	994	21	24.1	119.0
		1200	T.S.	996	18	24.6	118.5

消散  
Dissipated

**颱風艾濤(0310)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON ETAU (0310)**

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	0600	T.D.	996	16	13.5	139.3
		1200	T.S.	992	18	14.1	138.7
		1800	T.S.	988	21	14.7	138.0
	4	0000	T.S.	984	23	15.8	136.8
		0600	S.T.S.	980	25	16.6	135.5
		1200	S.T.S.	975	28	17.0	134.2
	5	1800	S.T.S.	970	31	17.6	133.4
		0000	T.	965	33	18.2	132.4
		0600	T.	960	36	18.7	131.5
	6	1200	T.	955	39	19.4	130.9
		1800	T.	955	39	20.4	130.2
		0000	T.	955	39	21.5	129.5
	7	0600	T.	955	39	22.8	129.0
		1200	T.	955	39	24.0	128.7
		1800	T.	950	41	25.2	128.4
	8	0000	T.	945	43	26.5	128.3
		0600	T.	945	43	27.5	128.6
		1200	T.	945	43	28.3	129.4
	9	1800	T.	945	43	29.4	130.7
		0000	T.	945	43	30.7	132.0
		0600	T.	945	43	32.0	133.1
	9	1200	T.	945	43	33.3	134.0
		1800	T.	955	39	34.2	134.8
		0000	S.T.S.	960	31	35.7	136.4
9	0600	S.T.S.	976	25	37.6	139.1	
	1200	T.S.	985	21	39.4	141.4	
	1800	T.S.	985	21	42.8	143.6	

變為溫帶氣旋  
Became Extratropical

颱風科羅旺(0312)的每六小時之位置及強度  
 SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TYPHOON KROVANH (0312)

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.	1002	13	12.6	144.6
		0600	T.D.	1002	13	13.0	144.0
		1200	T.D.	1002	13	13.5	143.3
		1800	T.D.	1002	13	15.3	142.1
	18	0000	T.D.	1002	13	16.3	141.4
		0600	T.D.	1002	13	16.9	140.7
		1200	T.D.	1002	13	17.4	139.8
		1800	T.D.	1002	13	17.8	138.7
	19	0000	T.D.	1002	13	18.3	137.0
		0600	T.D.	1002	13	18.8	135.3
		1200	T.D.	1002	13	19.0	134.2
		1800	T.D.	1002	13	19.0	133.5
	20	0000	T.D.	1002	13	19.1	132.8
		0600	T.D.	1000	16	19.1	132.1
		1200	T.S.	998	18	19.0	131.3
		1800	T.S.	995	21	18.9	130.4
	21	0000	T.S.	990	23	18.7	129.3
		0600	T.S.	990	23	18.5	128.2
		1200	S.T.S.	985	25	18.0	127.0
		1800	S.T.S.	980	28	17.8	125.9
	22	0000	S.T.S.	975	31	17.9	124.5
		0600	T.	970	33	17.8	123.3
		1200	T.	970	33	17.5	122.1
		1800	T.	970	33	17.3	120.5
	23	0000	T.	970	33	17.5	119.5
		0600	T.	970	33	17.7	118.0
		1200	T.	970	33	17.8	117.0
		1800	T.	965	36	18.2	116.0
24	0000	T.	960	39	18.8	114.8	
	0600	T.	960	39	19.2	113.6	
	1200	T.	960	39	19.6	112.4	
	1800	T.	960	39	19.9	111.3	
25	0000	T.	960	39	20.5	110.1	
	0600	T.	960	39	20.9	109.0	
	1200	T.	965	36	21.2	108.0	
	1800	S.T.S.	975	31	21.5	107.0	
26	0000	S.T.S.	985	25	22.1	105.7	
	0600	T.S.	998	18	22.9	104.7	

消散  
Dissipated

**熱帶風暴環高(0311)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TROPICAL STORM VAMCO (0311)**

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	19	0600	T.D.	996	16	22.5	124.8
		1200	T.S.	992	18	23.9	123.8
		1800	T.S.	992	18	25.4	122.3
	20	0000	T.D.	996	16	27.4	121.0
		0600	T.D.	1000	13	28.6	119.3

消散  
Dissipated

**颱風杜鵑(0313)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON DUJUAN (0313)**

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
八月 Aug	28	1800	T.D.	1002	13	16.2	136.0
		0000	T.D.	1002	13	16.0	135.5
	29	0600	T.D.	1002	13	16.0	135.2
		1200	T.D.	1000	16	16.0	134.9
		1800	T.S.	994	21	16.1	134.7
		0000	T.S.	990	23	16.3	134.4
		0600	S.T.S.	985	25	16.5	134.1
		1200	S.T.S.	980	28	17.4	133.3
	30	1800	S.T.S.	975	31	18.5	132.2
		0000	T.	970	33	19.2	131.1
		0600	T.	965	36	19.8	129.6
		1200	T.	965	36	20.1	128.3
		1800	T.	960	39	20.4	126.7
		0000	T.	950	43	20.7	125.3
九月 Sep	1	0600	T.	945	46	20.8	123.7
		1200	T.	940	49	21.1	122.0
		1800	T.	940	49	21.6	120.2
		0000	T.	940	49	21.9	118.0
	2	0600	T.	950	43	22.2	116.5
		1200	T.	955	41	22.6	114.8
		1800	S.T.S.	975	31	22.4	112.8
		0000	T.S.	996	18	22.7	110.8

消散  
Dissipated

**颱風鳴蟬(0314)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON MAEMI (0314)**

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	5	1800	T.D.	1002	13	13.9	143.7
		6	T.D.	1000	16	14.6	142.0
	6	0600	T.S.	995	18	15.2	141.1
		1200	T.S.	995	18	15.8	140.3
		1800	T.S.	990	21	16.5	139.0
		0000	T.S.	990	21	17.2	137.8
		0600	T.S.	990	21	18.0	136.8
		1200	T.S.	985	23	18.8	136.0
	7	1800	S.T.S.	980	25	19.3	135.0
		0000	S.T.S.	975	28	19.7	133.9
		0600	S.T.S.	975	28	20.1	132.8
		1200	S.T.S.	975	28	20.4	132.0
	8	1800	S.T.S.	970	31	21.0	131.2
		0000	T.	960	36	21.8	130.5
		0600	T.	950	41	22.4	129.6
		1200	T.	940	46	22.9	128.8
	9	1800	T.	930	51	23.3	127.9
		0000	T.	920	57	23.7	127.3
		0600	T.	910	61	24.0	126.6
		1200	T.	910	61	24.3	126.0
	10	1800	T.	910	61	24.7	125.5
		0000	T.	915	59	25.1	125.2
		0600	T.	920	57	25.7	125.1
		1200	T.	925	54	26.9	125.4
	11	1800	T.	930	51	28.4	125.8
		0000	T.	935	49	30.6	126.4
		0600	T.	935	49	32.7	127.1
		1200	T.	950	41	34.9	128.3
	12	1800	S.T.S.	970	31	37.0	129.8
		0000	S.T.S.	975	28	39.1	131.8
0600		S.T.S.	980	25	40.5	134.6	

變為溫帶氣旋  
Became Extratropical

**颱風彩雲(0315)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON CHOI-WAN (0315)**

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	17	1800	T.D.	1000	16	20.3	129.2
		18	0000	T.S.	998	18	21.5
	0600		T.S.	995	21	22.3	128.1
	1200		T.S.	995	21	23.0	127.6
	1800		T.S.	990	23	23.7	127.3
	19	0000	T.S.	990	23	24.9	127.3
		0600	S.T.S.	985	25	26.0	127.9
		1200	S.T.S.	980	28	27.1	128.2
		1800	S.T.S.	975	31	27.8	128.7
	20	0000	T.	970	33	28.4	129.5
		0600	T.	970	33	28.6	130.5
		1200	T.	970	33	29.0	132.0
		1800	T.	965	36	29.5	133.5
	21	0000	T.	960	39	30.0	135.7
		0600	T.	955	41	31.0	137.1
		1200	T.	955	41	32.1	138.9
		1800	T.	960	39	33.2	140.7
	22	0000	T.	965	36	34.4	142.8
		0600	T.	970	33	35.9	145.0
		1200	S.T.S.	980	28	37.8	147.6
		1800	S.T.S.	985	25	39.5	151.2

變為溫帶氣旋  
Became Extratropical

**颱風巨爵(0316)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON KOPPU (0316)**

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	25	0000	T.D.	998	16	16.7	135.8
		0600	T.D.	998	16	16.2	136.2
		1200	T.D.	998	16	16.2	136.7
		1800	T.D.	998	16	16.7	137.0
	26	0000	T.D.	998	16	17.3	136.8
		0600	T.D.	998	16	18.1	136.8
		1200	T.D.	998	16	19.0	137.4
		1800	T.S.	996	18	20.0	138.0
	27	0000	T.S.	992	21	21.5	139.2
		0600	T.S.	988	23	22.1	139.1
		1200	S.T.S.	984	25	23.1	139.6
		1800	S.T.S.	980	28	24.2	140.0
	28	0000	S.T.S.	980	28	24.9	140.6
		0600	S.T.S.	980	28	25.5	140.7
		1200	S.T.S.	975	31	26.1	140.6
		1800	T.	970	33	26.7	140.7
	29	0000	T.	965	36	27.4	141.3
		0600	T.	965	36	28.4	141.7
		1200	T.	965	36	29.2	142.4
		1800	T.	970	33	30.6	144.3
30	0000	S.T.S.	975	31	32.9	147.0	

變為溫帶氣旋  
Became Extratropical



**颱風凱薩娜(0317)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON KETSANA (0317)**

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.	996	16	14.8	130.2
		0600	T.S.	994	18	15.1	130.2
		1200	T.S.	992	21	15.5	129.9
		1800	T.S.	988	23	15.5	130.3
	20	0000	S.T.S.	984	25	15.3	130.6
		0600	S.T.S.	975	31	15.6	130.8
		1200	S.T.S.	975	31	15.9	131.1
		1800	T.	970	33	16.1	131.0
	21	0000	T.	965	36	16.3	131.1
		0600	T.	955	41	16.6	131.2
		1200	T.	950	43	17.0	131.1
		1800	T.	945	46	17.2	131.1
	22	0000	T.	945	46	17.4	131.1
		0600	T.	945	46	17.7	131.1
		1200	T.	945	46	18.1	131.2
		1800	T.	945	46	18.4	131.5
	23	0000	T.	945	46	18.8	132.0
		0600	T.	945	46	19.2	132.3
		1200	T.	945	46	19.6	132.7
		1800	T.	945	46	20.0	133.5
	24	0000	T.	950	43	20.4	133.6
		0600	T.	955	41	21.0	133.7
		1200	T.	955	41	21.9	134.1
		1800	T.	955	41	22.8	134.7
25	0000	T.	955	41	24.6	135.7	
	0600	T.	960	39	25.9	136.9	
	1200	T.	965	36	27.6	139.1	
	1800	S.T.S.	975	31	29.6	141.9	
26	0000	S.T.S.	980	28	32.1	144.6	
	0600	S.T.S.	984	25	34.4	147.7	

變為溫帶氣旋  
Became Extratropical

**颱風芭瑪(0318)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**TYPHOON PARMA (0318)**

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	20	1800	T.D.	996	16	20.7	143.2
	21	0000	T.S.	994	18	20.9	143.9
		0600	T.S.	994	18	21.5	144.4
		1200	T.S.	992	21	22.1	145.2
		1800	T.S.	988	23	22.2	146.0
	22	0000	S.T.S.	984	25	22.3	146.4
		0600	S.T.S.	975	31	22.9	146.9
		1200	T.	970	33	23.5	147.2
		1800	T.	970	33	24.1	147.9
	23	0000	T.	965	36	24.7	148.8
		0600	T.	960	39	26.1	149.6
		1200	T.	955	41	27.1	150.8
		1800	T.	950	43	28.3	152.3
	24	0000	T.	945	46	29.1	154.1
		0600	T.	945	46	30.1	156.2
		1200	T.	945	46	30.8	158.6
		1800	T.	945	46	30.8	161.4
	25	0000	T.	950	43	30.0	163.6
		0600	T.	950	43	28.6	165.1
		1200	T.	955	41	27.6	167.2
		1800	T.	960	39	26.4	168.4
	26	0000	T.	965	36	25.4	169.7
		0600	T.	965	36	23.8	169.5
		1200	T.	970	33	23.0	168.9
		1800	S.T.S.	975	31	22.4	167.4
	27	0000	S.T.S.	975	31	22.3	166.0
		0600	S.T.S.	975	31	22.3	164.5
		1200	S.T.S.	975	31	21.8	162.7
		1800	S.T.S.	975	31	22.0	160.5
	28	0000	S.T.S.	975	31	21.8	158.2
		0600	S.T.S.	975	31	21.8	156.0
		1200	T.	970	33	21.9	154.1
		1800	T.	965	36	22.6	152.1
	29	0000	T.	960	39	23.1	150.4
		0600	T.	955	41	23.9	149.4
		1200	T.	950	43	24.8	148.8
		1800	T.	950	43	25.7	149.2
	30	0000	T.	950	43	26.6	150.2
		0600	T.	955	41	27.8	151.7
		1200	T.	960	39	28.9	154.3
		1800	T.	965	36	29.7	156.7
	31	0000	S.T.S.	975	31	30.6	159.7
		0600	S.T.S.	984	25	31.4	163.2
		1200	T.S.	992	21	32.3	166.9

變為溫帶氣旋  
Became Extratropical

**強烈熱帶風暴茉莉(0319)的每六小時之位置及強度**  
**SIX-HOURLY POSITION AND INTENSITY DATA OF**  
**SEVERE TROPICAL STORM MELOR (0319)**

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	30	1200	T.D.	1000	16	13.2	128.0
		1800	T.S.	996	18	13.8	127.3
	31	0000	T.S.	992	21	14.5	126.2
		0600	T.S.	988	23	15.3	124.8
		1200	S.T.S.	980	28	15.7	123.9
十一月 Nov	1	1800	S.T.S.	980	28	16.2	122.9
		0000	S.T.S.	980	28	16.9	122.5
	2	0600	S.T.S.	980	28	17.5	121.8
		1200	S.T.S.	984	25	18.5	121.1
		1800	S.T.S.	984	25	19.4	120.9
		0000	S.T.S.	984	25	20.1	120.6
	3	0600	S.T.S.	984	25	20.6	120.5
		1200	S.T.S.	984	25	21.2	120.8
		1800	T.S.	988	23	21.9	121.3
		0000	T.S.	992	21	22.7	121.9
	4	0600	T.S.	996	18	23.1	122.7
		1200	T.S.	996	18	23.7	123.5
		1800	T.S.	996	18	24.0	124.1
		0000	T.D.	1000	16	24.3	124.6

消散  
Dissipated

颱風尼伯特(0320)的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TYPHOON NEPARTAK (0320)**

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	12	1200	T.D.	1002	13	12.0	134.0
		1800	T.D.	1000	16	12.1	131.8
	13	0000	T.D.	1000	16	12.2	130.0
		0600	T.S.	996	18	12.3	128.6
		1200	T.S.	992	21	12.4	126.4
	14	1800	T.S.	988	23	12.0	125.2
		0000	T.S.	988	23	11.6	123.8
		0600	T.S.	988	23	11.8	122.1
	15	1200	S.T.S.	984	25	12.1	120.5
		1800	S.T.S.	984	25	12.2	119.0
		0000	S.T.S.	980	28	12.6	117.9
	16	0600	S.T.S.	975	31	13.3	116.6
		1200	S.T.S.	975	31	13.8	115.7
		1800	S.T.S.	975	31	14.2	114.8
	17	0000	S.T.S.	975	31	14.4	113.8
		0600	S.T.S.	975	31	14.6	113.2
		1200	S.T.S.	975	31	15.0	112.2
	18	1800	S.T.S.	975	31	15.5	111.2
		0000	S.T.S.	975	31	16.1	110.2
		0600	S.T.S.	975	31	16.3	109.8
	19	1200	S.T.S.	975	31	16.6	109.6
		1800	T.	970	33	17.5	109.1
		0000	T.	965	36	18.1	108.9
	19	0600	T.	970	33	18.8	108.4
		1200	S.T.S.	980	28	19.2	108.4
		1800	T.S.	988	23	19.7	108.4
	19	0000	T.S.	996	18	20.1	108.6
		0600	T.D.	1000	16	21.0	109.0

消散  
Dissipated

颱風盧碧(0321)的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 TYPHOON LUPIT (0321)**

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 Nov	19	1200	T.D.	1000	13	8.8	163.6
		1800	T.D.	1000	13	8.8	163.0
	20	0000	T.D.	1000	13	8.9	161.9
		0600	T.D.	1000	13	8.9	161.3
		1200	T.D.	998	16	8.8	160.6
	21	1800	T.D.	998	16	8.7	160.2
		0000	T.D.	998	16	8.7	159.8
		0600	T.D.	998	16	8.7	158.5
	22	1200	T.S.	994	18	8.7	156.8
		1800	T.S.	990	21	8.5	155.1
		0000	S.T.S.	980	25	8.6	153.6
	23	0600	S.T.S.	975	28	8.8	152.2
		1200	S.T.S.	975	28	8.8	150.3
		1800	S.T.S.	970	31	8.9	148.9
	24	0000	T.	965	33	8.2	147.6
		0600	T.	960	36	8.0	146.8
		1200	T.	955	39	7.9	145.5
	25	1800	T.	955	39	7.7	144.5
		0000	T.	955	39	7.7	144.0
		0600	T.	955	39	8.5	143.3
	26	1200	T.	955	39	9.0	142.5
		1800	T.	950	41	9.9	141.4
		0000	T.	945	43	10.5	140.3
	27	0600	T.	940	46	11.4	138.8
		1200	T.	935	49	11.7	137.7
		1800	T.	930	51	12.1	137.1
	28	0000	T.	920	57	12.5	136.7
		0600	T.	910	61	13.0	136.3
		1200	T.	905	64	13.5	136.0
	29	1800	T.	905	64	13.9	135.4
0000		T.	905	64	14.0	134.9	
0600		T.	905	64	14.5	134.4	
30	1200	T.	905	64	14.9	133.8	
	1800	T.	910	61	15.2	133.3	
	0000	T.	915	59	15.5	132.9	
十二月 Dec	1	0600	T.	915	59	16.1	132.5
		1200	T.	915	59	16.8	131.9
		1800	T.	925	54	17.6	131.4
2	0000	T.	930	51	18.4	131.0	
	0600	T.	935	49	19.2	130.9	
	1200	T.	935	49	19.9	131.0	
2	1800	T.	940	46	20.8	131.6	
	0000	T.	945	43	21.8	132.5	
	0600	T.	950	41	23.0	133.7	
2	1200	T.	955	39	24.6	135.5	
	1800	T.	960	36	26.0	137.5	
	0000	T.	965	33	27.0	139.0	
2	0600	S.T.S.	970	31	29.3	140.2	
	1200	S.T.S.	975	28	30.9	141.7	
	1800	S.T.S.	980	25	32.2	144.1	
2	0000	T.S.	985	23	34.4	146.1	

變為溫帶氣旋  
 Became Extratropical

熱帶低氣壓由十二月二十五日至二十六日的每六小時之位置及強度  
**SIX-HOURLY POSITION AND INTENSITY DATA OF  
 THE TROPICAL DEPRESSION OF 25 - 26 DECEMBER**

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計 最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十二月 Dec	25	1200	T.D.	1002	13	13.7	130.1
		1800	T.D.	1000	16	13.8	129.3
	26	0000	T.D.	1000	16	13.7	128.7
		0600	T.D.	1000	16	13.6	128.3
		1200	T.D.	1002	13	13.4	127.9
消散 Dissipated							