香港天文台 HONG KONG OBSERVATORY

二零一一年的熱帶氣旋路徑圖

TRACKS OF TROPICAL CYCLONES IN 2011

每日協調世界時零時位置(香港時間上午八時),
符號中央數目字代表該月的日子

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

每六小時位置
Intermediate 6-hourly Positions

超強颱風 Super Typhoon

強颱風 Severe Typhoon

颱風 Typhoon

強烈熱帶風暴 Severe Tropical Storm

熱帶風暴 Tropical Storm

熱帶低氣壓 Tropical Depression

梅花 MUIFA 八月AUG

洛克 ROKE 九月SEP

塔拉斯 TALAS 九月SEP

馬鞍 MA-ON 七月JUL

奧鹿 NORU 九月SEP

桑卡 SONCA 九月SEP

苗柏 MERBOK 八月AUG

米雷 MEARI 六月JUN

熱帶低氣壓 T.D. 八月AUG

桑達 SONGDA 五月MAY

艾利 AERE 五月MAY

玫瑰 KULAP 九月SEP

南瑪都 NANMADOL 八月AUG

莎莉嘉 SARIKA 六月JUN

香港 Hong Kong

納沙 NESAT 九月SEP

榕樹 BANYAN 十月OCT

海馬 HAIMA 六月JUN

洛坦 NOCK-TEN 七月JUL

尼格 NALGAE 十月OCT

海棠 HAITANG 九月SEP

天鷹 WASHI 十二月DEC

熱帶低氣壓 T.D. 八月AUG

洛克(1115) ROKE 九月SEP

玫瑰(1114) KULAP 九月SEP

尼格(1119) NALGAE 九月SEP

塔拉斯(1112) TALAS 八月AUG

奧鹿(1113) NORU 九月SEP

桑卡(1116) SONCA 九月SEP

苗柏(1110) MERBOK 八月AUG

馬鞍(1106) MA-ON 七月JUL

南瑪都(1111) NANMADOL 八月AUG

海馬(1104) HAIMA 六月JUN

洛坦(1108) NOCK-TEN 七月JUL

海棠(1118) HAITANG 九月SEP

莎莉嘉(1103) SARIKA 六月JUN

艾利(1101) AERE 五月MAY

米雷(1105) MEARI 六月JUN

榕樹(1120) BANYAN 十月OCT

天鷹(1121) WASHI 十二月DEC

蝎虎 TOKAGE 七月JUL

蝎虎(1107) TOKAGE 七月JUL

納沙(1117) NESAT 九月SEP

梅花(1109) MUIFA 七月JUL

桑達(1102) SONGDA 五月MAY

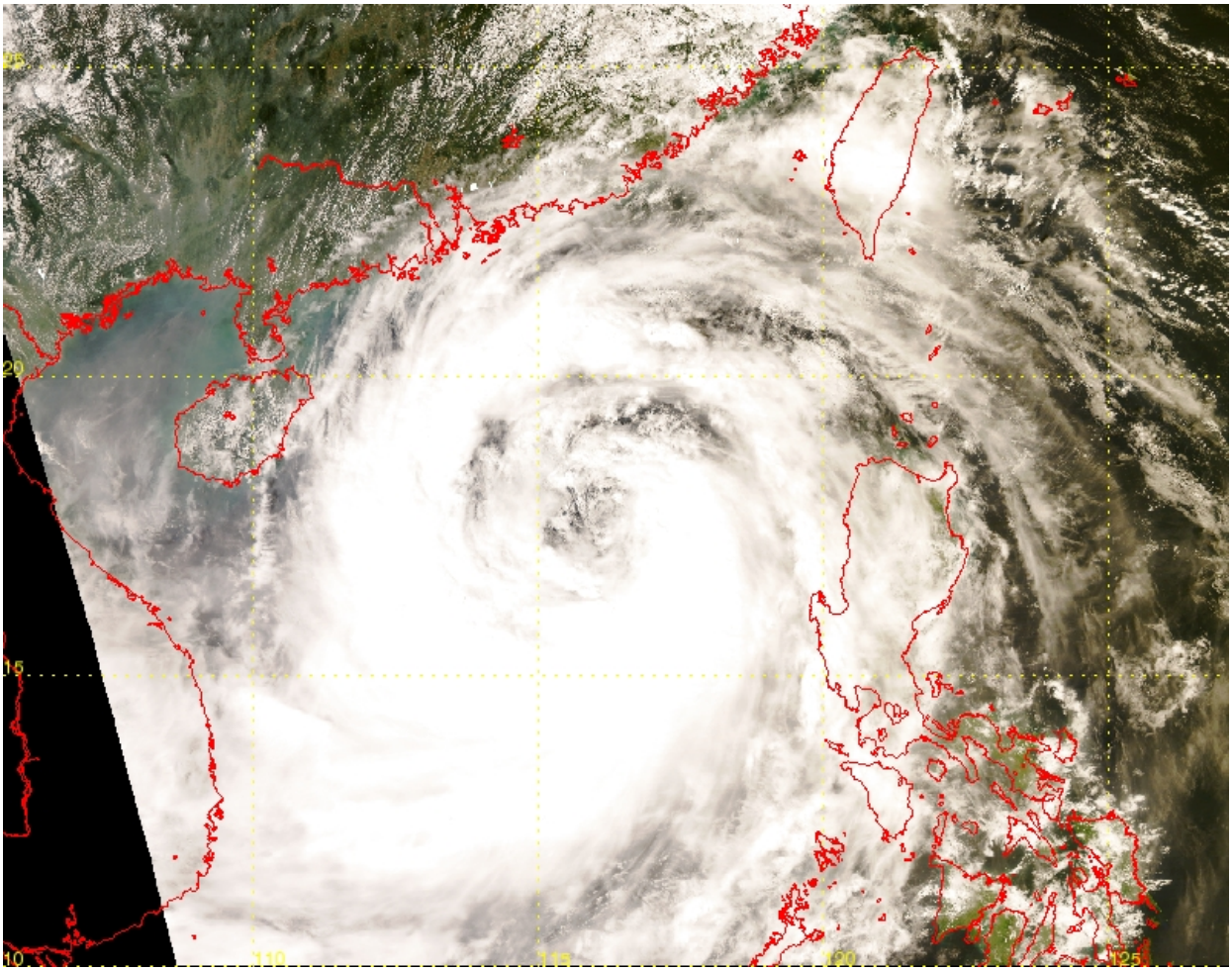
90°E 95°E 100°E 105°E 110°E 115°E 120°E 125°E 130°E 135°E 140°E 145°E 150°E 155°E 160°E 165°E 170°E 175°E 180°

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

香港天文台
HONG KONG OBSERVATORY

二零一一年熱帶氣旋

TROPICAL CYCLONES IN 2011



二零一三年四月出版
Published April 2013

香港天文台編製
香港九龍彌敦道 134A

Prepared by:
Hong Kong Observatory
134A Nathan Road
Kowloon, Hong Kong

551.515.2:551.506.1(512.317)

封面

颱風納沙於二零一一年九月二十八日下午 1 時 27 分的真彩衛星圖像。

〔此衛星圖像接收自美國太空總署地球觀測系統的 Aqua 衛星。〕

Cover

True colour satellite image of Typhoon Nesat captured at 1:27 p.m. on 28 September 2011.

(The image was captured by the Aqua satellite of the Earth Observing System operated by the U.S. National Aeronautics and Space Administration.)

目錄

CONTENTS

圖

頁

FIGURE

表

TABLES

第一節　引言

1.1 熱帶氣旋刊物的沿革

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

一八八四至一九三九年期間，部分對香港造成破壞的颱風的報告，曾以附錄形式載於《氣象資料》年刊內。而在一九四七至一九六七年出版的《天文台年報》，更擴充了有關熱帶氣旋的內容，收納所有導致香港吹烈風的熱帶氣旋的報告。其後，年刊系列加推《氣象資料第三冊（熱帶氣旋摘要）》，以記載每年北太平洋西部及南海區域所有熱帶氣旋的資料。此冊第一期在一九七一年出版，內容包括一九六八年赤道至北緯45度、東經100至160度範圍內所有熱帶氣旋的報告。由於有氣象偵察機提供報告（此項服務已在一九八七年八月停辦）及氣象衛星圖片，在原本資料短缺的海洋上追蹤熱帶氣旋位置的工作比從前順利得多。因此，由一九八五年開始，第三冊的覆蓋範圍東面邊界由東經160度伸展至180度。一九八七年，第三冊改稱為《熱帶氣旋年報》，但內容則大致上維持不變。本年報由一九九七年起以中英雙語刊出，一年後加設電腦光碟版，並在二零零零年以網上版取代印刷版。

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

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

1.2 熱帶氣旋等級

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

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

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

1.3 熱帶氣旋命名

從一九四七年至一九九九年，北太平洋西部及南海區域的熱帶氣旋非正式地採用美國軍方「聯合颱風警報中心」所編訂的名單上的名字。但由二零零零年開始，日本氣象廳根據一套新名單為每個達到熱帶風暴強度的熱帶氣旋命名。表1.1是二零一一年一月一日起生效的熱帶氣旋名單。這套名單經颱風委員會通過，一共有140個名字，分別由14個國家和地區提供。這些名字除了用於為國際航空及航海界發放的預測和警報外，亦是向國際傳媒發放熱帶氣旋消息時採用的規範名稱。另外，日本氣象廳在一九八一年起已獲委託為每個在北太平洋西部及南海區域出現而達到熱帶風暴強度的熱帶氣旋編配一個四位數字編號。例如編號"1101"代表在二零一一年區內第一個被日本氣象廳分類為熱帶風暴或更強的熱帶氣旋。在本年報內，此編號會顯示在熱帶氣旋名稱後的括弧內，例如熱帶風暴艾利(1101)。

1.4 資料來源

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

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

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

二零零九年以前颱風的最高持續風速為每小時118公里或以上。
* 二零零九年新增等級。

1.5 年報內容

本年報第二節是二零一一年所有影響北太平洋西部及南海區域的熱帶氣旋的概述。

而本年報第三節是二零一一年影響香港的熱帶氣旋的個別詳細報告，內容包括：

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

有關熱帶氣旋的各種資料及統計表載於本年報第四節內。

二零一一年每個熱帶氣旋的每六小時位置，連同當時的最低中心氣壓及最高持續風速，則表列於本年報的第五節內。

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

1.6 香港的熱帶氣旋警告系統

表 1.4 是香港熱帶氣旋警告信號的意義。

由二零零七年開始，發出 3 號和 8 號信號的參考範圍由維多利亞港擴展至由八個涵蓋全港並接近海平面的參考測風站組成的網絡(請參閱圖 1.1)。

揀選這些測風站，是基於它們處於較為空曠的位置及地理上的分佈，當中包括自然山脈分隔的考慮。這個參考測風站網絡應可概括地反映全港的風勢。

當參考網絡中半數或以上的測風站錄得或預料錄得的持續風速達到有關的風速限值，且風勢可能持續時，天文台則會發出 3 號或 8 號信號。3 號信號風速範圍為每小時 41 至 62 公里，而 8 號信號則為每小時 63 至 117 公里。

Section 1 INTRODUCTION

1.1 Evolution of tropical cyclone publications

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

During the period 1884-1939, reports on some destructive typhoons were printed as Appendices to the "Meteorological Results". This practice was extended and accounts of all tropical cyclones which caused gales in Hong Kong were included in the publication "Director's Annual Departmental Reports" from 1947 to 1967 inclusive. The series "Meteorological Results Part III - Tropical Cyclone Summaries" was subsequently introduced to provide information on tropical cyclones over the western North Pacific and the South China Sea. The first issue, published in 1971, contained reports on tropical cyclones occurring in 1968 within the area bounded by the Equator, 45°N, 100°E and 160°E. With reconnaissance aircraft reports (terminated from August 1987 onwards) and satellite pictures facilitating the tracking of tropical cyclones over the otherwise data-sparse ocean, the eastern boundary of the area of coverage was extended from 160°E to 180° from 1985 onwards. In 1987, the series was re-titled as "Tropical Cyclones in 19YY" but its contents remained largely the same. Starting from 1997, the series was published in both Chinese and English. The CD-ROM version of the publication first appeared in 1998 and the printed version was replaced by the Internet version in 2000.

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

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

1.2 Classification of tropical cyclones

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

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

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

1.3 Naming of tropical cyclones

Over the western North Pacific and the South China Sea between 1947 and 1999, tropical cyclone names were assigned by the U.S. Armed Forces' Joint Typhoon Warning Center according to a pre-determined but unofficial list. However, with effect from 2000, the Japan Meteorological Agency assigns names from a new list to tropical cyclones attaining tropical storm strength. Table 1.1 shows the name list effective from 1 January 2011. 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 2011 was assigned the code "1101". In this publication, the appropriate code immediately follows the name of the tropical cyclone in bracket, e.g. Tropical Storm Aere (1101).

1.4 Data sources

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

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

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

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

1.5 Content

In Section 2, an overview of all the tropical cyclones over the western North Pacific and the South China Sea in 2011 is presented.

The reports in Section 3 are individual accounts of the life history of tropical cyclones affecting Hong Kong in 2011. They include the following information :-

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

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

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

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

1.6 Hong Kong’s Tropical Cyclone Warning System

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

Starting from 2007, the reference for the issue of No.3 and No.8 signals has been expanded from the Victoria Harbour to a network of eight near-sea level reference anemometers covering the whole of Hong Kong as depicted in Figure 1.1.

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

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

表 1.1　　二零一一年一月一日起生效的熱帶氣旋名單

TABLE 1.1 Tropical cyclone name list effective from 1 January 2011

來源	Contributed by	I	II	III	IV	V
		名字 Name	名字 Name	名字 Name	名字 Name	名字 Name
柬埔寨	Cambodia	達維 Damrey	康妮 Kong-rey	娜基莉 Nakri	科羅旺 Krovanh	莎莉嘉 Sarika
中國	China	海葵 Haikui	玉兔 Yutu	風神 Fengshen	杜鵑 Dujuan	海馬 Haima
朝鮮	DPR Korea	鴻雁 Kirogi	桃芝 Toraji	海鷗 Kalmaegi	彩虹 Mujigae	米雷 Meari
中國香港	Hong Kong, China	啟德 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	薔琵 Champi	洛坦 Nock-ten
中國澳門	Macau, China	三巴 Sanba	蝴蝶 Wutip	黃蜂 Vongfong	煙花 In-fa	梅花 Muifa
馬來西亞	Malaysia	杰拉華 Jelawat	聖帕 Sepat	鸚鵡 Nuri	茉莉 Melor	苗柏 Merbok
米克羅尼西亞	Micronesia	艾雲尼 Ewiniar	菲特 Fitow	森拉克 Sinlaku	尼伯特 Nepartak	南瑪都 Nanmadol
菲律賓	Philippines	馬力斯 Maliksi	丹娜絲 Danas	黑格比 Hagupit	盧碧 Lupit	塔拉斯 Talas
韓國	RO Korea	格美 Gaemi	百合 Nari	薔薇 Jangmi	銀河 Mirinae	奧鹿 Noru
泰國	Thailand	派比安 Prapiroon	韋帕 Wipha	米克拉 Mekkhala	妮妲 Nida	玫瑰 Kulap
美國	U.S.A.	瑪莉亞 Maria	范斯高 Francisco	海高斯 Higos	奧麥斯 Omais	洛克 Roke
越南	Viet Nam	山神 Son-Tinh	利奇馬 Lekima	巴威 Bavi	康森 Conson	桑卡 Sonca
柬埔寨	Cambodia	寶霞 Bopha	羅莎 Krosa	美莎克 Maysak	燦都 Chanthu	納沙 Nesat
中國	China	悟空 Wukong	海燕 Haiyan	海神 Haishen	電母 Dianmu	海棠 Haitang
朝鮮	DPR Korea	清松 Sonamu	楊柳 Podul	紅霞 Noul	蒲公英 Mindulle	尼格 Nalgae
中國香港	Hong Kong, China	珊珊 Shanshan	玲玲 Lingling	白海豚 Dolphin	獅子山 Lionrock	榕樹 Banyan
日本	Japan	摩羯 Yagi	劍魚 Kajiki	鯨魚 Kujira	圓規 Kompasu	天鷹 Washi
老撾	Lao PDR	麗琵 Leepi	法茜 Faxai	燦鴻 Chan-hom	南川 Namtheun	帕卡 Pakhar

表 1.1 (續)
TABLE 1.1 (cont'd)

來源	Contributed by	I	II	III	IV	V
		名字 Name	名字 Name	名字 Name	名字 Name	名字 Name
中國澳門	Macau, China	貝碧嘉 Bebinca	琵琶 Peipah	蓮花 Linfa	瑪瑙 Malou	珊瑚 Sanvu
馬來西亞	Malaysia	溫比亞 Rumbia	塔巴 Tapah	浪卡 Nangka	莫蘭蒂 Meranti	瑪娃 Mawar
米克羅尼西亞	Micronesia	蘇力 Soulik	米娜 Mitag	蘇迪羅 Soudelor	凡亞比 Fanapi	古超 Guchol
菲律賓	Philippines	西馬侖 Cimaron	海貝思 Hagibis	莫拉菲 Molave	馬勒卡 Malakas	泰利 Talim
韓國	RO Korea	飛燕 Jebi	浣熊 Neoguri	天鵝 Goni	鮎魚 Megi	杜蘇芮 Doksuri
泰國	Thailand	山竹 Mangkhut	威馬遜 Rammasun	艾莎尼 Atsani	暹芭 Chaba	卡努 Khanun
美國	U.S.A.	尤特 Utor	麥德姆 Matmo	艾濤 Etau	艾利 Aere	韋森特 Vicente
越南	Viet Nam	潭美 Trami	夏浪 Halong	環高 Vamco	桑達 Songda	蘇拉 Saola

註：在二零一一年，北太平洋西部和南海的熱帶氣旋名單上，加入了三個新的名字：「艾莎尼」、「薔琵」及「煙花」，分別取代舊有名字「莫拉克」、「凱薩娜」及「芭瑪」。
Note: In 2011, three new names have been added to the name list for tropical cyclones in the western North Pacific and the South China Sea. They are Atsani, Champi and In-fa, replacing the old names Morakot, Ketsana and Parma respectively.

表 1.2 本年報內引用的氣壓表的位置及海拔高度
TABLE 1.2 Position and elevation of the barometer mentioned in this publication

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

表 1.3　　本年報內各風速表的位置及海拔高度

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

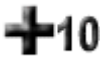
站 Station		位置 Position		風速表的海拔高度(米) Elevation of anemometer above M.S.L. (m)
		北緯 Latitude N	東經 Longitude E	
黃麻角(赤柱)	Bluff Head (Stanley)	22°11’51”	114°12’43”	103
中環碼頭	Central Pier	22°17’20”	114°09’21”	30
長洲	Cheung Chau	22°12’04”	114°01’36”	99
長洲泳灘	Cheung Chau Beach	22°12’39”	114°01’45”	27
青洲	Green Island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

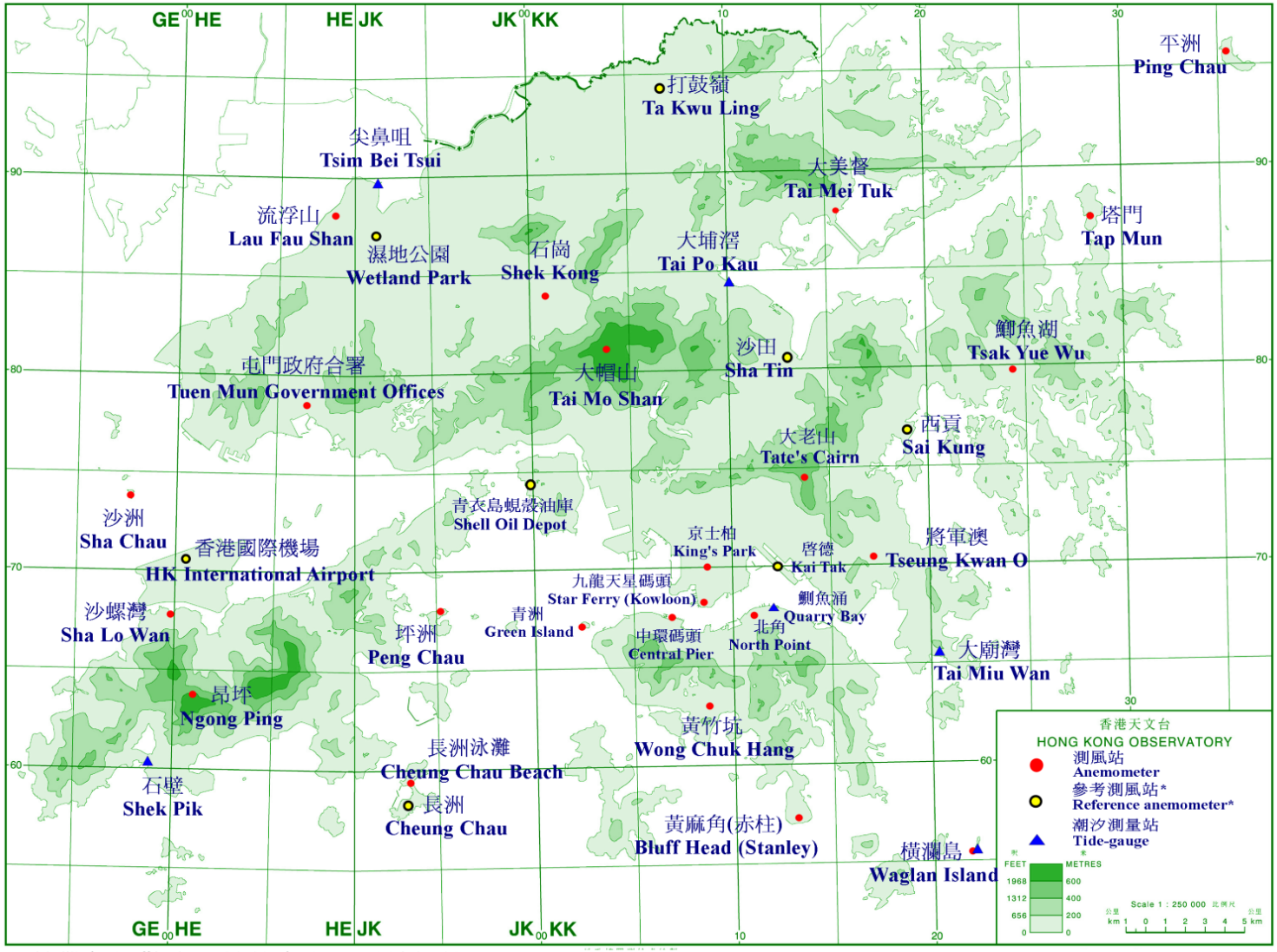
所指風速表在北跑道近中間位置。

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

表 1.4　　二零一一年香港熱帶氣旋警告信號的意義

TABLE 1.4　Meaning of tropical cyclone warning signals in Hong Kong in 2011

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



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

圖 1.1　　本年報內提及的測風站及潮汐測量站之分佈地點。

Figure 1.1　Locations of anemometers and tide gauge stations mentioned in this publication.

第二節　二零一一年熱帶氣旋概述

2.1　二零一一年的熱帶氣旋回顧

2.1.1　北太平洋西部（包括南海區域）的熱帶氣旋

二零一一年只有22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)，比1961-2010年長期年平均數的約30個為少。這是自一九四六年以來最低紀錄的第五位。全年有八個熱帶氣旋達到颱風或以上強度，比1961-2010年長期年平均數目(15個)少七個。

本年首個熱帶氣旋在五月形成，最後一個則在十二月形成。圖2.1是二零一一年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈。

二零一一年內有七個熱帶氣旋在中國大陸登陸，其中一個在香港300公里內的華南沿岸登陸。一個熱帶氣旋橫過台灣，一個登陸朝鮮半島，三個登陸日本，七個橫過菲律賓及四個登陸越南。

二零一一年風力最強的熱帶氣旋是超強颱風桑達(1102)。桑達最高持續風速估計為每小時205公里，而最低中心氣壓為920百帕斯卡(表4.1)，當時桑達位於馬尼拉東北偏東約520公里(圖2.3)。

洛克(1115)是二零一一年路徑最複雜的熱帶氣旋。洛克於九月十三日在沖繩島之東南偏東的北太平洋西部上形成後向琉球羣島移動並逐漸增強。強烈熱帶風暴洛克於九月十六日至十七日在沖繩島以東徘徊，並轉了一個圈(圖2.4)。期間，強烈熱帶風暴桑卡(1116)正在洛克以東處橫過北太平洋西部。

2.1.2　香港責任範圍內的熱帶氣旋

在二零一一年的22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)，較1961-2010年的長期年平均數的15.6個少(表2.1)。這12個熱帶氣旋中，有三個在香港責任範圍內形成。在二零一一年，香港天文台總共發出333個供船舶使用的熱帶氣旋警告(表4.2)。

2.1.3　南海區域內的熱帶氣旋

二零一一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)，當中有兩個在南海上形成，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

二零一一年香港的颱風季節於六月十日開始，當時熱帶風暴莎莉嘉(1103)橫過南海，天文台發出一號戒備信號。在十月三日，強烈熱帶風暴尼格遠離香港，天文台取消所有熱帶氣旋信號，本年颱風季節隨即結束。

年內共有五個熱帶氣旋影響香港(圖2.2)，比1961-2010年長期平均數的六個(表2.2)稍為少。這五個熱帶氣旋分別為六月的熱帶風暴莎莉嘉(1103)及熱帶風暴海馬(1104)、七月的強烈熱帶風暴洛坦(1108)、九月的颱風納沙(1117)及十月的強颱風尼格(1119)。納沙影響香港期間天文台發出八號東南烈風信號，是年內發出最高的熱帶氣旋警告信號。海馬、洛坦及尼格引致天文台發出三號強風信號，而莎莉嘉則只引致天文台發出一號戒備信號。

2.1.5 熱帶氣旋的雨量

二零一一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185.8毫米(表4.8.1)，約佔該年總雨量1 476.7毫米的百分之13，比正常的745.5毫米少約75%。

九月二十七日至三十日影響香港的颱風納沙(1117)為天文台總部帶來53.3毫米的雨量，是二零一一年為香港帶來最多雨量的熱帶氣旋。

2.2 每月概述

這一節逐月介紹二零一一年北太平洋西部及南海區域的熱帶氣旋概況。影響香港的各熱帶氣旋及傷亡報告則詳述於第三節。

一月至四月

二零一一年一月至四月並無熱帶氣旋影響北太平洋西部及南海區域。

五月

熱帶低氣壓艾利(1101)於五月七日在馬尼拉東南偏東約660公里的北太平洋西部上形成，並向西北偏西移動，當日下午增強為熱帶風暴。艾利於五月八日向西北移動，並達到其最高強度，中心附近最高持續風力達到每小時85公里。艾利於翌日向北移動橫過呂宋東北部，隨後於五月十日轉向東北移動，並在台灣東南的海面上減弱為熱帶低氣壓。艾利於翌日掠過琉球群島，五月十二日在日本以南海域消散。根據報章報導，艾利在呂宋東北部引發泥石流，造成最少3人死亡，10多萬居民要撤離。

熱帶低氣壓桑達(1102)於五月二十日在雅浦島東南偏東約300公里的北太平洋西部上形成，並大致向西北偏西移動。它於五月二十二日增強為熱帶風暴，翌日再增強為強烈熱帶風暴。桑達於五月二十五日逐漸增強為強颱風，並轉向西北移動。它於五月二十六日在菲律賓以東的太平洋上進一步增強為超強颱風，並達到其最高強度，中心附近最高持續風速達到每小時205公里。桑達於五月二十七日在台灣東南海面上轉向北移動及減弱為強颱風，翌日向東北移動，橫過琉球羣島及減弱為颱風，五月二十九日在日本以南海域上變為一個溫帶氣旋。根據報章報導，桑達掠過日本期間造成一死一失蹤，67人受傷，沖繩縣共27萬戶停電。

六月

熱帶低氣壓莎莉嘉(1103)於六月九日在東沙東南偏南約650公里的南海中部上形成，並向西北移動。它於六月十日早上轉向西北偏北移動，並增強為熱帶風暴及達到其最高強度，中心附近持續風力達到每小時65公里。莎莉嘉當日下午轉向北移動橫過南海東北部。它於六月十一日早上在汕頭附近登陸，下午在福建消散。

熱帶低氣壓海馬(1104)於六月十八日在馬尼拉以東約420公里的北太平洋西部上形成，並大致向西北移動，翌日黃昏橫過呂宋海峽。海馬於隨後兩天向西至西南偏西移動橫過南海北部，六月二十二日轉向西北偏西至西北移動，並增強為熱帶風暴及達到其最高強度，中心附近持續風力達到每小時85公里。海馬於六月二十三日在廣東西部沿岸登陸，隨後向西南偏西移動，橫過廣東西部沿岸地區，六月二十四日橫過北部灣，黃昏時在越南北部沿岸登陸，六月二十五日在老撾內陸消散。

熱帶低氣壓米雷(1105)於六月二十一日在馬尼拉東南偏東約1 160公里的北太平洋西部上形成，並向西北移動。它於六月二十二日增強為熱帶風暴，翌日向西北偏北移動。米雷於六月二十四日增強為強烈熱帶風暴，六月二十五日大致轉向北移動，橫過東海，並達到其最高強度，中心附近持續風力達到每小時110公里。它於六月二十六日黃昏時掠過山東半島沿岸，六月二十七日減弱為熱帶風暴及轉向東北移動，隨後在朝鮮半島上消散。米雷為菲律賓帶來水災，造成15人失蹤。此外，米雷導致遼寧、浙江及山東省有33 000公頃農田受影響及400間房屋受損。

七月

熱帶低氣壓馬鞍(1106)於七月十一日在關島東北偏東約1 430公里的北太平洋西部上形成，並向西至西北偏西移動。馬鞍逐漸增強，並於七月十四日增強為颱風，翌日再增強為強颱風。它於七月十六日在硫黃島西南約530公里的北太平洋西部上增強為超強颱風及達到其最高強度，中心附近持續風力達到每小時185公里。馬鞍於七月十七日向西北移動，並減弱為強颱風，翌日轉向北移動。它於七月十九日減弱為颱風，並轉向東北移動，掠過日本四國以南海域。馬鞍於七月二十日在本州南部登陸及減弱為強烈熱帶風暴，於七月二十一日轉向東南移動，橫過日本以南海域及減弱為熱帶風暴。它於七月二十二日轉向東北偏北移動，七月二十四日在日本以東的北太平洋西部上變為溫帶氣旋。馬鞍吹襲日本期間造成至少一人死亡，60人受傷。

一股熱帶低氣壓於七月十五日在馬尼拉以東約1 340公里的北太平洋西部上形成，並命名為蝎虎(1107)。其中心附近最高持續風速為每小時45公里。蝎虎向東移動，並於七月十六日在北太平洋西部上消散。

熱帶低氣壓洛坦(1108)於七月二十五日在馬尼拉東南偏東約790公里的北太平洋西部上形成，並大致向西北偏西移動，翌日增強為熱帶風暴，並轉向西北移動。它於七月二十七日增強為強烈熱帶風暴，當日下午橫過呂宋。洛坦於隨後兩天大致向西至西北偏西移動，橫過南海北部及達到其最高強度，中心附近持續風力達到每小時105公里。它於七月二十九日在海南島登陸，七月三十日橫過北部灣，並減弱為熱帶風暴，黃昏時在越南北部沿岸再次登陸。洛坦於七月三十一日在老撾內陸消散。

熱帶低氣壓梅花(1109)於七月二十六日在關島以南約500公里的北太平洋西部上形成，並向西北偏西移動。它於七月二十八日增強為熱帶風暴，翌日轉向北移動。梅花於七月三十日緩慢移動，並逐漸增強為強颱風。它於七月三十一日在沖繩島東南偏南的北太平洋西部上進一步增強為超強颱風，中心附近持續風力達到每小時185公里，並大致向偏北

移動，橫過北太平洋西部。梅花於八月一日減弱為強颱風，八月三日轉向西北偏西移動，八月五日向西北移動，並在沖繩島西南處掠過。它於八月六日減弱為颱風，並轉向西北偏北移動，橫過東海。梅花於八月八日減弱為強烈熱帶風暴，並在朝鮮西北部沿岸登陸，八月九日在中國東北部變為一個溫帶氣旋。根據報章報導，梅花吹襲期間，造成韓國至少四人死亡、兩人失蹤，32萬間房屋電力供應中斷。華東及中國東北部超過1 800間房屋倒塌，另12 500萬間被損壞，直接經濟損失42.35億元人民幣。

八月

熱帶低氣壓苗柏(1110)於八月三日在威克島西北約660公里的北太平洋西部上形成，並向西北偏西移動，當日下午增強為熱帶風暴。它於八月五日轉向西北移動，翌日向北移動，並在硫黃島東北偏東增強為強烈熱帶風暴及達到其最高強度，中心附近持續風力為每小時90公里。苗柏於八月七日轉向東北移動。它於八月九日減弱為熱帶風暴，翌日在北海道以東的北太平洋西部上變為一個溫帶氣旋。

一股熱帶低氣壓於八月十日在名古屋以南約 1 080公里的北太平洋西部上形成。該熱帶低氣壓強度持續偏弱，中心附近持續風力為每小時45公里。它於隨後兩天向東北移動，八月十三日在東京東南的北太平洋西部上消散。

南瑪都(1111)於八月二十三日在馬尼拉以東約700公里的北太平洋西部上形成，並且幾乎停留不動，黃昏時增強為熱帶風暴。它於八月二十四日增強為強烈熱帶風暴及向西移動，翌日增強為颱風。南瑪都於八月二十六日向西北移動，並在馬尼拉東北的太平洋上逐漸成為超強颱風，中心附近持續風力達到每小時195公里。它於八月二十七日向西北偏北移動，橫過呂宋東北端及減弱為強颱風，隨後於八月二十九日橫過台灣南部及減弱為強烈熱帶風暴。南瑪都於八月三十日在台灣海峽上減弱為熱帶風暴及移動緩慢，八月三十一日早上在福建登陸，並減弱為熱帶低氣壓，黃昏時在福建內陸消散。南瑪都吹襲期間，造成菲律賓至少15人死亡，六人失蹤，20多人受傷。台灣則有一人死亡。南瑪都為福建帶來暴雨，造成70間房屋倒塌，超過12 000公頃農作物受災，直接經濟損失5.32億元人民幣。

塔拉斯(1112)於八月二十四日在關島西北約480公里的北太平洋西部上形成，並向西北偏北移動。它於八月二十五日增強為熱帶風暴，八月二十六日進一步增強為強烈熱帶風暴。塔拉斯於隨後三天移動緩慢，但大致向北推進及繼續增強，中心附近持續風力達到每小時110公里。塔拉斯於八月三十日及三十一日向西北偏西移動，橫過日本以南海域。 它於九月一日轉向西北移動，移近日本，於九月三日轉向北移動，橫過日本四國及本州，翌日進入日本海及減弱為熱帶風暴，九月五日在日本海上變為一個溫帶氣旋。根據報章報導，塔拉斯為日本帶來豪雨，觸發水浸和山泥傾瀉，造成最少46人死亡，50多人失蹤。

九月

熱帶低氣壓奧鹿(1113)於九月二日在硫黃島之東南偏東約1 030公里的北太平西部上形成，並向西至西南移動。它於九月三日採取東北偏北途徑。奧鹿於九月四日在硫黃島東北偏東處增強為熱帶風暴及達到其最高強度，中心附近持續風力達到每小時75公里，並向西北偏北移動。奧鹿於九月六日再度向東北偏北移動，並在日本以東的北太平洋西部上變為一個溫帶氣旋。

熱帶低氣壓玫瑰(1114)於九月七日在沖繩島之東南約960公里的北太平洋西部上形成，並大致向西北移動，當日黃昏增強為熱帶風暴及達到其最高強度，中心附近持續風力達到每小時65公里。玫瑰於九月八日在沖繩島以東處減弱為熱帶低氣壓，九月十日在日本九州西南的東海上進一步減弱為一低壓區。

熱帶低氣壓洛克(1115)於九月十三日在沖繩島之東南偏東約1 140公里的北太平洋西部上形成，並向西北偏北移動，翌日轉向西北偏西移動。洛克於九月十五日增強為熱帶風暴，隨後兩天在沖繩島附近徘徊，並增強為強烈熱帶風暴。它於九月十八日向偏北移動，翌日在沖繩島東北處增強為颱風。洛克於九月二十日加快向東北移動，並在日本以南海域增強為強颱風及達到其最高強度，中心附近持續風力達到每小時155公里。它於九月二十一日橫過日本本州東部，並減弱為颱風，翌日在北海道以東的海域上變為一個溫帶氣旋。洛克為日本多處帶來大雨，觸發山泥傾瀉，造成最少12人死亡、五人失蹤、超過300人受傷。

熱帶低氣壓桑卡(1116)於九月十四日在硫黃島的東南偏東約1 420公里的北太平洋西部上形成，並大致向東北移動，翌日轉向西北移動並於下午增強為熱帶風暴。桑卡於九月十七日增強為強烈熱帶風暴，於九月十八日採取偏北方向移動並在東京東南偏南的北太平洋西部上進一步增強為颱風。它於翌日達到其最高強度，中心附近持續風力達到每小時130公里，並轉向東北移動。桑卡於九月二十日減弱為強烈熱帶風暴，黃昏時在日本以東的北太平洋西部上變為一個溫帶氣旋。

熱帶低氣壓納沙(1117)於九月二十三日在馬尼拉以東約1 840公里的北太平洋西部上形成，並向西北偏西移動。納沙在北太平洋西部上逐漸增強，於九月二十六日在馬尼拉以東約560公里處成為颱風及達到其最高強度，中心附近持續風力達到每小時145公里。納沙於九月二十七日橫過呂宋，當日下午進入南海，隨後兩天橫過南海北部。它於九月二十九日下午在海南島東北部登陸。納沙於九月三十日首先橫過北部灣，下午在越南北部沿岸再次登陸，並逐漸減弱為熱帶風暴，然後於黃昏時橫過越南北部。納沙於十月一日在越南北部消散。

熱帶低氣壓海棠(1118)於九月二十五日在西沙以南約140公里的南海中部上形成，並且緩慢移動，當日下午增強為熱帶風暴及達到其最高強度，中心附近持續風力達到每小時65公里。海棠於九月二十六日向西移動，橫過海南島以南海域，九月二十七日在越南沿岸登陸及減弱為熱帶低氣壓，黃昏時在中南半島上消散。海棠吹襲越南期間，導致四人死亡、另外四人失蹤。

熱帶低氣壓尼格(1119)於九月二十七日在馬尼拉之東北偏東約1 850公里的北太平洋西部上形成，並大致向西移動。它於翌日增強為熱帶風暴，並向西至西南偏西移動，於九月二十九日進一步增強為強烈熱帶風暴。尼格於九月三十日逐漸增強為強颱風，於十月一日早上在馬尼拉東北約300公里處的海域上達到其最高強度，中心附近持續風力達到每小時175公里。其後尼格橫過呂宋，下午較後時間進入南海。它於隨後兩天向西至西北偏西移動橫過南海北部。尼格於十月二日凌晨減弱為颱風，下午減弱為強烈熱帶風暴。它於十月四日進一步減弱為熱帶風暴，當日下午橫過海南島南部，晚間進入北部灣及進一步減弱為熱帶低氣壓。尼格於十月五日向西南移動，橫過北部灣南部，日間在海南島附近海域消散。

十月

熱帶低氣壓榕樹(1120)於十月十日在馬尼拉之東南偏東約 1 420 公里的北太平洋西部上形成，並向西北偏西移動，於翌日達到其最高強度，中心附近持續風力達到每小時 55 公里。榕樹於十月十二日橫過菲律賓中部，翌日轉向西北移動，橫過南海中部。榕樹於十月十四日向西北偏北移動，其後於十月十五日在東沙以南約 160 公里的南海北部上消散。

十一月

二零一一年十一月並無熱帶氣旋在北太平洋西部及南海區域上形成。

十二月

熱帶低氣壓天鷹(1121)於十二月十四日在雅浦島東南偏南約 500 公里的北太平洋西部上形成，並向西北偏西移動。它於十二月十五日增強為熱帶風暴，翌日達到其最高強度，中心附近持續風力達到每小時 85 公里。天鷹於當日黃昏橫過菲律賓南部後於十二月十八日向西移動，進入南海南部。它於十二月十九日向西南偏西移動，並於當日黃昏在越南東南的南海南部上消散。根據報章報導，天鷹吹襲菲律賓期間，引發洪災及山泥傾瀉，造成 1 010 人死亡、超過 1 600 人受傷、約 50 人失蹤，4 000 多棟房屋被毀或受損。

備註：人命傷亡及財物損毀數據是根據報章報導輯錄而成。

Section 2 TROPICAL CYCLONE OVERVIEW FOR 2011

2.1 Review of tropical cyclones in 2011

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

In 2011, only a total of 22 tropical cyclones occurred over the western North Pacific and the South China Sea bounded by the Equator, 45°N, 100° and 180°E, less than the long term (1961-2010) average figure of around 30. This was the fifth lowest on record since 1946. During the year, eight tropical cyclones attained typhoon intensity or above, seven less than the long term (1961-2010) average of 15.

The first tropical cyclone of the year formed in May and the last one in December. Figure 2.1 shows the monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2011.

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

The most intense tropical cyclone in 2011 was Super Typhoon Songda (1102). Songda had an estimated maximum sustained wind speed of 205 km/h and a minimum sea-level pressure of 920 hPa (Table 4.1) when it was located over the western North Pacific about 520 km east-northeast of Manila (Figure 2.3).

The track of Roke (1115) was the most complicated in 2011 (Figure 2.4). After forming over the western North Pacific to the east-southeast of Okinawa on 13 September, Roke moved towards the Ryukyu Islands and gradually strengthened. On 16-17 September, Severe Tropical Storm Roke made a loop in its track and lingered to the east of Okinawa, during which Severe Tropical Storm Sonca (1116) made its way through the western North Pacific to the east of Roke (Figure 2.4).

2.1.2 Tropical cyclones in Hong Kong's area of responsibility

Amongst the 22 tropical cyclones in 2011, 12 occurred inside Hong Kong's area of responsibility (i.e. the area bounded by 10°N, 30°N, 105°E and 125°E), less than the long term annual average figure of 15.6 (Table 2.1). Three of these 12 tropical cyclones developed within Hong Kong's area of responsibility. Altogether, 333 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory in 2011 (Table 4.2).

2.1.3 Tropical cyclones over the South China Sea

Eight tropical cyclones affected the South China Sea bounded by 10°N, 25°N, 105°E and 120°E in 2011. Two of them formed over the area. Six moved into the South China Sea from the western North Pacific.

2.1.4 Tropical cyclones affecting Hong Kong

In 2011, the typhoon season in Hong Kong started on 10 June when Tropical Storm Sarika (1103) moved across the South China Sea and necessitated the issuance of the Standby Signal No.1. The typhoon season ended on 3 October as Severe Tropical Storm Nalgae moved away from Hong Kong and all tropical cyclone warning signals were cancelled.

Five tropical cyclones affected Hong Kong during 2011 (Figure 2.2), slightly less than the long term (1961-2010) average figure of 6 (Table 2.2). These five tropical cyclones were Tropical Storm Sarika (1103) and Tropical Storm Haima (1104) in June, Severe Tropical Storm Nock-ten (1108) in July, Typhoon Nesat (1117) in September and Severe Typhoon Nalgae (1119) in October. The No. 8 SE Gale or Storm Signal was issued during the passage of Nesat, which was the highest tropical cyclone warning signal in 2011. Haima, Nock-ten and Nalgae necessitated the issuance of the No. 3 Strong Wind Signal while Sarika 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 2011 was 185.8 mm (Table 4.8.1). This was 75% below the normal of 745.5 mm and accounted for some 13% of the year's total rainfall of 1 476.7 mm.

Typhoon Nesat (1117), which affected Hong Kong on 27 - 30 September, brought 53.3 mm of rainfall to the Hong Kong Observatory Headquarters, and was the wettest tropical cyclone in 2011.

2.2 Monthly overview

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

JANUARY TO APRIL

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

MAY

Aere (1101) formed as a tropical depression over the western North Pacific about 660 km east-southeast of Manila on 7 May. Moving west-northwestwards, it intensified into a tropical storm that afternoon. Aere moved northwestwards on 8 May and reached its peak intensity with an estimated maximum sustained wind of 85 km/h near its centre. It moved northwards across the northeastern part of Luzon on 9 May, turned to move northeastwards and then weakened into a tropical depression over the seas to the southeast of Taiwan on 10 May. Aere moved across the Ryukyu Islands the following day and dissipated over the seas south of Japan on 12 May. According to press reports, Aere triggered landslides in the northeastern part of Luzon, where at least three people were killed and over 100 000 people evacuated.

Songda (1102) formed as a tropical depression over the western North Pacific about 300 km east-southeast of Yap on 20 May and moved generally west-northwestwards. It intensified into a tropical storm on 22 May and a severe tropical storm the next day. Songda intensified gradually into a severe typhoon and turned to move northwestwards on 25 May. It further intensified into a super typhoon over the Pacific to the east of the Philippines on 26 May, reaching its peak intensity with an estimated maximum sustained wind of 205 km/h near its centre. Songda turned to move northwards over the seas to the southeast of Taiwan and weakened into a severe typhoon on 27 May. It moved northeastwards across the Ryukyu Islands, weakening first into a typhoon the next day and became extratropical over the seas south of Japan on 29 May. According to press reports, one person was killed, one missing and 67 people injured in Japan during the passage of Songda. Electricity supply to a total of 270 000 households was interrupted in Okinawa.

JUNE

Sarika (1103) formed as a tropical depression over the central part of the South China Sea about 650 km south-southeast of Dongsha on 9 June and moved northwestwards. It tracked north-northwestwards and intensified into a tropical storm on the morning of 10 June, reaching its peak intensity with an estimated maximum sustained wind of 65 km/h near its centre. Sarika turned to move northwards across the northeastern part of the South China Sea that afternoon. It made landfall near Shantou on the morning of 11 June and dissipated over Fujian that afternoon.

Haima (1104) formed as a tropical depression over the western North Pacific about 420 km east of Manila on 18 June and moved generally northwestwards, crossing the Luzon Strait in the following evening. Haima moved west to west-southwestwards across the northern part of the South China Sea for the following two days. It turned to move west-northwest to northwestwards on 22 June and intensified into a tropical storm, reaching its peak intensity with an estimated maximum sustained wind of 85 km/h near its centre. Haima made landfall over the coast of western Guangdong on 23 June and moved west-southwestwards across the coastal region of western Guangdong subsequently. It moved across Beibu Wan on 24 June and made landfall over the northern coast of Vietnam that evening. Haima dissipated inland over Laos on 25 June.

Meari (1105) formed as a tropical depression over the western North Pacific about 1 160 km east-southeast of Manila on 21 June and moved northwestwards. It intensified into a tropical storm on 22 June and moved north-northwestwards the following day. Meari intensified into a severe tropical storm on 24 June and turned to move generally northwards across the East China Sea on 25 June, reaching its peak intensity with an estimated maximum wind of 110 km/h near its centre that day. It skirted the coast of Shangdong Peninsula in the evening on 26 June. Meari weakened into a tropical storm on 27 June, turned to move northeastwards and dissipated over the Korean Peninsula subsequently. Meari brought flooding to the Philippines where 15 people were missing. It also affected 33 000 hectares of farmland and destroyed 400 houses in the provinces of Liaoning, Zhejiang and Shangdong.

JULY

Ma-on (1106) formed as a tropical depression over the western North Pacific about 1 430 km east-northeast of Guam on 11 July and moved west to west-northwestwards. It gradually intensified and became a typhoon on 14 July and a severe typhoon on the following day. Ma-on intensified into a super typhoon over the western North Pacific about 530 km southwest of Iwo Jima on 16 July, reaching its peak intensity with an estimated maximum sustained wind of 185 km/h near its centre. Ma-on moved northwestwards and weakened into a severe typhoon on

17 July, and turned to move northwards on 18 July. It weakened into a typhoon and turned to move northeastwards on 19 July, crossing the seas south of Shikoku, Japan. Ma-on made landfall over southern Honshu on 20 July and weakened into a severe tropical storm, but turned to move southeastwards across the seas south of Japan. It weakened into a tropical storm on 21 July. Ma-on turned to move north-northeastwards on 22 July and became an extratropical cyclone over the western North Pacific east of Japan on 24 July. At least one person was killed and 60 injured in Japan during the passage of Ma-on.

A tropical depression formed over the western North Pacific about 1 340 km east of Manila on 15 July and was named Tokage (1107). The estimated maximum sustained wind near its centre was about 45 km/h. Moving eastwards, the tropical depression dissipated over the western North Pacific on 16 July.

Nock-ten (1108) formed as a tropical depression over the western North Pacific about 790 km east-southeast of Manila on 25 July and moved generally west-northwestwards. Nock-ten intensified into a tropical storm and turned to move northwestwards the next day. It intensified into a severe tropical storm on 27 July, crossing Luzon that afternoon. Nock-ten moved generally west to west-northwestwards across the northern part of the South China Sea for the following two days, reaching its peak intensity with an estimated maximum sustained wind of 105 km/h near its centre. It made landfall over Hainan Island on 29 July. Moving across Beibu Wan on 30 July, Nock-ten weakened into a tropical storm. It made landfall again over the coast of northern Vietnam that evening and subsequently dissipated inland over Laos on 31 July.

Muifa (1109) formed as a tropical depression over the western North Pacific about 500 km south of Guam on 26 July and moved west-northwestwards. It intensified into a tropical storm on 28 July and turned to move northwards on 29 July. Muifa became slow moving and intensified gradually into a severe typhoon on 30 July. It intensified further into a super typhoon over the western North Pacific to the south-southeast of Okinawa on 31 July with an estimated maximum sustained wind of 185 km/h near its centre, while moving generally northwards across the western North Pacific. Muifa weakened into a severe typhoon on 1 August, turned to move west-northwestwards on 3 August and passed to the southwest of Okinawa on 5 August on a northwesterly track. It weakened into a typhoon on 6 August and turned to move north-northwestwards across the East China Sea. Muifa weakened into a severe tropical storm on 8 August and made landfall over the northwestern coast of DPR Korea. It became an extratropical cyclone over northeastern China on 9 August. According to press reports, at least four people were killed and two others missing in the Republic of Korea during the passage of Muifa. Electricity supply to 320 000 houses were also interrupted. In eastern and northeastern China, over 1 800 houses collapsed and 12 500 houses were damaged. The direct economic losses amounted to 4 235 million RMB.

AUGUST

Merbok (1110) formed as a tropical depression over the western North Pacific about 660 km northwest of Wake Island on 3 August. Moving west-northwestwards, Merbok intensified into a tropical storm that afternoon. It turned to move northwestwards on 5 August. Merbok moved northwards and intensified into a severe tropical storm to the east-northeast of Iwo Jima on 6 August, reaching its peak intensity with an estimated maximum sustained wind of 90 km/h near its centre. It turned to move northeastwards on 7 August. Merbok weakened into a tropical storm on 9 August and became an extratropical cyclone to the east of Hokkaido over the western North Pacific on 10 August.

A tropical depression formed over the western North Pacific about 1 080 km south of Nagoya on 10 August. The tropical depression remained weak with an estimated maximum sustained wind of 45 km/h near its centre. Moving northeastwards for the following two days, the tropical depression dissipated over the western North Pacific southeast of Tokyo on 12 August.

Nanmadol (1111) formed as a tropical depression over the western North Pacific about 700 km east of Manila on 23 August and was almost stationary. It intensified into a tropical storm that evening. Moving westwards, it intensified into a severe tropical storm on 24 August and further into a typhoon on the following day. Nanmadol moved northwestwards and intensified gradually into a super typhoon over the Pacific to the northeast of Manila on 26 August, reaching its peak intensity with an estimated maximum sustained wind of 195 km/h near its centre. It crossed the northeastern tip of Luzon on a north-northwesterly track on 27 August and weakened into a severe typhoon, and subsequently crossed southern Taiwan and weakened into a severe tropical storm on 29 August. Nanmadol weakened into a tropical storm over the Taiwan Strait on 30 August and became slow moving. It made landfall over Fuijian on the morning of 31 August and weakened into a tropical depression, dissipating inland over Fuijian in the evening. During the passage of Nanmadol, at least 15 people were killed, six others missing and over 20 people injured in the Philippines. One person was killed in Taiwan. Nanmadol brought rainstorms to Fuijian where about 70 houses collapsed, over 12 000 hectares of crops were damaged and the direct economic losses amounted to 532 million RMB.

Talas (1112) formed as a tropical depression over the western North Pacific about 480 km northwest of Guam on 24 August and moved north-northwestwards. It intensified into a tropical storm on 25 August and further into a severe tropical storm on 26 August. For the following three days, Talas became slow-moving but generally travelled northwards and continued to intensify, with the estimated maximum sustained wind near its centre reaching 110 km/h. Talas turned to move west-northwestwards across the seas south of Japan on the last two days of the month. It moved northwestwards towards Japan on 1 September. Talas turned to move northwards across Shikoku and Honshu, Japan on 3 September. It entered the Sea of Japan on the following day and weakened into a tropical storm. Talas became an extratropical cyclone over the Sea of Japan on 5 September. According to press reports, torrential rain brought about by Talas triggered flooding and landslides in Japan, where at least 46 people were killed and some 50 people missing.

SEPTEMBER

Noru (1113) formed as a tropical depression over the western North Pacific about 1 030 km east-southeast of Iwo Jima on 2 September and moved west to southwestwards. It took up a north-northeasterly track on 3 September. Noru intensified into a tropical storm to the east-northeast of Iwo Jima on 4 September, reaching its peak intensity with an estimated maximum sustained wind of 75 km/h near its centre and moved north-northwestwards. Noru resumed moving north-northeastwards and became an extratropical cyclone over the western North Pacific to the east of Japan on 6 September.

Kulap (1114) formed as a tropical depression over the western North Pacific about 960 km southeast of Okinawa on 7 September and moved generally northwestwards. It intensified into a tropical storm that evening, reaching its peak intensity with an estimated maximum sustained wind of 65 km/h near its centre. Kulap weakened into a tropical depression to the east of Okinawa on 8 September. It weakened further into an area of low pressure over the East China Sea southwest of Kyushu, Japan on 10 September.

Roke (1115) formed as a tropical depression over the western North Pacific about 1 140 km east-southeast of Okinawa on 13 September and moved north-northwestwards. It turned to move west-northwestwards the following day and intensified into a tropical storm on 15 September. Roke lingered near Okinawa for the following two days and intensified into a severe tropical storm. It took up a northward track on 18 September and intensified to a typhoon to the northeast of Okinawa on 19 September. Roke speeded up to move northeastwards on 20 September and intensified into a severe typhoon over the seas south of Japan, reaching its peak intensity with an estimated maximum sustained wind of 155 km/h near its centre. It crossed eastern Honshu, Japan and weakened into a typhoon on 21 September. Roke became an extratropical cyclone over the seas east of Hokkaido on 22 September. Roke brought torrential rain to many parts of Japan triggering landslides. At least 12 people were killed, another five missing and over 300 people injured in Japan.

Sonca (1116) formed as a tropical depression over the western North Pacific about 1 420 km east-southeast of Iwo Jima on 14 September and moved generally northeastwards. It turned to move northwestwards and intensified into a tropical storm on the following afternoon. Sonca intensified into a severe tropical storm on 17 September. While moving generally on a northward track, it further intensified into a typhoon to the south-southeast of Tokyo on 18 September. Sonca reached its peak intensity with an estimated maximum sustained wind of 130 km/h near its centre on 19 September and turned to move northeastwards. Sonca weakened into a severe tropical storm on 20 September and became an extratropical cyclone over the western North Pacific to the east of Japan that evening.

Nesat (1117) formed as a tropical depression over the western North Pacific about 1 840 km east of Manila on 23 September and moved west-northwestwards. It gradually intensified over the western North Pacific and became a typhoon about 560 km east of Manila on 26 September, reaching its peak intensity with an estimated maximum sustained wind of 145 km/h near its centre. On 27 September, Nesat crossed Luzon and entered the South China Sea in the afternoon. It moved across the northern part of the South China Sea for the following two days and made landfall over the northeastern part of Hainan Island on the afternoon of 29 September. On 30 September, Nesat first moved across Beibu Wan, then made landfall again over the coast of northern Vietnam in the afternoon and weakened gradually into a tropical storm. It then moved across northern Vietnam that evening. Nesat dissipated over northern Vietnam on 1 October.

Haitang (1118) formed as a tropical depression over the central part of the South China Sea about 140 km south of Xisha on 25 September and moved slowly. Haitang intensified into a tropical storm that afternoon, reaching its peak intensity with an estimated maximum sustained wind of 65 km/h near its centre. Haitang moved westwards across the seas south of Hainan on 26 September. It made landfall over the coast of Vietnam on 27 September and weakened into a tropical depression, dissipating over Indochina that evening. Four people were killed and another four missing in Vietnam during the passage of Haitang.

Nalgae (1119) formed as tropical depression over the western North Pacific about 1 850 km east-northeast of Manila on 27 September and moved generally westwards. It intensified into a tropical storm on the following day and moved west to west-southwestwards. Nalgae intensified into a severe tropical storm on 29 September. It gradually intensified into a severe typhoon on 30 September and attained its peak intensity with an estimated maximum sustained wind of 175 km/h near its centre over the seas about 300 km northeast of Manila on the morning of 1 October. Nalgae then crossed Luzon and entered the South China Sea in the late afternoon. It moved west to west-northwestwards across the northern part of the South China Sea for the following two days. Nalgae weakened into a typhoon in the early hours on 2 October and a severe

tropical storm that afternoon. It weakened further into a tropical storm on 4 October and crossed the southern part of Hainan Island that afternoon, entering Beibu Wan and weakening further into a tropical depression at night. Nalgae moved southwestwards across the southern part of Beibu Wan on 5 October and dissipated over the seas near Hainan that day.

OCTOBER

Banyan (1120) formed as a tropical depression over the western North Pacific about 1 420 km east-southeast of Manila on 10 October and moved west-northwestwards, reaching its peak intensity with an estimated maximum sustained wind of 55 km/h near its centre on the following day. It crossed the central part of the Philippines on 12 October and turned to move northwestwards across the central part of the South China Sea on the following day. Banyan moved north-northwestwards on 14 October and dissipated over the northern part of the South China Sea about 160 km south of Dongsha on 15 October.

NOVEMBER

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

DECEMBER

Washi (1121) formed as a tropical depression over the western North Pacific about 500 km south-southeast of Yap on 14 December and moved west-northwestwards. It intensified into a tropical storm on 15 December, reaching its peak intensity with an estimated maximum sustained wind of 85 km/h near its centre on the following day and crossed the southern Philippines that evening. Washi entered the southern part of the South China Sea on a westward track on 18 December. It turned to move west-southwestwards on 19 December and dissipated over the southern part of the South China Sea to the southeast of Vietnam that evening. According to press reports, Washi brought flash floods and landslip to the Philippines where 1 010 people were killed, over 1 600 people injured and around 50 people missing. Some 4 000 houses were also damaged or destroyed.

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

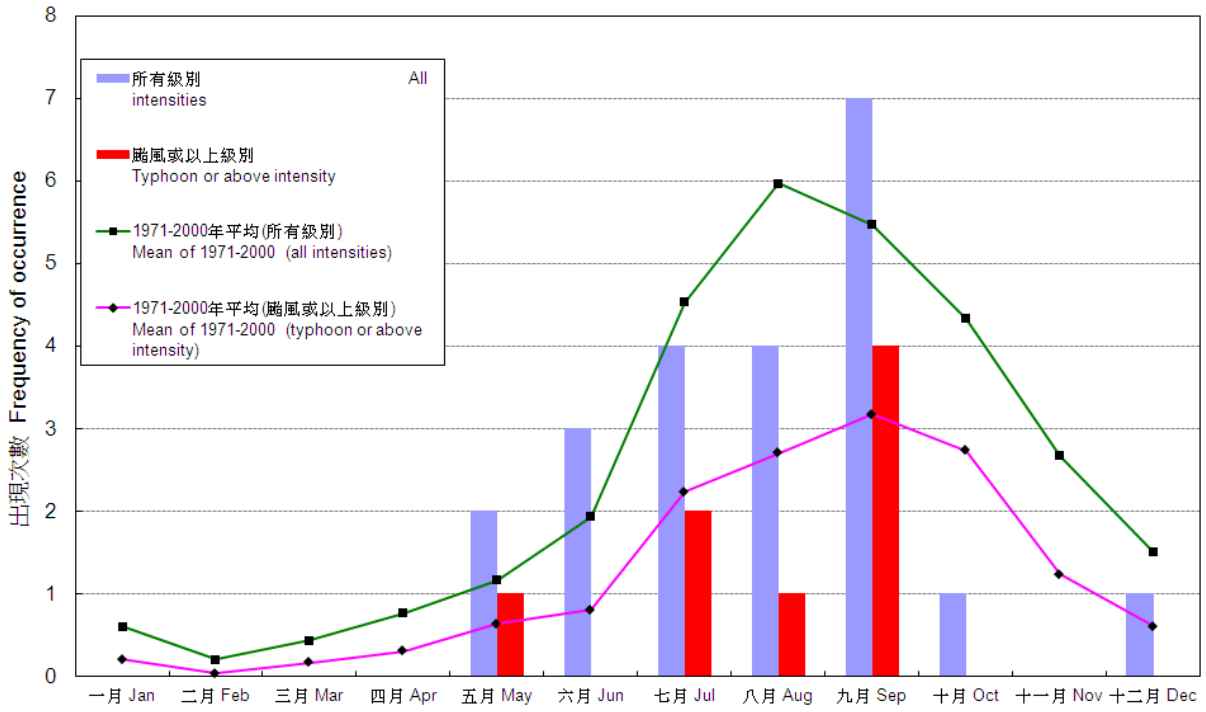


圖 2.1　二零一一年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈（以熱帶氣旋在該月初次出現為準）。

Figure 2.1 Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2011 (based on the first occurrence of the tropical cyclone in the month).

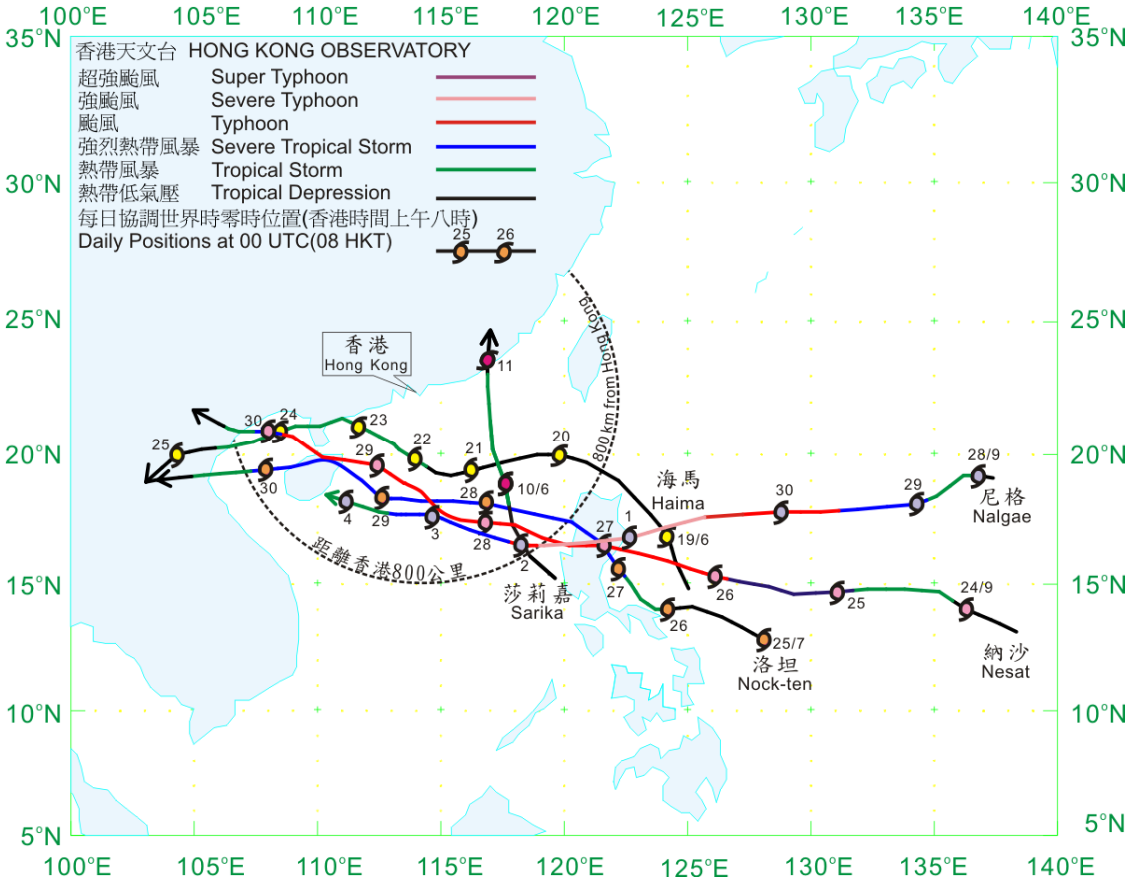


圖 2.2　二零一一年五個影響香港的熱帶氣旋的路徑圖。

Figure 2.2 Tracks of the five tropical cyclones affecting Hong Kong in 2011.

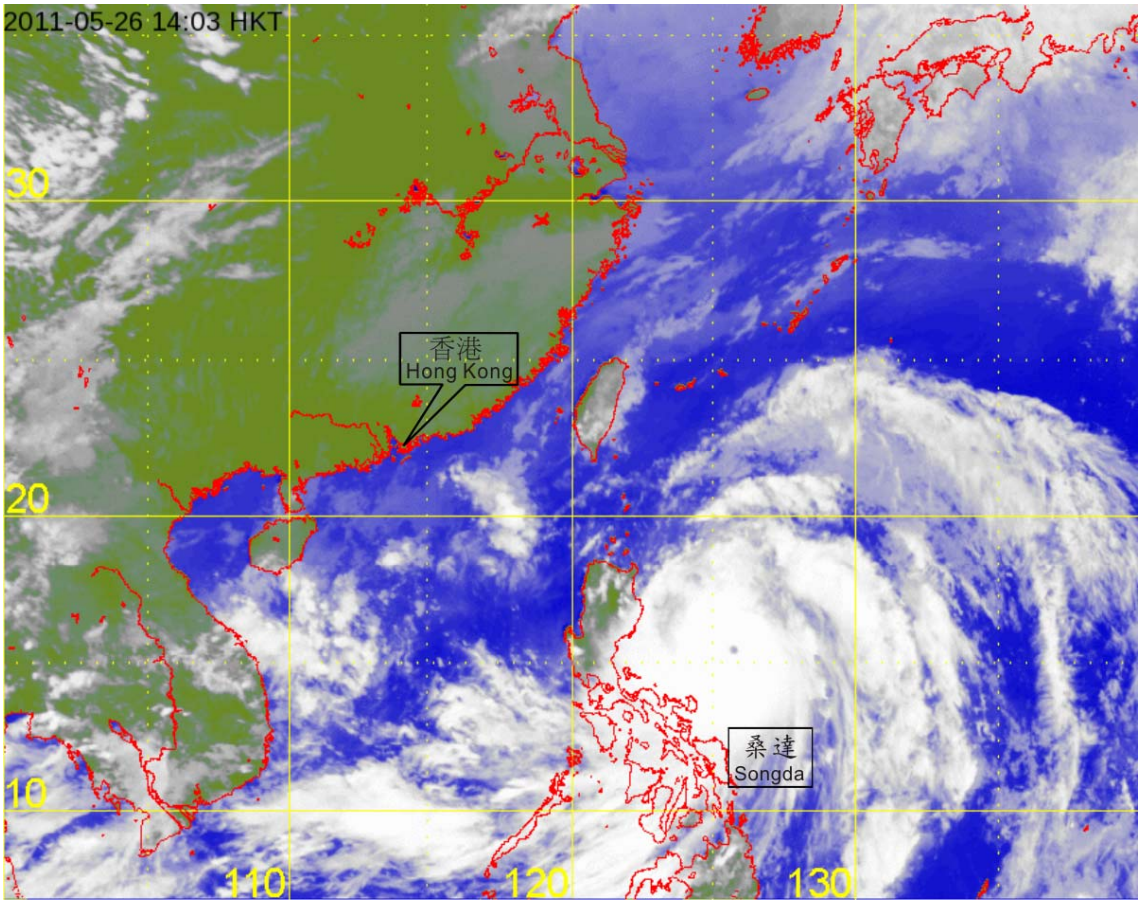


圖 2.3　超強颱風桑達(1102)在二零一一年五月二十六日下午2時的紅外線衛星圖片。當時桑達位於馬尼拉東北偏東約520公里的北太平洋西部上，最高風速估計為每小時205公里，而最低中心氣壓為920百帕斯卡，是二零一一年區內風力最強的熱帶氣旋。

Figure 2.3　Infra-red satellite imagery at 2 p.m. on 26 May 2011 of Super Typhoon Songda (1102) at peak intensity. Songda, the most intense tropical cyclone in the region in 2011, was centred over the western North Pacific about 520 km east-northeast of Manila with an estimated maximum sustained winds of 205 km/h and a minimum sea-level pressure of 920 hPa at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

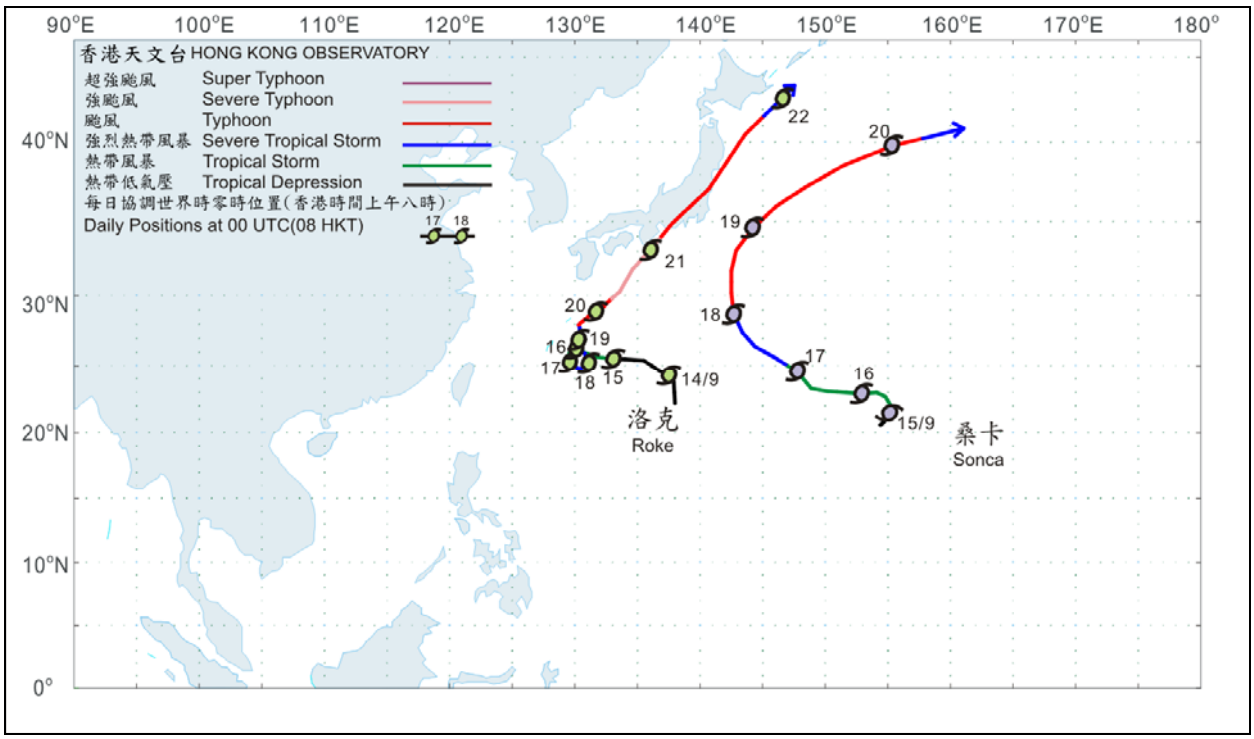


圖2.4　　洛克(1115)及桑卡(1116)的路徑圖。

Figure 2.4　　Tracks of Roke (1115) and Sonca (1116).

表 2.1　在香港責任範圍內(10º-30ºN, 105º-125ºE)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 (10º-30ºN, 105º-125ºE), 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
2004			1		1	3	2	2	2	1	2	1	15
2005			1				2	3	4	3	2		15
2006					1	1	3	3	4	1	2	1	16
2007							1	4	3	1	3		12
2008				1	2	1	2	3	5	1	2		17
2009					2	2	3	2	3	4	1		17
2010							3	4	2	2			11
2011					2	3	1	2	2	2			12
平均 Average (1961-2010)	0.1	0.0	0.1	0.2	0.8	1.4	2.6	3.1	2.7	2.1	1.7	0.6	15.6

表 2.2　　影響香港的熱帶氣旋之每月分佈

TABLE 2.2　Monthly distribution of tropical cyclones affecting Hong Kong

年份 Year	月份 # Month #												共 Total
	一月 Jan	二月 Feb	三月 Mar	四月 Apr	五月 May	六月 Jun	七月 Jul	八月 Aug	九月 Sep	十月 Oct	十一月 Nov	十二月 Dec	
1961					1		3		2				6
1962							2	1		1			4
1963						1	1	1	1				4
1964					1	1		1	4	3			10
1965						1	2		2		1		6
1966					1		3	1	1				6
1967				1		1	1	3		1	1		8
1968							1	3	2				6
1969							1		2	1			4
1970							1	2	1	2			6
1971					1	2	3	1	1	1			9
1972						2	1	1			1		5
1973							2	3	2	2			9
1974						2	1		2	4	1	1	11
1975						1		1	2	3			7
1976						1	1	2	1				5
1977						1	3	1	3				8
1978				1			1	2	2	2			8
1979							2	2	2				6
1980					1	1	4	1	2	1			10
1981						1	2	1	1				5
1982						1	2		1	1			5
1983							3		2	2			7
1984						1	1	2	1				5
1985						1	1		2	1			5
1986							1	2		1			4
1987						1		2	1	1			5
1988					1	1	1		1	2			6
1989					1	1	2		1	2			7
1990					1	2	1	1	1				6
1991							3	1	2				6
1992						1	3	1					5
1993						1	1	2	3	1	1		9
1994						2		1	1				4
1995							1	4	2	1			8
1996							2	2	2	1			7
1997							1	1					2
1998								2	1	2			5
1999				1		1	1	1	3	1			8
2000						1	2	2	1		1		7
2001						2	2	1	1				6
2002								2	1				3
2003							2	1	1				4
2004						1	1	1					3
2005								1	2				3
2006					1	1		3	1	1			7
2007								1	1				2
2008				1		1		2	1	1			6
2009						2	2	1	3				8
2010							2	1	1	1			5
2011						2	1		1	1			5
平均 Average (1961-2010)	0.0	0.0	0.0	0.1	0.2	0.7	1.5	1.3	1.5	0.9	0.1	0.0	6.0

熱帶氣旋警告信號首次發出的月份。

#The month that the tropical cyclone warning signal was first issued.

第三節　二零一一年影響香港的熱帶氣旋

3.1　熱帶風暴莎莉嘉(1103)：二零一一年六月九日至十一日

莎莉嘉是香港天文台在二零一一年首個需要發出警告信號的熱帶氣旋。

熱帶低氣壓莎莉嘉於六月九日在東沙東南偏南約 650 公里的南海中部上形成，並向西北移動。它於六月十日早上向西北偏北移動，並增強為熱帶風暴及達到其最高強度，中心附近持續風力達到每小時 65 公里。莎莉嘉當日下午轉向北移動，時速約 22 公里，橫過南海東北部。它於六月十一日黎明時份減弱為熱帶低氣壓，早上在汕頭附近登陸，下午在福建消散。根據報章報導，莎莉嘉為菲律賓帶來大雨，造成六人死亡。莎莉嘉亦為廣東東部帶來大雨，導致農作物被毀。與莎莉嘉殘餘相連的暴雨在福建觸發山泥傾瀉，造成七人死亡。此外，莎莉嘉吹襲期間，台灣一觀光船出海後受風暴環流衝擊，導致 22 名乘客受傷。

香港天文台於六月十日上午 9 時 40 分發出一號戒備信號，當時莎莉嘉位於香港東南約 480 公里。當日香港主要吹輕微至和緩東南風。香港天文台總部當日下午 6 時 06 分錄得最低瞬時海平面氣壓 1001.7 百帕斯卡，當時莎莉嘉位於香港東南偏東約 330 公里。莎莉嘉於六月十一日上午 3 時左右最接近香港，並在香港東北偏東約 280 公里處掠過。當日早上本港轉吹和緩西南風，風勢間中疾勁。隨着莎莉嘉減弱及在香港東北偏東約 310 公里處橫過沿岸，天文台於上午 7 時 15 分取消所有熱帶氣旋警告信號。莎莉嘉影響香港期間各站錄得的最高風速可參考表 3.1.1。

六月十日香港大致天晴及天氣酷熱。六月十一日早上本港有狂風驟雨。當日下午間中有大驟雨及狂風雷暴，天文台在下午 5 時 50 分發出黃色暴雨警告信號，直至下午 8 時 05 分取消。大嶼山及新界部份地區錄得超過 50 毫米雨量，而新田及大嶼山北部更錄得超過 100 毫米。

六月十一日下午，落馬洲有一輛小巴在大雨期間被水圍困，事件中無人受傷。

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

Section 3 TROPICAL CYCLONES AFFECTING HONG KONG IN 2011

3.1 Tropical Storm Sarika (1103): 9 – 11 June 2011

Sarika was the first tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2011.

Sarika formed as a tropical depression over the central part of the South China Sea about 650 km south-southeast of Dongsha on 9 June and moved northwestwards. It tracked north-northwestwards and intensified into a tropical storm on the morning of 10 June, reaching its peak intensity with an estimated maximum sustained wind of 65 km/h near its centre. Sarika turned to move northwards at about 22 km/h across the northeastern part of the South China Sea that afternoon. It weakened into a tropical depression around dawn on 11 June, making landfall near Shantou that morning and dissipated over Fujian in the afternoon. According to press reports, Sarika brought heavy rain to the Philippines where six people were killed. It also brought rainstorms to eastern Guangdong, bringing damages to crops there. In Fujian, rainstorms associated with the remnant of Sarika triggered landslides, killing seven people. Twenty-two passengers aboard a sight-seeing cruise were also injured over the seas in Taiwan during the passage of Sarika.

In Hong Kong, the Standby Signal No. 1 was issued at 9:40 a.m. on 10 June when Sarika was about 480 km southeast of Hong Kong. Winds in Hong Kong were mainly light to moderate from the southeast that day. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1001.7 hPa was recorded at 6:06 p.m. that day when Sarika was located about 330 km to the east-southeast. Sarika was closest to Hong Kong at around 3 a.m. on 11 June passing about 280 km to the east-northeast and winds turned to moderate southwesterlies, occasionally gusty that morning. All signals were cancelled at 7:15 a.m. on 11 June as Sarika weakened and crossed the coast about 310 km to the east-northeast of Hong Kong. The maximum winds recorded at various stations during the passage of Sarika are given in Table 3.1.1.

The weather was mainly fine and very hot on 10 June. Squally showers affected Hong Kong on the morning of 11 June. There were occasional heavy showers with squally thunderstorms that afternoon and evening. The Amber Rainstorm Warning Signal was issued at 5:50 p.m. that day and was cancelled at 8:05 p.m. More than 50 millimetres of rainfall were recorded over the Lantau Island and parts of the New Territories, with the rainfall at San Tin and northern Lantau exceeding 100 millimetres.

In Hong Kong, a minibus was trapped by flood waters in Lok Ma Chau during the downpour on the afternoon of 11 June. No one was injured during the incident.

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

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

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

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東南	SE	22	10/6	16:11	東南	SE	14	10/6	17:00
中環碼頭	Central Pier	東北偏東	ENE	23	10/6	16:44	東	E	16	10/6	19:00
		東北偏東	ENE	23	10/6	16:48					
長洲	Cheung Chau	西北偏西	WNW	38	11/6	06:41	西北偏西	WNW	20	11/6	07:00
長洲泳灘	Cheung Chau Beach	西	W	40	11/6	06:43	東南偏東	ESE	13	10/6	18:00
青洲	Green Island	東南偏南	SSE	34	10/6	16:30	南	S	30	10/6	17:00
香港國際機場	Hong Kong International Airport	西南偏西	WSW	45	11/6	04:58	東南偏南	SSE	19	10/6	18:00
							東南偏南	SSE	19	10/6	19:00
啟德	Kai Tak	西	W	31	11/6	07:04	東南	SE	19	10/6	12:00
京士柏	King's Park	東	E	27	10/6	16:28	東南偏東	ESE	13	10/6	17:00
流浮山	Lau Fau Shan	東南	SE	36	10/6	17:36	東南	SE	23	10/6	18:00
昂坪	Ngong Ping	西	W	51	11/6	06:27	西	W	31	11/6	07:00
北角	North Point	東	E	31	10/6	16:02	東	E	22	10/6	17:00
		東	E	31	10/6	16:25					
坪洲	Peng Chau	東南偏南	SSE	25	10/6	15:09	南	S	13	10/6	16:00
							南	S	13	10/6	17:00
平洲	Ping Chau	東南	SE	22	10/6	15:45	東南偏南	SSE	7	10/6	16:00
西貢	Sai Kung	南	S	25	10/6	16:03	南	S	20	10/6	16:00
沙洲	Sha Chau	西南偏南	SSW	31	11/6	05:07	東南	SE	22	10/6	21:00
		西南偏南	SSW	31	11/6	05:10					
沙螺灣	Sha Lo Wan	西南偏南	SSW	31	11/6	05:17	東南	SE	16	10/6	18:00
沙田	Sha Tin	東南	SE	30	10/6	16:29	東	E	14	10/6	17:00
石崗	Shek Kong	南	S	20	10/6	16:13	南	S	9	10/6	17:00
		東南偏南	SSE	20	10/6	16:54					
九龍天星碼頭	Star Ferry (Kowloon)	西	W	27	11/6	06:45	東	E	16	10/6	19:00
打鼓嶺	Ta Kwu Ling	東	E	25	10/6	15:23	東	E	12	10/6	16:00
大美督	Tai Mei Tuk	東南	SE	25	10/6	16:07	東	E	14	10/6	19:00
		東南	SE	25	10/6	16:34					
大帽山	Tai Mo Shan	西南	SW	34	11/6	04:45	東南偏東	ESE	23	10/6	23:00
							西南	SW	23	11/6	05:00
							西南	SW	23	11/6	06:00
塔門	Tap Mun	東南	SE	31	10/6	15:49	東南	SE	20	10/6	17:00
大老山	Tate's Cairn	東	E	31	10/6	20:17	東	E	23	10/6	20:00
		東	E	31	10/6	20:19	東南偏東	ESE	23	10/6	23:00
鯽魚湖	Tsak Yue Wu	西南偏南	SSW	20	10/6	15:36	西南偏南	SSW	7	10/6	17:00
將軍澳	Tseung Kwan O	東南偏東	ESE	22	10/6	11:10	東北	NE	9	10/6	10:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	25	10/6	18:18	東南	SE	13	10/6	19:00
屯門政府合署	Tuen Mun Government Offices	東南偏南	SSE	34	10/6	15:33	東南	SE	20	10/6	18:00
		東南偏南	SSE	34	10/6	17:08					
		東南	SE	34	10/6	17:51					
橫瀾島	Waglan Island	東南	SE	22	10/6	15:47	東南	SE	13	10/6	16:00
							東	E	13	10/6	20:00
濕地公園	Wetland Park	南	S	27	10/6	17:00	南	S	13	10/6	16:00
黃竹坑	Wong Chuk Hang	東南	SE	25	10/6	13:49	東南偏南	SSE	14	10/6	14:00

表 3.1.2　莎莉嘉影響香港期間，香港天文台總部及其他各站所錄得的日雨量

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

站 (參閱圖 3.1.2) Station (See Fig. 3.1.2)			六月十日 10 Jun	六月十一日 11 Jun	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory			0.0	11.6	11.6
長洲 Cheung Chau (CCH)			[0.5]	[6.0]	[6.5]
香港國際機場 Hong Kong International Airport (HKA)			0.0	26.1	26.1
N05	粉嶺	Fanling	0.0	8.5	8.5
N13	糧船灣	High Island	0.0	2.5	2.5
K04	佐敦谷	Jordan Valley	0.0	[21.0]	[21.0]
N06	葵涌	Kwai Chung	0.0	24.5	24.5
H12	半山區	Mid Levels	0.0	13.5	13.5
H21	淺水灣	Repulse Bay	0.0	7.0	7.0
N09	沙田	Sha Tin	0.0	3.5	3.5
H19	筲箕灣	Shau Kei Wan	0.0	0.0	0.0
SEK	石崗	Shek Kong	0.0	[41.0]	[41.0]
K06	蘇屋邨	So Uk Estate	0.0	8.0	8.0
R31	大美督	Tai Mei Tuk	0.0	13.5	13.5
R21	踏石角	Tap Shek Kok	0.0	4.5	4.5
N17	東涌	Tung Chung	0.0	125.5	125.5
R27	元朗	Yuen Long	0.0	8.5	8.5

註：　[　] 基於不齊全的每小時雨量數據。

Note :　[　] Based on incomplete hourly data.

表 3.1.3　莎莉嘉影響香港期間，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 Sarika

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	1.87	11/6	05:32	0.15	10/6	19:33
石壁	Shek Pik	1.86	11/6	05:17	0.11	10/6	19:06
大廟灣	Tai Miu Wan	1.70	11/6	03:47	0.10	10/6	19:34
大埔滘	Tai Po Kau	1.82	11/6	05:42	0.19	10/6	20:47
尖鼻咀	Tsim Bei Tsui	2.18	11/6	06:20	0.19	10/6	21:07
橫瀾島	Waglan Island	1.91	11/6	05:37	0.17	10/6	19:34

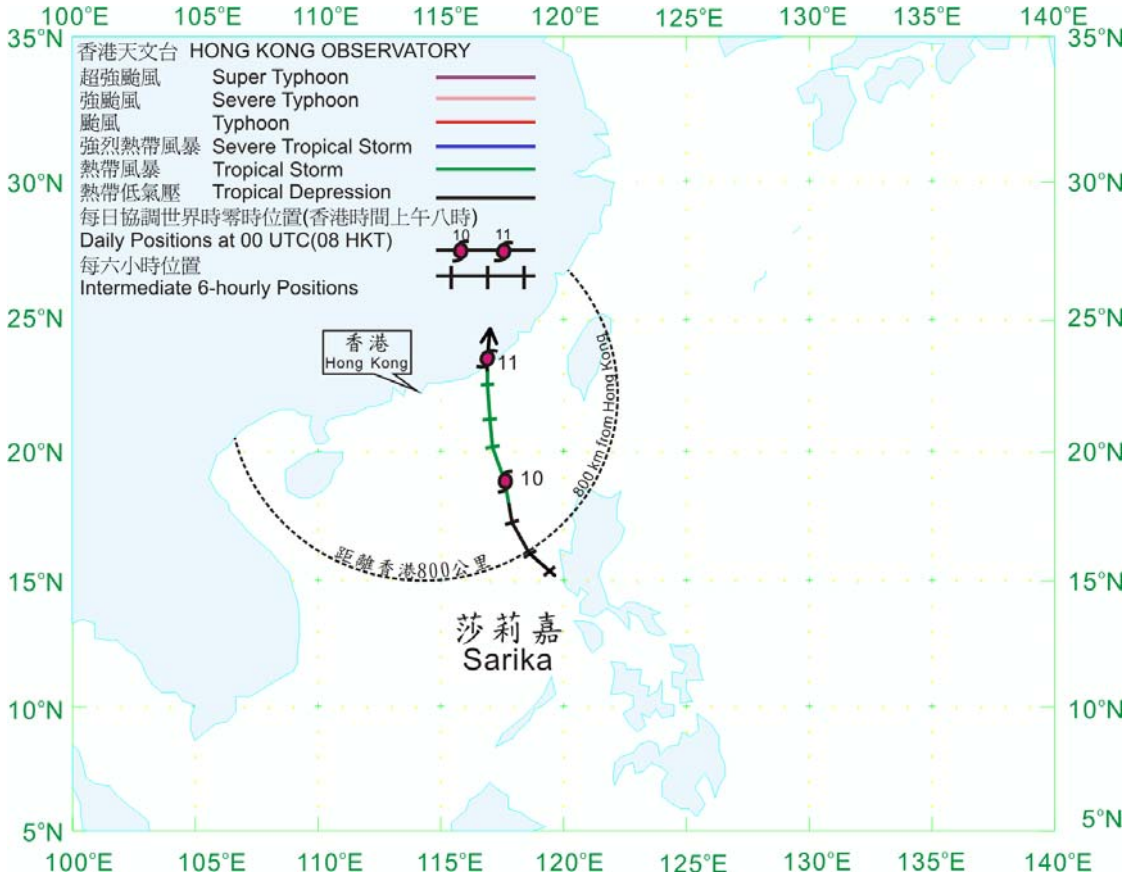


圖 3.1.1　莎莉嘉（1103）在二零一一年六月九日至十一日的路徑圖。

Figure 3.1.1　Track of Sarika (1103) for 9 – 11 June 2011.

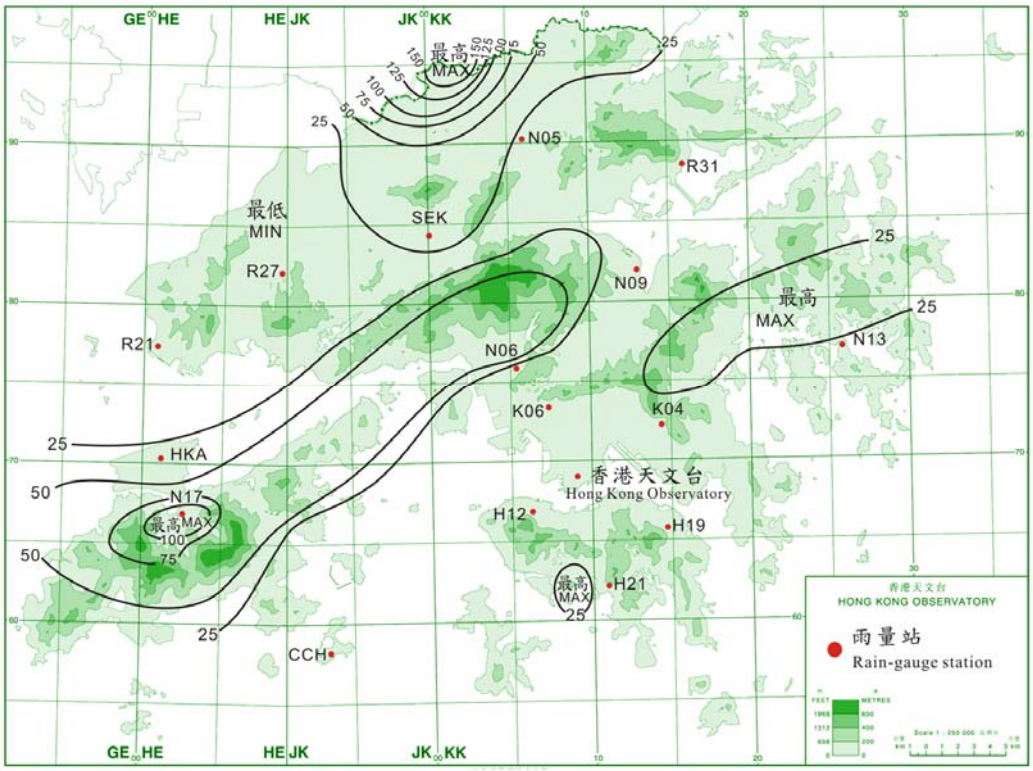


圖 3.1.2　二零一一年六月十日至十一日的雨量分佈(等雨量線單位為毫米)。

Figure 3.1.2　Rainfall distribution for 10 – 11 June 2011 (isohyets are in millimetres).

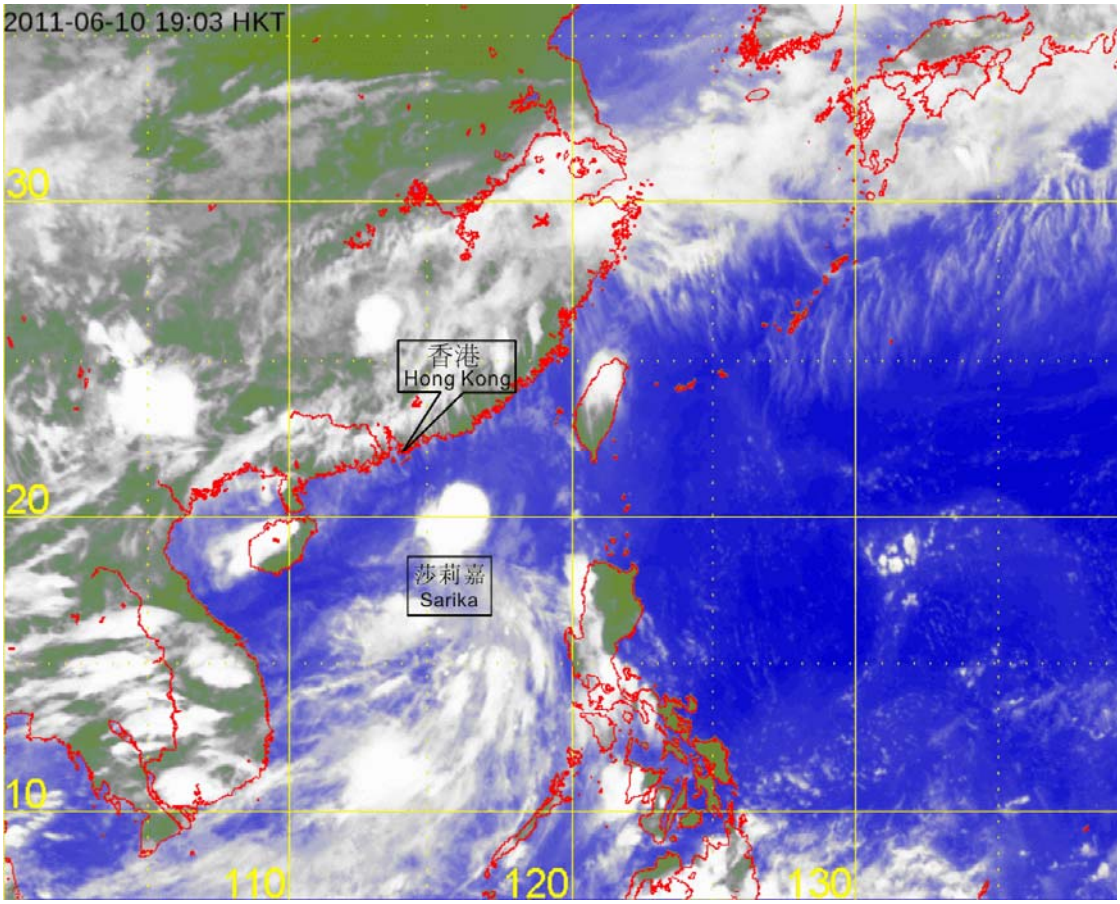


圖 3.1.3　熱帶風暴莎莉嘉在二零一一年六月十日下午 7 時的紅外線衛星圖片。當時莎莉嘉集結在香港東南偏東約 320 公里，並達到其最高強度，中心附近估計最高持續風速達到每小時 65 公里。

Figure 3.1.3　Infra-red satellite imagery at 7 p.m. on 10 June 2011 of Tropical Storm Sarika. Sarika was located about 320 km east-southeast of Hong Kong and at its peak intensity with estimated maximum sustained winds of 65 kilometres per hour near its centre at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

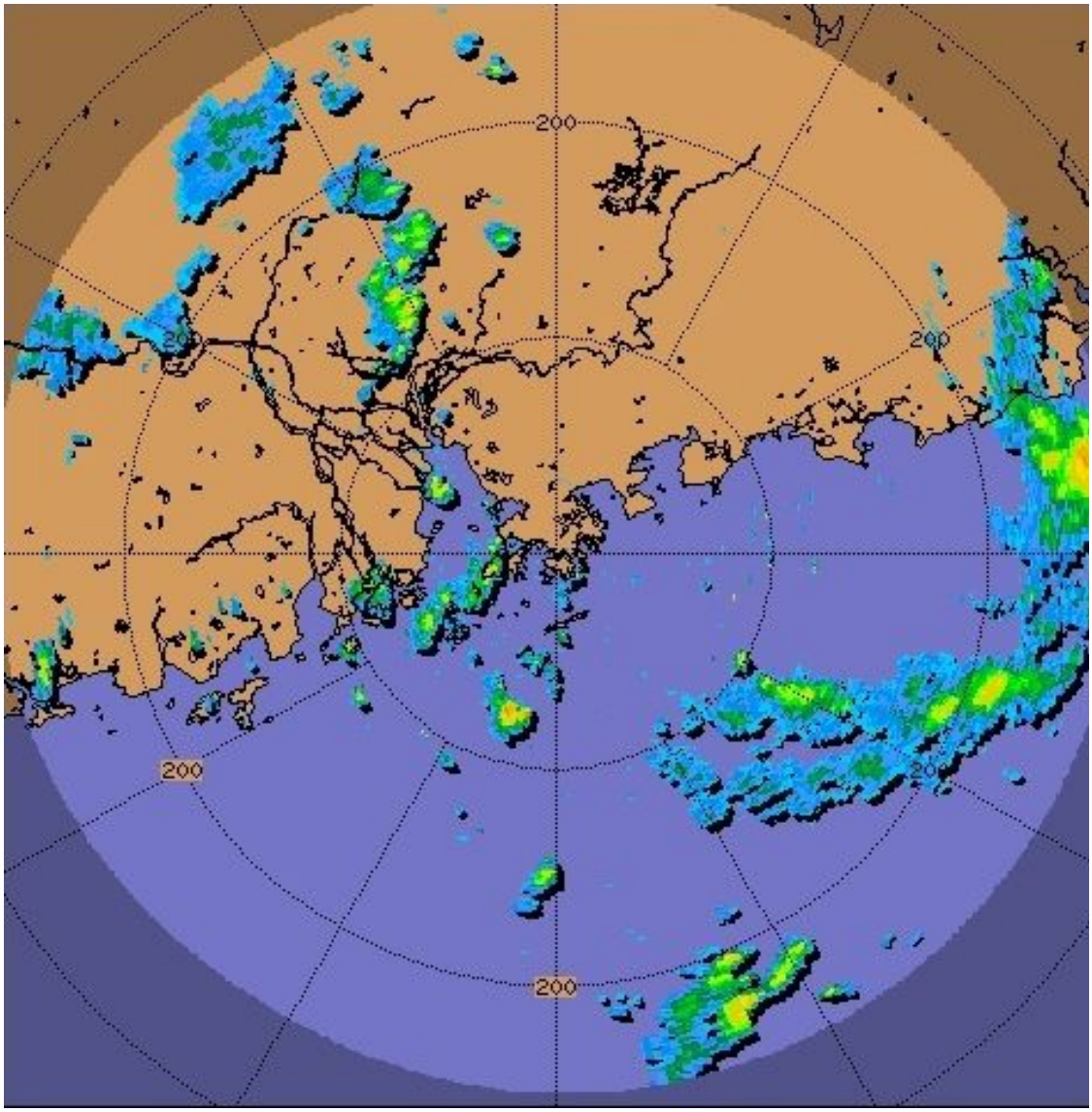


圖 3.1.4　二零一一年六月十一日上午 5 時的雷達回波圖像，當時莎莉嘉中心正集結在香港東北偏東約 285 公里，其外圍雨帶正影響廣東東部及南海東北部。

Figure 3.1.4　Radar echoes captured at 5:00 a.m. on 11 June 2011. The centre of Sarika was located about 285 km east-northeast of Hong Kong and its outer rainbands were affecting the eastern part of Guangdong and the northeastern part of the South China Sea.

3.2 熱帶風暴海馬(1104)：二零一一年六月十八日至二十五日

海馬是香港天文台在二零一一年第二個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓海馬於六月十八日在馬尼拉以東約420公里的北太平洋西部上形成，並大致向西北移動。它於六月十九日黃昏轉向西北偏西移動，橫過呂宋海峽。海馬於隨後兩天採取西至西南偏西的路徑，橫過南海北部。海馬於六月二十二日轉向西北偏西至西北移動，時速約12公里，並增強為熱帶風暴，黃昏時達到其最高強度，中心附近估計最高持續風速達到每小時85公里。海馬於六月二十三日早上在香港西南偏西約300公里的廣東西部沿岸登陸，下午它向西南偏西移動，掠過廣東西部沿岸地區。海馬於六月二十四日橫過北部灣，黃昏時在越南北部沿岸登陸，翌日凌晨減弱為熱帶低氣壓，黃昏在老撾內陸消散。根據報章報導，海馬在越南造成至少16人死亡、四人失蹤、63人受傷。

香港天文台於六月二十日下午 9 時 35 分發出一號戒備信號，當時海馬位於香港東南約 420 公里。當日黃昏香港吹輕微至和緩東風，翌日轉吹清勁東風，離岸及高地間中吹強風。由於海馬逐漸移近香港，天文台在六月二十二日上午 5 時 45 分發出三號強風信號，當時海馬位於香港以南約 330 公里。當日本港風勢進一步增強，吹清勁至強風程度東至東南風，離岸及高地間中吹烈風。香港天文台總部當日下午 4 時 31 分錄得最低瞬時海平面氣壓 995.2 百帕斯卡。海馬於下午 8 時左右最接近香港，並在香港西南偏南約 240 公里處掠過。六月二十三日凌晨本港轉吹東南風，風勢仍然強勁，離岸及高地吹烈風。隨着海馬遠離本港，早上本港風勢逐漸減弱，天文台在上午 10 時 25 分改發一號戒備信號，取代三號強風信號。下午海馬進一步移離本港，天文台於下午 8 時 45 分取消所有熱帶氣旋警告信號。海馬影響香港期間各站錄得的最高風速及持續風力達到強風的時段可參考表 3.2.1 及 3.2.2。

六月二十日香港除有幾陣驟雨外，天晴及天氣酷熱。翌日初時大致天晴，下午開始有幾陣狂風驟雨。六月二十二日有狂風大驟雨。六月二十三日仍然有幾陣狂風驟雨，主要在本港西部地區。

海馬影響香港期間，本港共有三人受傷。各區有超過170宗塌樹報告，其中港島司徒拔道一棵大樹塌下，壓毀一輛汽車，車內一名乘客受傷。慈雲山有一名男子被墮下的樹枝擊中受傷。本港有多宗塌棚及大廈玻璃幕牆受損事件，而灣仔有地盤發生泥牆倒塌，新界林村河有一艘舢舨沉沒，事件中無人受傷。

表3.2.3及3.2.4 分別是海馬影響香港期間本港的日雨量及最高潮位資料。圖 3.2.1-3.2.5 分別為海馬的路徑圖、本港的雨量分佈圖、長洲錄得的十分鐘平均風速、海馬的衛星圖像及雷達圖像。

3.2 Tropical Storm Haima (1104): 18 – 25 June 2011

Haima was the second tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2011.

Haima formed as a tropical depression over the western North Pacific about 420 km east of Manila on 18 June and moved generally northwestwards. It turned to move west-northwestwards across the Luzon Strait on the evening of 19 June. Haima took on a west to west-southwestward track across the northern part of the South China Sea for the following two days. It turned to move west-northwest to northwestwards at about 12 km/h on 22 June and intensified into a tropical storm, reaching its peak intensity with an estimated maximum sustained wind of 85 km/h near its centre that evening. Haima made landfall over the coast of western Guangdong about 300 km west-southwest of Hong Kong on the morning of 23 June and moved west-southwestwards skirting the coastal region of western Guangdong that afternoon. It moved across Beibu Wan on 24 June and made landfall over the northern coast of Vietnam that evening. Haima weakened into a tropical depression in the early hours of 25 June and dissipated inland over Laos that evening. According to press reports, at least 16 people were killed, four missing and 63 people injured in Vietnam during the passage of Haima.

In Hong Kong, the Standby Signal No. 1 was issued at 9:35 p.m. on 20 June when Haima was about 420 km southeast of Hong Kong. Winds in Hong Kong were light to moderate from the east that evening, becoming fresh easterlies, occasionally strong offshore and on high ground the following day. As Haima moved gradually closer to Hong Kong, the Strong Wind Signal No. 3 was issued at 5:45 a.m. on 22 June when Haima was about 330 km to the south. Winds strengthened further to become fresh to strong east to southeasterlies that day, occasionally reaching gale force offshore and on high ground. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 995.2 hPa was recorded at 4:31 p.m. that day. Haima was closest to Hong Kong at around 8 p.m. passing about 240 km to the south-southwest. Winds turned to the southeast on the small hours of 23 June and remained generally strong, reaching gale force offshore and on high ground. The winds weakened gradually in the morning as Haima moved away and the Standby Signal No. 1 was issued at 10:25 a.m. to replace the Strong Wind Signal No. 3. As Haima moved further away from Hong Kong during the afternoon, all signals were cancelled at 8:45 p.m. The maximum winds recorded at various stations and the period of strong winds during the passage of Haima are given in Tables 3.2.1 and 3.2.2 respectively.

The weather in Hong Kong was fine and very hot apart from a few showers on 20 June. It was mainly fine at first the following day, with a few squally showers in the afternoon. There were squally heavy showers on 22 June. A few squally showers still affected Hong Kong on 23 June, mainly in the western part of the territory.

A total of three people were injured during the passage of Haima. Over 170 cases of fallen trees were reported in various parts of Hong Kong. In particular, a tree collapsed in Stubbs Road on Hong Kong Island, damaging a car and injuring one passenger. In Tsz Wan Shan, a man was injured by fallen tree branches. There were also many incidents of fallen scaffoldings and damage to curtain walls. In Wanchai, there was a report of a collapsing wall in a construction site. A sampan sank in Lam Chuen River in the New Territories. No one was injured during the incident.

Information on the daily rainfall and maximum sea level in Hong Kong during the passage of Haima is given in Tables 3.2.3 and 3.2.4 respectively. Figures 3.2.1 - 3.2.5 show respectively the track of Haima, the rainfall distribution for Hong Kong, 10-minute mean wind speeds recorded at Cheung Chau, a satellite and radar imagery of Haima.

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

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

站（參閱圖 1.1）Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東南	SE	92	22/6	22:58	東南	SE	56	22/6	22:00
中環碼頭	Central Pier	東	E	70	22/6	21:29	東	E	41	22/6	19:00
長洲	Cheung Chau	東南	SE	104	22/6	22:02	東南	SE	77	22/6	23:00
							東南	SE	77	23/6	00:00
長洲泳灘	Cheung Chau Beach	東	E	99	22/6	23:16	東	E	68	23/6	00:00
青洲	Green Island	-	-	90	22/6	21:47	-	-	49	23/6	03:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	87	22/6	22:37	東南偏東	ESE	52	22/6	23:00
							東南偏東	ESE	52	23/6	01:00
啟德	Kai Tak	東南偏東	ESE	77	22/6	23:19	東	E	43	22/6	23:00
京士柏	King's Park	東南偏東	ESE	68	22/6	22:12	東南偏東	ESE	31	23/6	02:00
流浮山	Lau Fau Shan	東	E	63	22/6	10:49	東	E	31	22/6	11:00
昂坪	Ngong Ping	東	E	146	23/6	08:38	東	E	103	23/6	00:00
北角	North Point	東	E	77	22/6	12:52	東	E	40	22/6	14:00
坪洲	Peng Chau	東	E	75	22/6	10:33	東	E	45	22/6	15:00
平洲	Ping Chau	東	E	58	22/6	14:47	東	E	16	22/6	16:00
西貢	Sai Kung	東南	SE	75	22/6	22:30	東南	SE	43	22/6	23:00
沙洲	Sha Chau	東南偏東	ESE	81	23/6	01:36	東南	SE	56	23/6	00:00
		東南偏南	SSE	81	23/6	10:28					
沙螺灣	Sha Lo Wan	東南偏東	ESE	99	23/6	08:32	東南偏東	ESE	41	23/6	09:00
沙田	Sha Tin	東北偏東	ENE	56	22/6	17:57	東南	SE	25	23/6	05:00
		東南偏東	ESE	56	22/6	19:34					
石崗	Shek Kong	東	E	70	23/6	10:12	東	E	31	22/6	17:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	83	22/6	22:32	東	E	47	22/6	23:00
打鼓嶺	Ta Kwu Ling	東北偏東	ENE	68	22/6	23:40	東	E	27	22/6	21:00
大美督	Tai Mei Tuk	東北偏東	ENE	101	22/6	11:26	東	E	58	22/6	17:00
大帽山	Tai Mo Shan	東南	SE	121	23/6	01:58	東南	SE	83	23/6	08:00
塔門	Tap Mun	東南偏東	ESE	72	22/6	21:50	東南	SE	45	23/6	08:00
大老山	Tate's Cairn	東	E	113	22/6	15:45	東	E	67	22/6	11:00
鯽魚湖	Tsak Yue Wu	東	E	47	22/6	20:29	東	E	13	23/6	01:00
							東	E	13	23/6	02:00
將軍澳	Tseung Kwan O	東南偏南	SSE	62	22/6	15:43	東南	SE	20	23/6	07:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南偏東	ESE	76	22/6	22:27	東南偏東	ESE	27	23/6	01:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	75	22/6	23:14	東南	SE	30	23/6	08:00
橫瀾島	Waglan Island	東南	SE	90	22/6	23:00	東南	SE	67	22/6	23:00
濕地公園	Wetland Park	東南	SE	51	22/6	23:28	東	E	22	22/6	17:00
黃竹坑	Wong Chuk Hang	東南偏東	ESE	79	23/6	00:59	東	E	31	23/6	03:00

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

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

站（參閱圖 1.1） Station (See Fig. 1.1)		最初達到強風*時間 First time strong wind speed* was reached		最後達到強風*時間 Last time strong wind speed* was reached	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	21/6	13:42	23/6	20:45
香港國際機場	Hong Kong International Airport	22/6	07:25	23/6	17:59
啟德	Kai Tak	22/6	18:20	23/6	04:19
西貢	Sai Kung	22/6	04:45	23/6	00:19

* 十分鐘平均風速達每小時 41-62 公里

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

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

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

表 3.2.3　海馬影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.2.3　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Haima

站 (參閱圖 3.2.2) Station (See Fig. 3.2.2)			六月二十日 20 Jun	六月二十一日 21 Jun	六月二十二日 22 Jun	六月二十三日 23 Jun	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			0.0	8.3	41.4	微量 Trace	49.7
長洲 Cheung Chau (CCH)			[0.5]	[3.5]	[15.0]	[0.0]	[19.0]
香港國際機場 Hong Kong International Airport (HKA)			0.0	3.0	38.8	48.4	90.2
N05	粉嶺	Fanling	0.0	0.5	52.0	7.0	59.5
N13	糧船灣	High Island	0.0	8.5	45.5	0.0	54.0
K04	佐敦谷	Jordan Valley	0.0	9.5	48.5	0.0	58.0
N06	葵涌	Kwai Chung	0.0	3.5	73.5	0.0	77.0
H12	半山區	Mid Levels	0.0	12.0	81.5	0.0	93.5
H21	淺水灣	Repulse Bay	1.0	15.0	64.5	0.0	80.5
N09	沙田	Sha Tin	0.0	6.5	65.0	0.0	71.5
H19	筲箕灣	Shau Kei Wan	0.0	15.5	39.5	0.0	55.0
SEK	石崗	Shek Kong	0.0	2.5	76.0	2.5	81.0
K06	蘇屋邨	So Uk Estate	0.0	1.5	52.0	0.0	53.5
R31	大美督	Tai Mei Tuk	0.0	4.5	44.5	0.5	49.5
R21	踏石角	Tap Shek Kok	0.0	0.5	51.5	11.0	63.0
N17	東涌	Tung Chung	0.0	2.0	51.5	[54.5]	[108.0]
R27	元朗	Yuen Long	1.5	4.0	51.0	1.0	57.5

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

表 3.2.4　海馬影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.2.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Haima

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.25	22/6	11:44	0.51	22/6	04:30
石壁	Shek Pik	2.29	22/6	12:06	0.56	23/6	01:37
大廟灣	Tai Miu Wan	2.26	22/6	11:34	0.55	22/6	11:34
大埔滘	Tai Po Kau	2.25	22/6	10:30	0.57	22/6	17:16
尖鼻咀	Tsim Bei Tsui	2.54	21/6	13:04	0.51	23/6	15:03
橫瀾島	Waglan Island	2.24	22/6	11:42	0.48	22/6	04:50

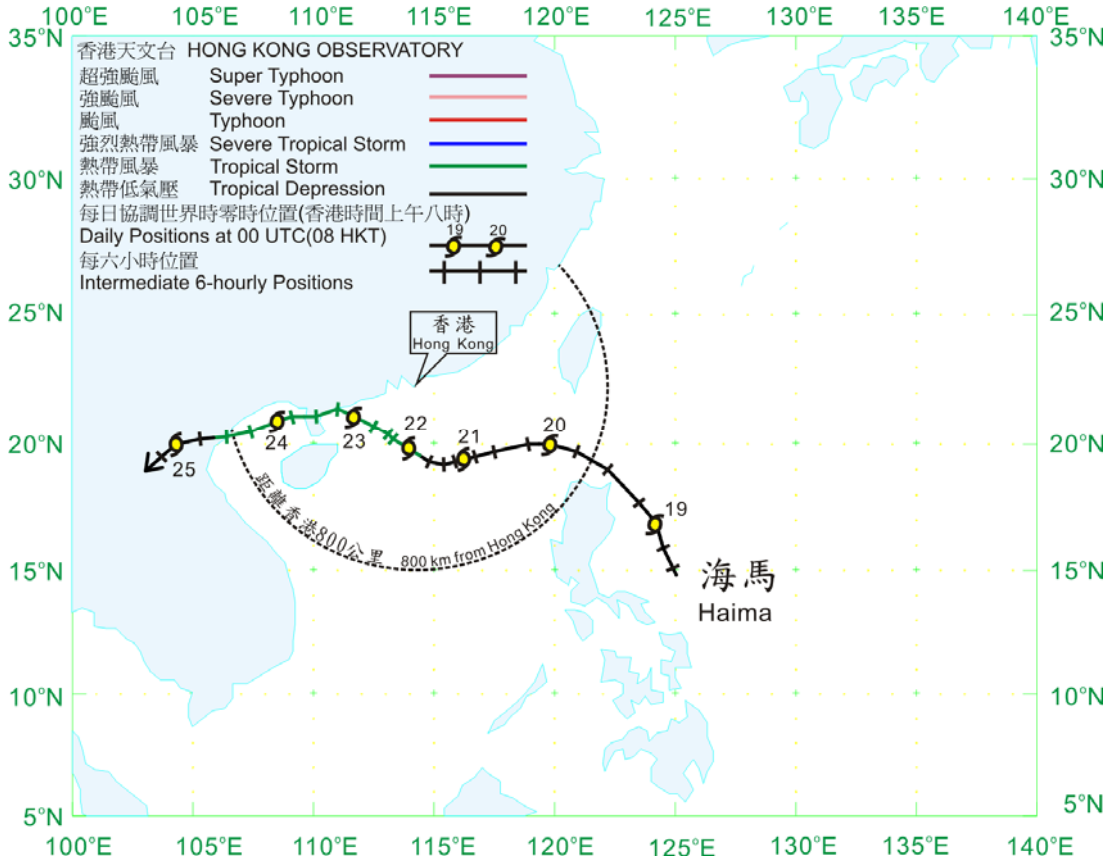


圖 3.2.1　海馬(1104）在二零一一年六月十八日至二十五日的路徑圖。

Figure 3.2.1　Track of Haima (1104) for 18 – 25 June 2011.

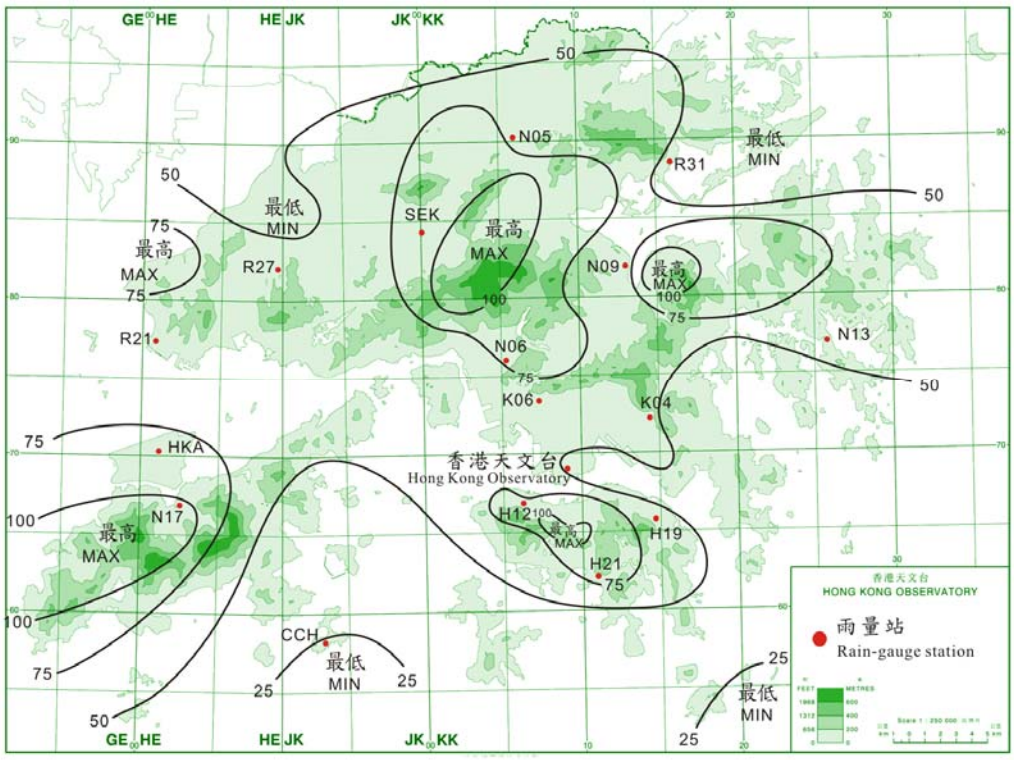


圖 3.2.2　二零一一年六月二十日至二十三日的雨量分佈(等雨量線單位為毫米)。

Figure 3.2.2　Rainfall distribution for 20 – 23 June 2011 (isohyets are in millimetres).

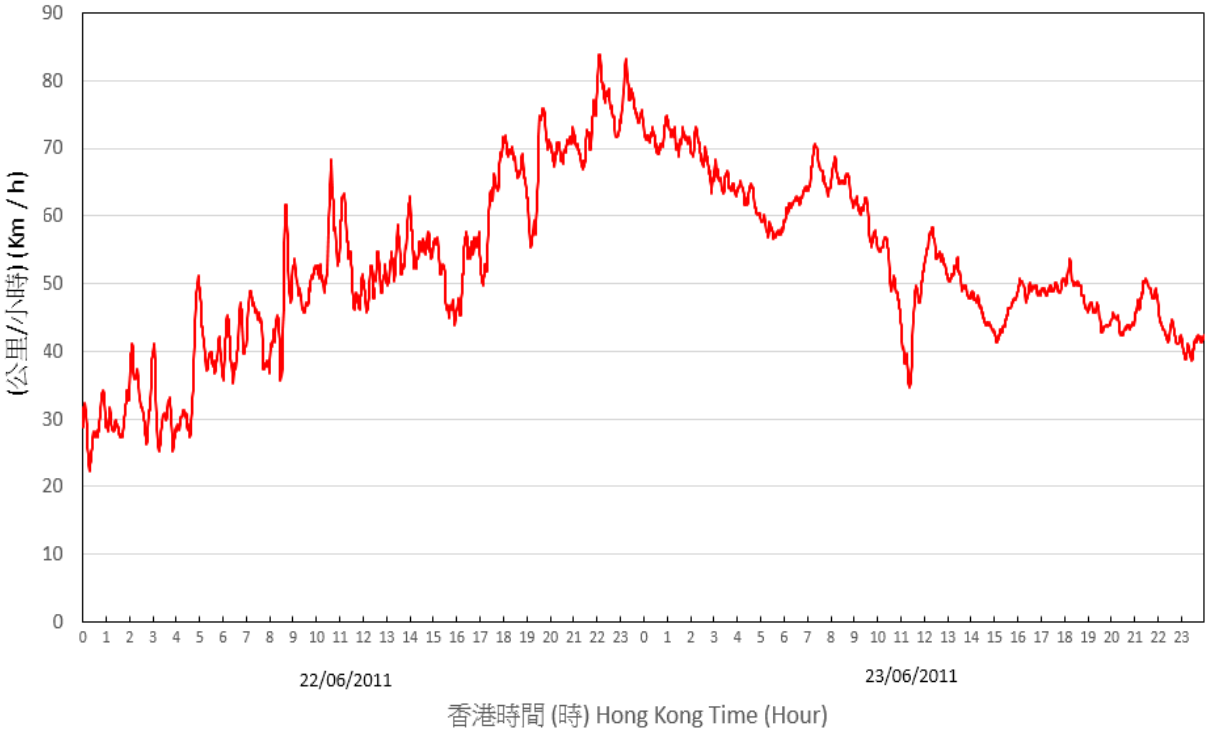


圖 3.2.3　二零一一年六月二十二日至二十三日長洲自動氣象站錄得十分鐘平均風速的時間序列。

Figure 3.2.3　Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 22 - 23 June 2011.

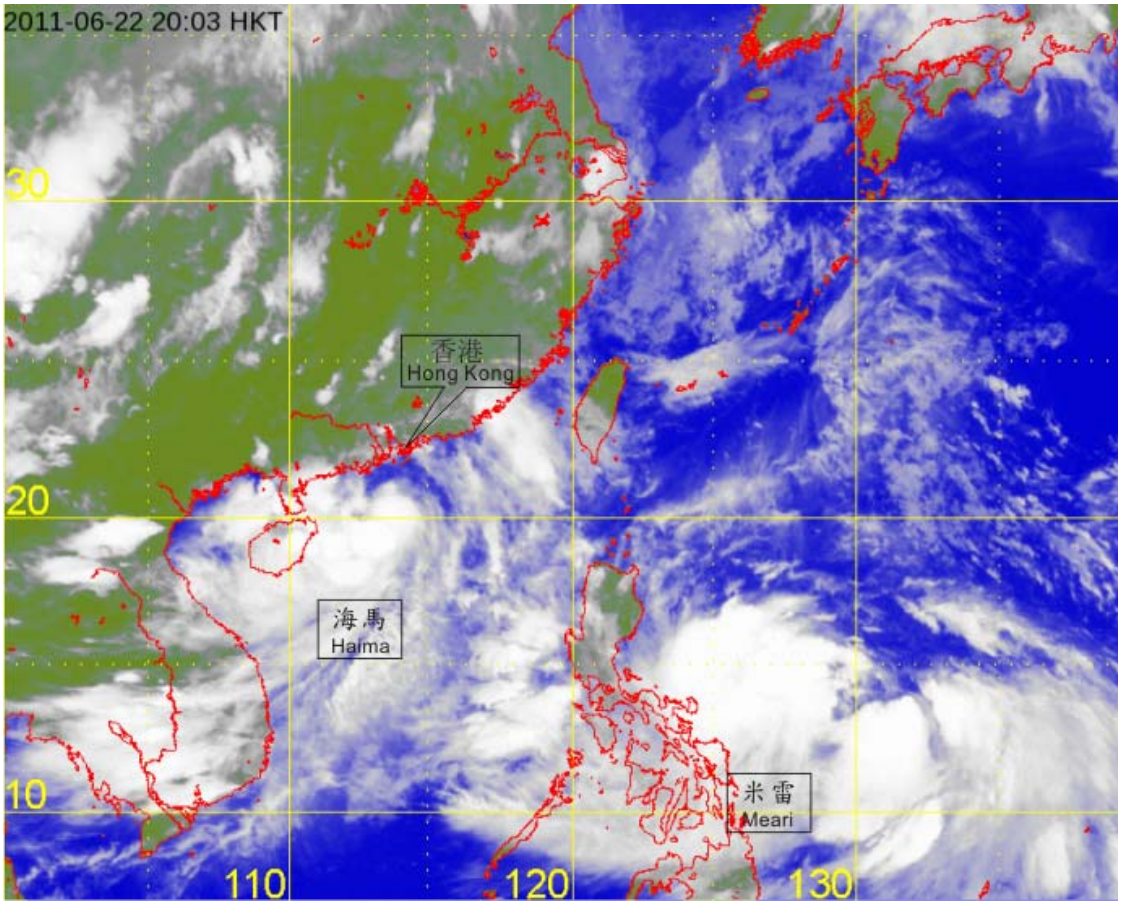


圖 3.2.4　熱帶風暴海馬在二零一一年六月二十二日下午 8 時的紅外線衛星圖片。當時海馬達到其最高強度，中心附近估計最高持續風速達到每小時 85 公里。

Figure 3.2.4　Infra-red satellite imagery at 8 p.m. on 22 June 2011 of Tropical Storm Haima. Haima was at its peak intensity with estimated maximum sustained winds of 85 kilometres per hour near its centre at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

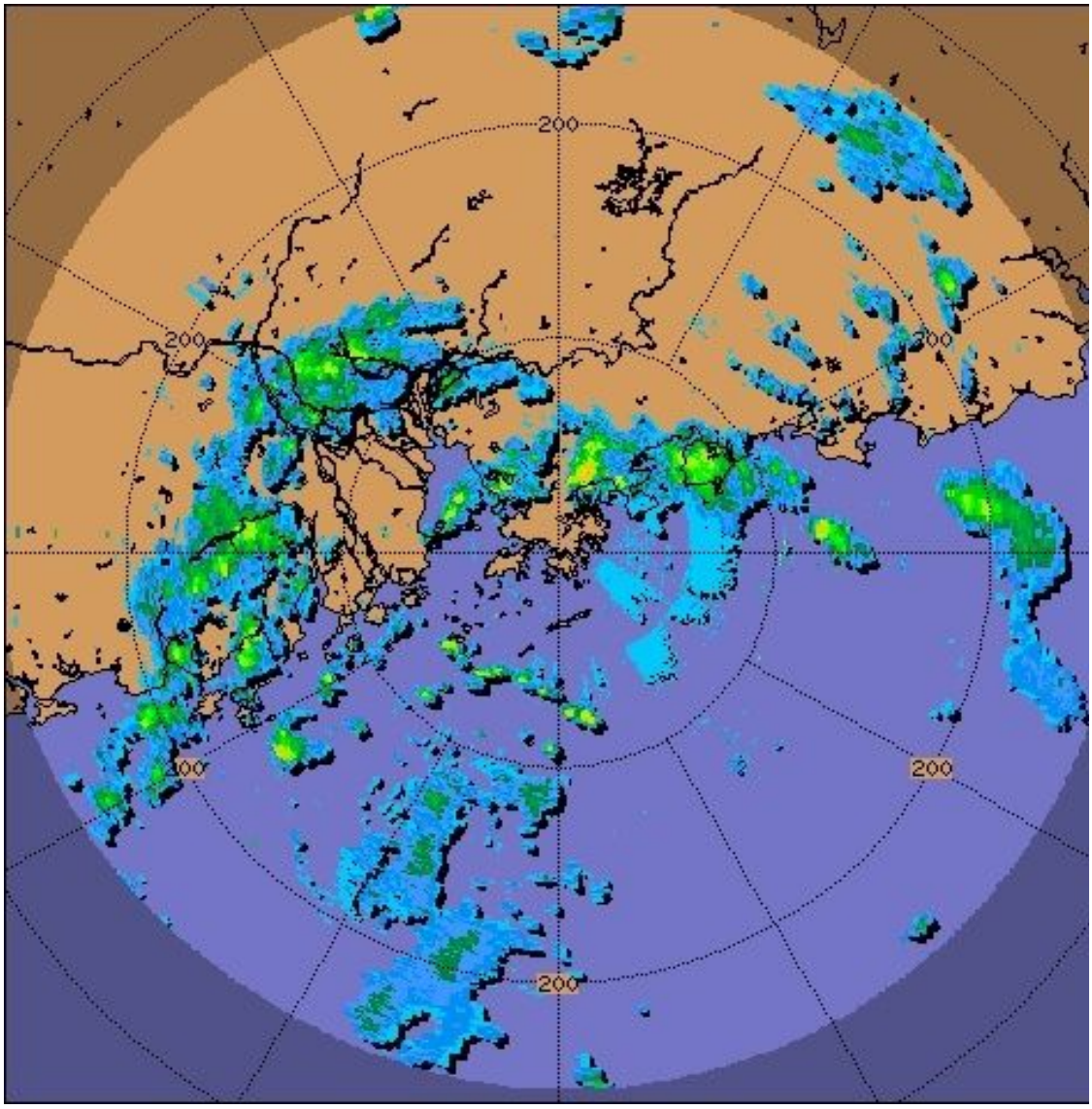


圖 3.2.5　二零一一年六月二十二日下午 8 時的雷達回波圖像，當時熱帶風暴海馬中心正集結在香港西南偏南約 240 公里，最為接近本港，其外圍雨帶正影響廣東沿岸地區。

Figure 3.2.5　Radar echoes captured at 8:00 p.m. on 22 June 2011. The centre of Tropical Storm Haima was closest to Hong Kong at about 240 km to the south-southwest. Its outer rainbands were affecting the coastal areas of Guangdong.

3.3 強烈熱帶風暴洛坦(1108)：二零一一年七月二十五日至三十一日

洛坦是香港天文台在二零一一年第三個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓洛坦於七月二十五日在馬尼拉東南偏東約 790 公里的北太平洋西部上形成，並大致向西北偏西移動，翌日增強為熱帶風暴，並轉向西北移動。它於七月二十七日早上進一步增強為強烈熱帶風暴，當日下午橫過呂宋，黃昏時進入南海。洛坦於隨後兩天大致向西至西北偏西移動，時速約 22 公里，橫過南海北部及達到其最高強度，中心附近持續風力達到每小時 105 公里。它於七月二十九日在香港西南約 450 公里海南島文昌市附近登陸。洛坦於七月三十日橫過北部灣，並減弱為熱帶風暴，黃昏時在越南北部沿岸再次登陸，七月三十一日在老撾內陸消散。根據報章報導，洛坦吹襲菲律賓期間，導致 50 人死亡，直接經濟損失為 14.6 億比索(約 2.7 億港元)。另外，洛坦在海南島造成兩人死亡，直接經濟損失達 3.77 億元人民幣。

香港天文台於七月二十八日上午 8 時 40 分發出一號戒備信號，當時洛坦位於香港東南約 530 公里。隨着洛坦逐漸移近香港，天文台在下午 6 時 45 分發出三號強風信號，當時洛坦位於香港以南約 460 公里。當日香港吹和緩東至東北風，黃昏時離岸吹強風，高地間中吹烈風。香港天文台總部於七月二十九日上午 6 時 26 分錄得最低瞬時海平面氣壓 1000.8 百帕斯卡，當時洛坦位於香港西南偏南約 460 公里。當日早上本港普遍吹偏東強風，高地間中吹烈風。早上青洲、昂坪、大帽山、大老山及橫瀾島錄得每小時超過 90 公里的陣風。洛坦於下午 2 時左右最接近香港，並在香港西南約 440 公里處掠過。下午本港轉吹東至東南風，風勢逐漸緩和，天文台於下午 2 時 10 分改發一號戒備信號，取代三號強風信號。隨着風勢進一步減弱，天文台於下午 4 時 40 分取消所有熱帶氣旋警告信號。

七月二十八日香港天晴及天氣酷熱，天文台總部錄得最高氣溫為33.7度，但下午有幾陣狂風驟雨及雷暴。七月二十九日轉為多雲，洛坦的外圍雨帶亦為本港帶來狂風驟雨及雷暴。

洛坦影響香港期間，本港至少發生11宗塌樹及兩宗塌棚架意外，深水埗及鴨脷洲有物件墮下，釀成三人受傷。另外，石峽尾有樹枝被強風吹塌，釀成交通意外，有一人受傷。受到惡劣天氣影響，七月二十九日香港國際機場有四航班轉飛其他機場。

表3.3.1- 3.3.4 分別是洛坦影響香港期間各站錄得的最高風速、持續風力達到強風的時段、本港的日雨量及最高潮位資料。圖3.3.1-3.3.4 分別為洛坦的路徑圖、本港的雨量分佈圖、洛坦的衛星及相關雷達圖像。

3.3 Severe Tropical Storm Nock-ten (1108) : 25 – 31 July 2011

Nock-ten was the third tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2011.

Nock-ten formed as a tropical depression over the western North Pacific about 790 km east-southeast of Manila on 25 July and moved generally west-northwestwards. Nock-ten intensified into a tropical storm and turned to move northwestwards on 26 July. It intensified further into a severe tropical storm on the morning of 27 July, crossed Luzon in the afternoon and entered the South China Sea that evening. Nock-ten moved generally west to west-northwestwards at about 22 km/h across the northern part of the South China Sea for the following two days, reaching its peak intensity with an estimated maximum sustained wind of 105 km/h near its centre. It made landfall near Wenchang, Hainan Island about 450 km southwest of Hong Kong on 29 July. Moving westwards across Beibu Wan on 30 July, Nock-ten weakened into a tropical storm. It made landfall again over the coast of northern Vietnam that evening and subsequently dissipated inland over Laos on 31 July. According to press reports, 50 people were killed in the Philippines with a direct economic loss amounted to 1 460 million peso (around HK$270 million) during the passage of Nock-ten. It also brought about two deaths in Hainan Island. The direct economic loss there was reported to be 377 million RMB.

In Hong Kong, the Standby Signal No. 1 was issued at 8:40 a.m. on 28 July when Nock-ten was about 530 km southeast of Hong Kong. As Nock-ten moved gradually closer to Hong Kong, the Strong Wind Signal No. 3 was issued at 6:45 p.m. when Nock-ten was about 460 km south of Hong Kong. Winds in Hong Kong were generally moderate east to northeasterlies that day, becoming strong over offshore waters, occasionally reaching gale force on high ground that evening. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1000.8 hPa was recorded at 6:26 a.m. on 29 July when Nock-ten was about 460 km south-southwest of Hong Kong. Generally strong easterlies affected the territory that morning, with occasional gales observed on high ground. Gusts of over 90 km/h were recorded at Green Island, Ngong Ping, Tai Mo Shan, Tate's Cairn and Waglan Island in the morning. Nock-ten was closest to Hong Kong at around 2 p.m. that day passing about 440 km to the southwest. Local winds moderated gradually and became east to southeasterlies that afternoon. The Standby Signal No. 1 was issued at 2:10 p.m. to replace the Strong Wind Signal No. 3. All signals were cancelled at 4:40 p.m. on the same day as local winds subsided further.

On 28 July, the weather in Hong Kong was fine and very hot apart from a few squally showers and thunderstorms in the afternoon. The maximum temperature recorded at the Hong Kong Observatory Headquarters was 33.7 degrees. It became cloudy on 29 July. The outer rainbands of Nock-ten also brought squally showers and thunderstorms to the territory that day.

During the passage of Nock-ten, there were at least 11 reports of fallen trees and two reports of collapsed scaffoldings in Hong Kong. Three people were injured due to fallen objects in Sham Shui Po and Ap Lei Chau. Broken tree branches resulted in a traffic accident in Shek Kip Mei, injuring another person. At the Hong Kong International Airport, four aircraft were diverted due to adverse weather on 29 July.

Information on maximum wind, period of strong winds, daily rainfall and maximum sea level in Hong Kong during the passage of Nock-ten is given in Tables 3.3.1-3.3.4 respectively. Figures 3.3.1 - 3.3.4 show respectively the track of Nock-ten, the rainfall distribution for Hong Kong, a satellite imagery of Nock-ten and a related radar imagery.

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

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

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東南	SE	72	29/7	06:39	東	E	38	29/7	05:00
中環碼頭	Central Pier	東北偏東	ENE	67	28/7	19:33	東	E	45	29/7	02:00
							東	E	45	29/7	04:00
長洲	Cheung Chau	東南偏南	SSE	92	29/7	14:05	東	E	52	29/7	06:00
長洲泳灘	Cheung Chau Beach	東北偏東	ENE	83	28/7	21:22	東	E	58	29/7	00:00
		東	E	83	28/7	23:02					
		東	E	83	29/7	01:25					
青洲	Green Island	東北	NE	94	29/7	06:47	東北偏北	NNE	56	29/7	02:00
香港國際機場	Hong Kong International Airport	東北	NE	85	28/7	17:13	東	E	41	29/7	05:00
啟德	Kai Tak	東	E	79	29/7	00:29	東	E	31	29/7	03:00
京士柏	King's Park	東	E	65	29/7	00:11	東南偏東	ESE	25	29/7	13:00
流浮山	Lau Fau Shan	東南偏南	SSE	72	29/7	15:02	東	E	31	29/7	01:00
昂坪	Ngong Ping	東北偏東	ENE	122	29/7	00:31	東	E	96	29/7	00:00
北角	North Point	東	E	68	29/7	02:52	東	E	38	29/7	01:00
坪洲	Peng Chau	東	E	75	28/7	22:02	東	E	45	29/7	01:00
平洲	Ping Chau	東	E	54	28/7	23:38	東	E	14	29/7	00:00
		東	E	54	29/7	02:55					
西貢	Sai Kung	東北偏東	ENE	63	28/7	23:53	東	E	38	29/7	06:00
沙洲	Sha Chau	東北偏北	NNE	85	28/7	17:12	東南偏東	ESE	34	29/7	15:00
沙螺灣	Sha Lo Wan	東	E	68	28/7	23:11	東	E	40	29/7	00:00
沙田	Sha Tin	西北偏北	NNW	52	29/7	05:20	東北	NE	20	29/7	00:00
石崗	Shek Kong	東北偏北	NNE	59	29/7	02:19	東	E	23	29/7	08:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	75	29/7	06:42	東	E	41	29/7	03:00
打鼓嶺	Ta Kwu Ling	東北	NE	51	29/7	04:25	東	E	19	29/7	00:00
							東北偏東	ENE	19	29/7	02:00
大美督	Tai Mei Tuk	東	E	79	29/7	06:40	東	E	51	29/7	07:00
大帽山	Tai Mo Shan	-	-	96	29/7	06:03	-	-	58	29/7	05:00
塔門	Tap Mun	東南	SE	59	29/7	06:36	東	E	31	29/7	00:00
大老山	Tate's Cairn	東南偏東	ESE	96	29/7	06:41	東	E	58	29/7	04:00
鯽魚湖	Tsak Yue Wu	東北	NE	43	29/7	12:20	東	E	14	28/7	16:00
將軍澳	Tseung Kwan O	東	E	52	29/7	05:28	東	E	16	29/7	02:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	59	29/7	14:46	東南偏東	ESE	22	28/7	23:00
							東南偏東	ESE	22	29/7	00:00
屯門政府合署	Tuen Mun Government Offices	東南偏東	ESE	54	29/7	14:58	東南	SE	22	29/7	15:00
橫瀾島	Waglan Island	東	E	92	29/7	06:32	東	E	52	29/7	05:00
濕地公園	Wetland Park	東北偏北	NNE	70	28/7	16:44	東	E	22	29/7	05:00
							東	E	22	29/7	06:00
黃竹坑	Wong Chuk Hang	東	E	70	29/7	00:27	東	E	31	29/7	01:00

表 3.3.2　在洛坦影響下，在熱帶氣旋警告系統的八個參考測風站所錄到持續風力達到強風程度的時段

Table 3.3.2　Periods during which sustained strong winds were reached at the 8 reference anemometers in the tropical cyclone warning system when warning signals for Nock-ten were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 First time strong wind speed* was reached		最後達到強風*時間 Last time strong wind speed* was reached	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	28/7	15:32	29/7	14:34
香港國際機場	Hong Kong International Airport	28/7	17:13	29/7	14:24
西貢	Sai Kung	28/7	23:57	29/7	06:35

* 十分鐘平均風速達每小時 41-62 公里

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

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

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

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

站 (參閱圖 3.3.2) Station (See Fig. 3.3.2)			七月二十八日 28 July	七月二十九日 29 July	總雨量(毫米) Total (mm)
香港天文台 Hong Kong Observatory			微量 Trace	12.4	12.4
香港國際機場 Hong Kong International Airport (HKA)			0.2	27.9	28.1
N26	長洲	Cheung Chau	0.0	22.5	22.5
N05	粉嶺	Fanling	3.5	50.5	54.0
N13	糧船灣	High Island	0.0	[7.0]	[7.0]
K04	佐敦谷	Jordan Valley	0.0	23.0	23.0
N06	葵涌	Kwai Chung	0.0	8.5	8.5
H12	半山區	Mid Levels	0.0	29.5	29.5
H21	淺水灣	Repulse Bay	0.5	21.0	21.5
N09	沙田	Sha Tin	1.5	32.0	33.5
H19	筲箕灣	Shau Kei Wan	0.5	18.5	19.0
SEK	石崗	Shek Kong	[5.0]	22.5	[27.5]
K06	蘇屋邨	So Uk Estate	0.0	15.0	15.0
R31	大美督	Tai Mei Tuk	0.0	4.5	4.5
R21	踏石角	Tap Shek Kok	8.5	24.0	32.5
N17	東涌	Tung Chung	0.0	35.0	35.0
R27	元朗	Yuen Long	6.0	29.5	35.5

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

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

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.64	29/7	07:20	0.35	29/7	07:20
石壁	Shek Pik	2.66	29/7	06:53	0.33	29/7	06:10
大廟灣	Tai Miu Wan	2.65	29/7	06:45	0.47	29/7	06:45
大埔滘	Tai Po Kau	2.51	29/7	06:54	0.40	29/7	11:07
尖鼻咀	Tsim Bei Tsui	3.03	29/7	08:30	0.32	29/7	08:30
橫瀾島	Waglan Island	2.67	29/7	06:25	0.39	28/7	21:39

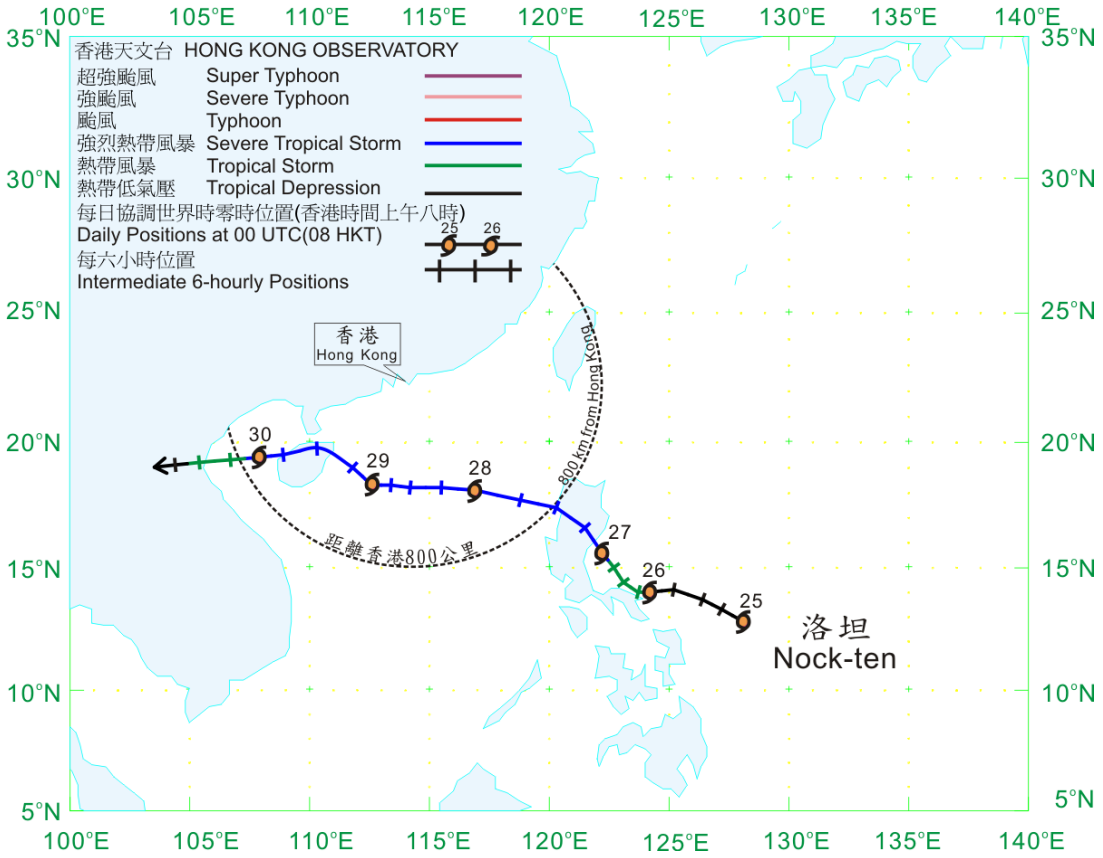


圖 3.3.1　洛坦(1108)在二零一一年七月二十五日至三十一日的路徑圖。

Figure 3.3.1　Track of Nock-ten (1108) for 25 – 31 July 2011.

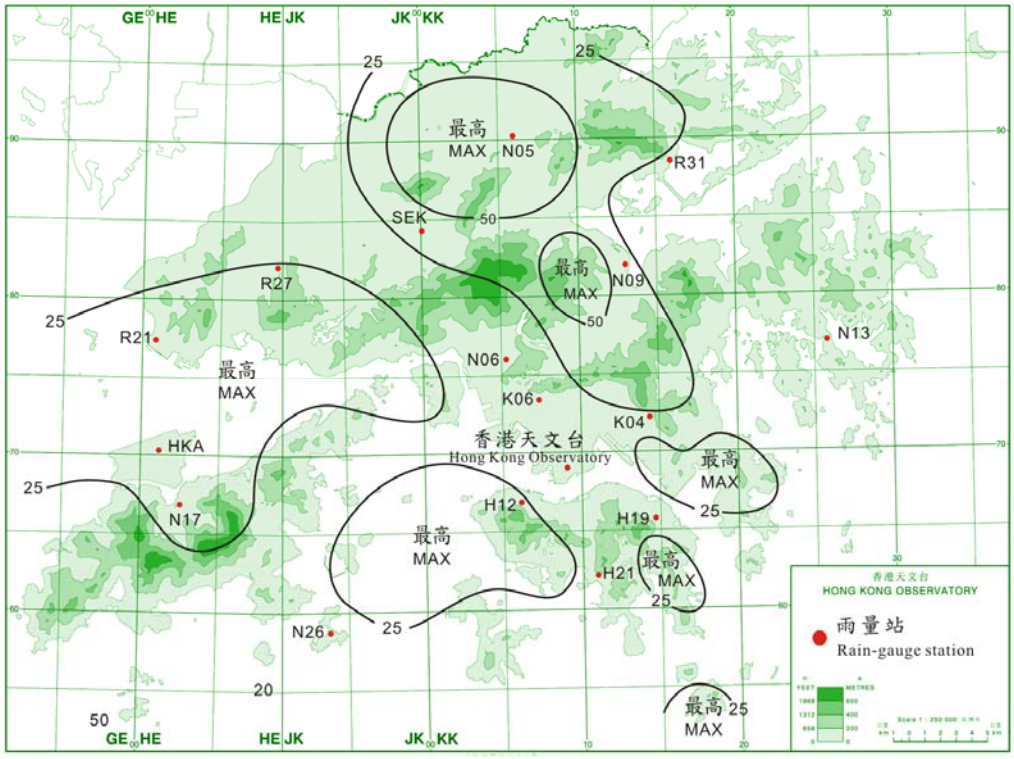


圖 3.3.2　二零一一年七月二十八日至二十九日的雨量分佈 (等雨量線單位為毫米)。

Figure 3.3.2　Rainfall distribution for 28 – 29 July 2011 (isohyets are in millimetres).

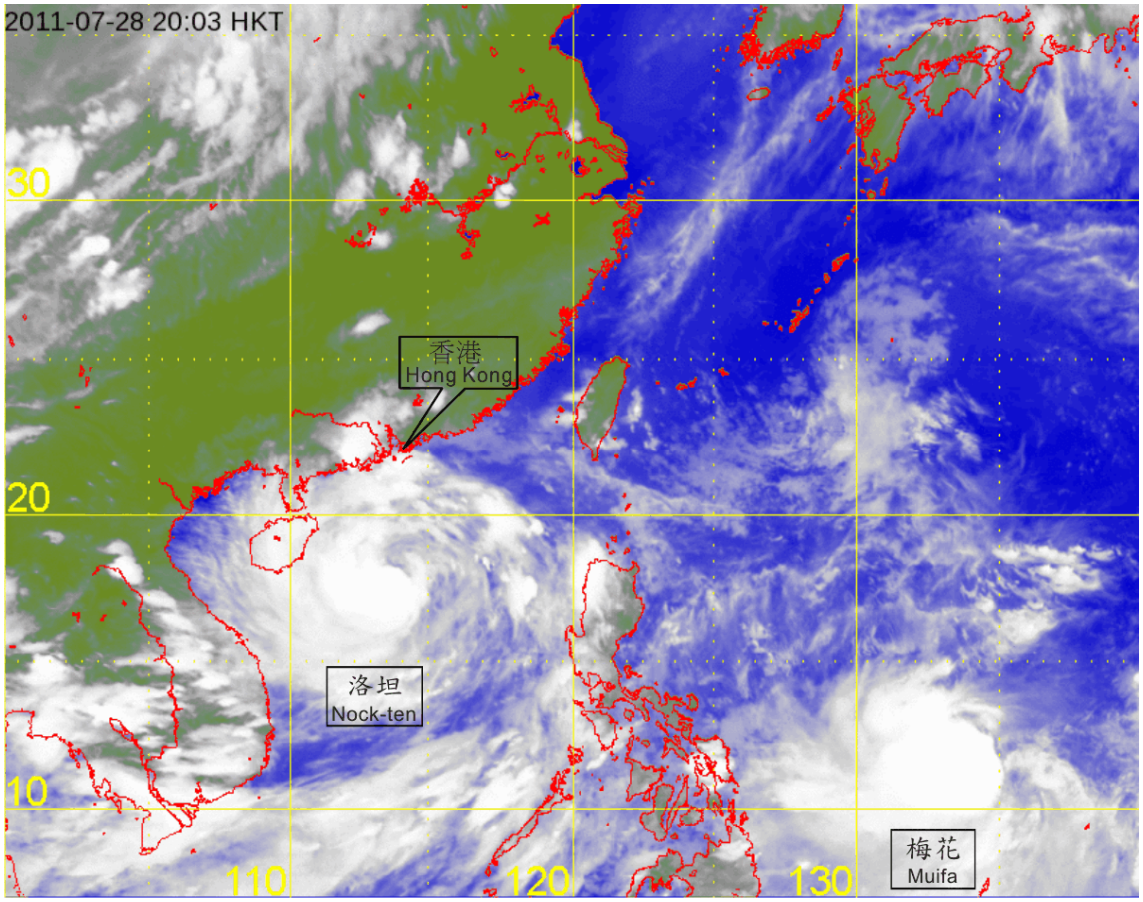


圖 3.3.3　強烈熱帶風暴洛坦在二零一一年七月二十八日下午8時的紅外線衛星圖片。當時洛坦位於香港以南約 450 公里，並達到其最高強度，中心附近估計最高持續風速達到每小時 105 公里。

Figure 3.3.3　Infra-red satellite imagery at 8 p.m. on 28 July 2011 of Severe Tropical Storm Nock-ten. Nock-ten was located about 450 km south of Hong Kong and at its peak intensity with estimated maximum sustained winds of 105 kilometres per hour near its centre at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

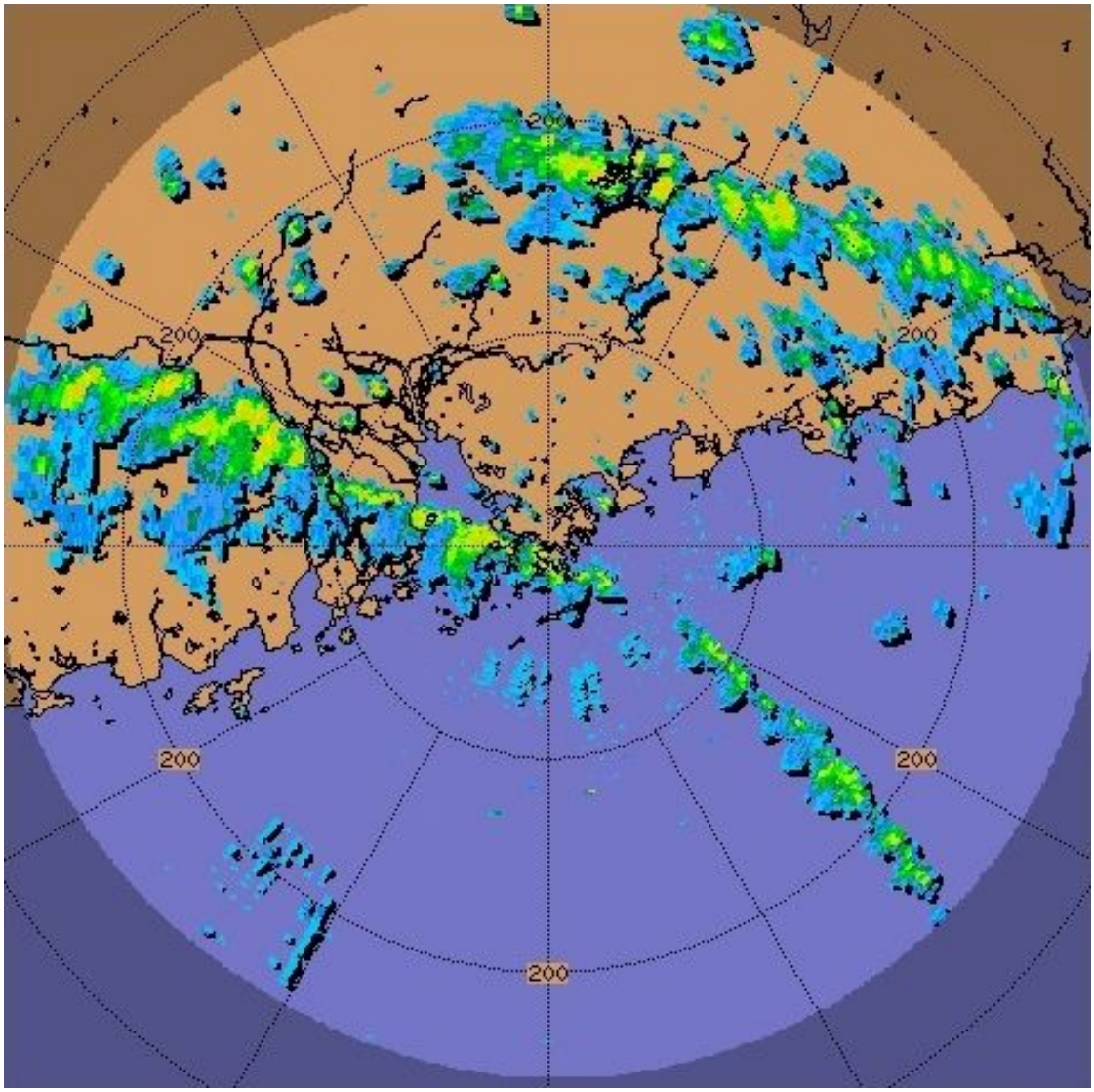


圖 3.3.4　二零一一年七月二十九日下午 2 時 30 分的雷達回波圖像，當時強烈熱帶風暴洛坦的中心正集結在香港西南約 440 公里，並移向海南島，其外圍雨帶正影響香港。

Figure 3.3.4　Radar echoes captured at 2:30 p.m. on 29 July 2011. An outer rainband associated with Severe Tropical Storm Nock-ten was affecting Hong Kong. The centre of Nock-ten was located about 440 km southwest of Hong Kong at that time and was moving towards Hainan Island.

3.4 颱風納沙(1117)：二零一一年九月二十三日至十月一日

納沙是香港天文台在二零一一年第四個需要發出熱帶氣旋警告信號的熱帶氣旋。天文台亦在納沙襲港期間發出本年首個八號烈風或暴風信號。

熱帶低氣壓納沙於九月二十三日在馬尼拉以東約 1 840 公里的北太平洋西部上形成，並向西北偏西移動。它於九月二十四日增強為熱帶風暴，翌日再增強為強烈熱帶風暴。納沙於九月二十六日在馬尼拉以東約 560 公里的北太平洋西部上進一步增強為颱風及達到其最高強度，中心附近持續風力達到每小時 145 公里。它於九月二十七日橫過呂宋，下午進入南海，九月二十八日繼續向西北偏西移動，時速約為 20 公里，橫過南海北部。納沙於當晚採取西北途徑，時速約為 22 公里，移近華南沿岸。它於九月二十九日大致向西北偏西移動，下午在海南島東北部登陸，黃昏時進入北部灣。納沙於九月三十日首先減弱為強烈熱帶風暴，並橫過北部灣，下午在越南北部沿岸再次登陸及減弱為熱帶風暴，黃昏時進一步移入內陸，十月一日在越南北部消散。

根據報章報導，納沙吹襲菲律賓期間觸發水災，導致 35 人死亡。海南島、廣東及廣西至少有四人死亡，一人失蹤、農作物受災面積超過 183 千公頃，超過 5 300 間房屋倒塌或受損，直接經濟損失 74 億多元人民幣。此外，納沙吹襲越南期間，導致約 3 000 間房屋受損及 11 艘船隻沉沒。

香港天文台於九月二十七日下午 10 時 40 分發出一號戒備信號，當時納沙位於香港東南約 770 公里。當晚本港吹和緩東至東北風。隨着納沙移近香港，九月二十八日本港轉吹清勁東北風，高地吹強風。天文台在下午 5 時 20 分發出三號強風信號，當時納沙位於香港東南偏南約 510 公里。當日黃昏本港風勢增強，大部份地區吹強風，離岸及高地間中吹烈風。納沙於九月二十九日凌晨繼續移近，本港風力進一步增強。天文台在上午 4 時 40 分發出八號東南烈風或暴風信號，當時納沙位於香港之西南偏南約 360 公里。納沙於上午 7 時左右最接近香港，並在香港西南偏南約 350 公里處掠過。受到納沙的廣闊環流影響，早上香港南部普遍吹偏東烈風，高地風勢間中達暴風程度，大老山、大帽山、青洲、長洲、平洲及昂坪錄得每小時超過 120 公里的陣風。下午隨着納沙進一步移離香港及在海南島登陸，本港轉吹東南風，風勢逐漸減弱，天文台於下午 4 時 10 分改發三號強風信號，取代八號東南烈風或暴風信號，當時納沙位於香港之西南約 450 公里。黃昏時本港離岸繼續普遍吹強風，晚間較後時間風勢逐漸減弱。天文台於九月三十日零時 20 分改發一號戒備信號，取代三號強風信號。隨着風勢進一步減弱，天文台於上午 6 時 25 分取消所有熱帶氣旋警告信號。香港天文台總部於九月二十九日上午 3 時 29 分錄得最低瞬時海平面氣壓 999.0 百帕斯卡，當時納沙位於香港之西南偏南約 370 公里。

九月二十七日香港大致天晴及天氣炎熱，部份地區有煙霞。翌日早上仍然大致天晴，但下午轉為多雲及有狂風驟雨。九月二十九日有狂風驟雨，大嶼山及新界西部錄得超過60毫米的雨量。受到納沙的外圍雨帶影響，九月三十日持續大致多雲及有幾陣驟雨。

納沙影響香港期間，引致 418 宗塌樹及 15 宗塌棚架意外事件，共有 26 人受傷。其中，一輛的士在新蒲崗太子道東被巨型棚架擊中，一名乘客受傷。港島柴灣對開海面一艘浮塢連運沙船斷纜後在港內飄浮，船身首先撞毀油庫碼頭，再連續撞擊杏花邨堤岸，其間運沙船一條伸出的運輸管一度與民居接近，超過 50 名居民須緊急疏散。受到惡劣天氣影響，香港國際機場共有超過 40 班航班被取消，約 490 班航班延誤，44 航班轉飛其他機場。

表3.4.1- 3.4.4 分別是納沙影響香港期間各站錄得的最高風速、持續風力達到強風及烈風的時段、本港的日雨量及最高潮位資料。圖3.4.1-3.4.5 分別為納沙的路徑圖、本港的雨量分佈圖、長洲錄得的十分鐘平均風速、納沙的衛星及相關雷達圖像。

3.4 Typhoon Nesat (1117) : 23 September - 1 October 2011

Nesat was the fourth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2011. It also necessitated the issuance of the first No. 8 Gale or Storm Signal in the year.

Nesat formed as a tropical depression over the western North Pacific about 1 840 km east of Manila on 23 September and moved west-northwestwards. It intensified into a tropical storm on 24 September and further into a severe tropical storm on the following day. Nesat intensified into a typhoon over the western North Pacific about 560 km east of Manila on 26 September, reaching its peak intensity with an estimated maximum sustained wind of 145 km/h near its centre. On 27 September, Nesat crossed Luzon and entered the South China Sea in the afternoon. It continued to move west-northwestwards at about 20 km/h across the northern part of the South China Sea on 28 September. Nesat took up a northwesterly track at a speed of about 22 km/h that night, moving closer to the south China coast. It moved generally west-northwestards on 29 September and made landfall over the northeastern part of Hainan Island in the afternoon, entering Beibu Wan that evening. On 30 September, Nesat first weakened into a severe tropical storm and moved across Beibu Wan, then made landfall again over the coast of northern Vietnam in the afternoon and weakened into a tropical storm. It moved further inland that evening and dissipated over northern Vietnam on 1 October.

According to press reports, Nesat triggered flooding in the Philippines where 35 people were killed. In Hainan Island, Guangdong and Guangxi, at least 4 people were killed and one person missing during the passage of Nesat. Over 183 000 hectares of farmland were inundated and over 5 300 houses collapsed or destroyed, with direct economic loss exceeding 7.4 billion RMB. In addition, around 3 000 houses were destroyed and 11 boats sank during the passage of Nesat over Vietnam.

In Hong Kong, the Standby Signal No. 1 was issued at 10:40 p.m. on 27 September when Nesat was about 770 km southeast of Hong Kong. Local winds were moderate east to northeasterlies that night, freshening from the northeast and becoming strong on high ground on 28 September as Nesat moved closer. The Strong Wind Signal No. 3 was issued at 5:20 p.m. when Nesat was about 510 km south-southeast of Hong Kong. Local winds strengthened from the east in the evening and strong winds were recorded over most areas in Hong Kong, occasionally reaching gale force offshore and on high ground. As Nesat continued to move closer in the early hours of 29 September, local winds continued to strengthen and the No. 8 SE Gale or Storm Signal was issued at 4:40 a.m. when Nesat was about 360 km to the south-southwest. Nesat was closest to Hong Kong at around 7 a.m. that day passing about 350 km to the south-southwest. Under the influence of the large circulation of Nesat, gale force easterlies generally affected the southern part of Hong Kong that morning, occasionally reaching storm force on high ground. Gusts of over 120 km/h were recorded at Tate’s Cairn, Tai Mo Shan, Green Island, Cheung Chau, Ping Chau and Ngong Ping in the morning. As Nesat moved further away from Hong Kong and made landfall over Hainan Island in the afternoon, local winds turned to the southeast and gradually weakened. The No. 8 SE Gale or Storm Signal was replaced by the No. 3 Strong Wind Signal at 4:10 p.m. when Nesat was about 450 km southwest of Hong Kong. Local winds remained generally strong during the evening and gradually weakened later that night. The No. 3 Signal was replaced by the Standby Signal No. 1 at 0:20 a.m. on 30 September. All signals were cancelled at

6:25 a.m. as winds subsided further. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 999.0 hPa was recorded at 3:29 a.m. on 29 September when Nesat was about 370 km south-southwest of Hong Kong.

The weather in Hong Kong was mainly fine and hot with some haze on 27 September. It continued mainly fine on the morning of 28 September, but became cloudy with squally showers in the afternoon. Squally showers affected Hong Kong on 29 September with more than 60 millimetres of rainfall recorded over Lantau Island and the western part of the New Territories. Under the influence of the outer rainbands of Nesat, the weather remained mainly cloudy with a few showers on 30 September.

During the passage of Nesat, there were 418 reports of fallen trees and 15 reports of collapsed scaffoldings in Hong Kong. A total of 26 people were injured. In particular, a large sheet of scaffolding was blown down in Prince Edward Road East in San Po Kong, hitting a taxi and injuring its passenger. Over the seas off Chai Wan, a crane barge drifted across the harbour after its anchor cable was snapped. The barge first hit a pier at an oil storage depot in Chai Wan and then slammed into a sea wall at the Heng Fa Chuen promenade. At one point, the barge's extended crane arm came close to an apartment block, prompting the evacuation of more than 50 residents. At the Hong Kong International Airport, over 40 flights were cancelled, around 490 flights affected and 44 aircraft were diverted due to adverse weather.

Information on maximum wind, periods of strong and gale force winds, daily rainfall and maximum sea level in Hong Kong during the passage of Nesat is given in Tables 3.4.1-3.4.4 respectively. Figures 3.4.1 - 3.4.5 show respectively the track of Nesat, the rainfall distribution for Hong Kong, 10-minute mean wind speeds recorded at Cheung Chau, a satellite and a related radar imagery of Nesat.

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

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

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東南偏東	ESE	103	29/9	03:04	東南	SE	58	29/9	11:00
中環碼頭	Central Pier	東	E	94	29/9	04:04	東	E	63	29/9	05:00
長洲	Cheung Chau	-	-	121	29/9	10:05	東	E	79	29/9	05:00
							東	E	79	29/9	11:00
長洲泳灘	Cheung Chau Beach	東	E	137	29/9	02:32	東	E	85	29/9	05:00
青洲	Green Island	-	-	122	29/9	04:34	-	-	76	29/9	03:00
香港國際機場	Hong Kong International Airport	東	E	110	29/9	03:15	東	E	62	29/9	09:00
啟德	Kai Tak	東北偏東	ENE	96	29/9	02:31	東	E	47	29/9	18:00
京士柏	King's Park	東	E	87	29/9	05:27	東	E	34	29/9	05:00
流浮山	Lau Fau Shan	東	E	104	29/9	02:41	東	E	49	29/9	04:00
昂坪	Ngong Ping	東北偏東	ENE	167	29/9	03:15	東北偏東	ENE	124	29/9	04:00
北角	North Point	東	E	96	29/9	02:14	東	E	51	29/9	03:00
							東	E	51	29/9	05:00
坪洲	Peng Chau	東	E	110	29/9	02:11	東	E	76	29/9	03:00
平洲	Ping Chau	東	E	121	29/9	04:12	東	E	30	29/9	05:00
西貢	Sai Kung	東北偏東	ENE	104	29/9	02:05	東	E	58	29/9	05:00
沙洲	Sha Chau	東	E	85	29/9	04:25	東南	SE	58	29/9	19:00
沙螺灣	Sha Lo Wan	東	E	96	29/9	05:00	東	E	56	29/9	05:00
沙田	Sha Tin	北	N	79	29/9	03:17	東北	NE	27	29/9	04:00
石崗	Shek Kong	東	E	96	29/9	14:13	東	E	36	29/9	09:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	92	29/9	18:19	東	E	54	29/9	05:00
							東	E	54	29/9	10:00
打鼓嶺	Ta Kwu Ling	東	E	70	29/9	16:42	東北偏東	ENE	27	29/9	04:00
							東北偏東	ENE	27	29/9	06:00
大美督	Tai Mei Tuk	東	E	108	29/9	10:12	東	E	77	29/9	05:00
大帽山	Tai Mo Shan	東南偏東	ESE	149	29/9	09:47	東南	SE	96	29/9	15:00
塔門	Tap Mun	東	E	96	29/9	02:03	東	E	49	29/9	01:00
大老山	Tate's Cairn	東	E	131	29/9	04:58	東	E	87	29/9	05:00
鯽魚湖	Tsak Yue Wu	東北偏東	ENE	62	29/9	03:22	東	E	20	29/9	03:00
							東	E	20	29/9	05:00
將軍澳	Tseung Kwan O	東北偏東	ENE	72	29/9	02:09	東北	NE	25	29/9	03:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南偏東	ESE	79	29/9	07:46	東	E	31	29/9	09:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	96	29/9	18:01	東南	SE	36	29/9	19:00
橫瀾島	Waglan Island	東	E	110	29/9	01:14	東	E	83	29/9	03:00
濕地公園	Wetland Park	東	E	77	29/9	04:47	東	E	31	29/9	04:00
黃竹坑	Wong Chuk Hang	東	E	96	29/9	07:04	東	E	41	29/9	03:00

表 3.4.2　在納沙影響下，在熱帶氣旋警告系統的八個參考測風站所錄到持續風力達到強風及烈風程度的時段

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

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 First time strong wind speed* was reached		最後達到強風*時間 Last time strong wind speed* was reached		最初達到烈風#時間 First time gale force wind speed* was reached		最後達到烈風#時間 Last time gale force wind speed* was reached	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	28/9	14:29	30/9	06:08	28/9	21:25	29/9	21:51
香港國際機場	Hong Kong International Airport	28/9	20:45	29/9	22:07	29/9	03:05	29/9	14:54
啟德	Kai Tak	29/9	00:40	29/9	19:11	-			
西貢	Sai Kung	28/9	20:02	29/9	18:54	29/9	01:27	29/9	02:08

- 未達到指定的風力

- not reaching the specified wind speed

* 十分鐘平均風力達每小時 41-62 公里

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

十分鐘平均風力達每小時 63-87 公里

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

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

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

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

站 (參閱圖 3.4.2) Station (See Fig. 3.4.2)			九月二十七日 27 Sep	九月二十八日 28 Sep	九月二十九日 29 Sep	九月三十日 30 Sep	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			微量 Trace	2.5	30.8	2.7	36.0
香港國際機場 Hong Kong International Airport (HKA)			0.0	3.7	53.6	28.3	85.6
N26	長洲	Cheung Chau	0.0	3.0	46.0	13.0	62.0
N05	粉嶺	Fanling	0.0	8.0	20.0	13.5	41.5
N13	糧船灣	High Island	0.0	3.5	9.0	3.0	15.5
K04	佐敦谷	Jordan Valley	0.0	3.0	29.5	1.5	34.0
N06	葵涌	Kwai Chung	0.0	4.5	45.0	1.0	50.5
H12	半山區	Mid Levels	0.0	4.0	38.5	13.0	55.5
H21	淺水灣	Repulse Bay	0.0	3.5	34.5	9.5	47.5
N09	沙田	Sha Tin	0.0	7.5	10.0	7.5	25.0
H19	筲箕灣	Shau Kei Wan	0.0	2.0	25.0	1.0	28.0
SEK	石崗	Shek Kong	0.0	6.0	68.0	7.0	81.0
K06	蘇屋邨	So Uk Estate	0.0	4.0	49.5	0.5	54.0
R31	大美督	Tai Mei Tuk	0.0	7.0	11.5	10.5	29.0
R21	踏石角	Tap Shek Kok	0.0	6.0	59.5	8.5	74.0
N17	東涌	Tung Chung	0.0	5.5	63.5	31.0	100.0
R27	元朗	Yuen Long	0.0	5.0	59.0	6.5	70.5

表 3.4.4　納沙影響香港期間，香港各潮汐站所錄得的最高潮位及與天文潮位的最大差距
Table 3.4.4　Times and heights of the maximum sea level and the maximum deviation from astronomical tide at tide stations in Hong Kong during the passage of Nesat

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)			與天文潮位的最大差距* Maximum deviation from astronomical tide*		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.86	28/9	22:09	0.71	29/9	06:30
石壁	Shek Pik	2.95	29/9	10:13	0.80	29/9	10:13
大廟灣	Tai Miu Wan	2.91	28/9	22:20	0.83	29/9	10:50
大埔滘	Tai Po Kau	2.89	28/9	23:07	0.80	29/9	02:42
尖鼻咀	Tsim Bei Tsui	3.13	29/9	11:22	0.75	29/9	08:14
橫瀾島	Waglan Island	2.86	28/9	22:17	0.66	29/9	04:54

*潮位差距是基於風暴潮及中國東南部沿岸的東北季候風的共同影響。
* The deviations are due to the combined effect of storm surge and the northeast monsoon prevailing over the coast of southeastern China.

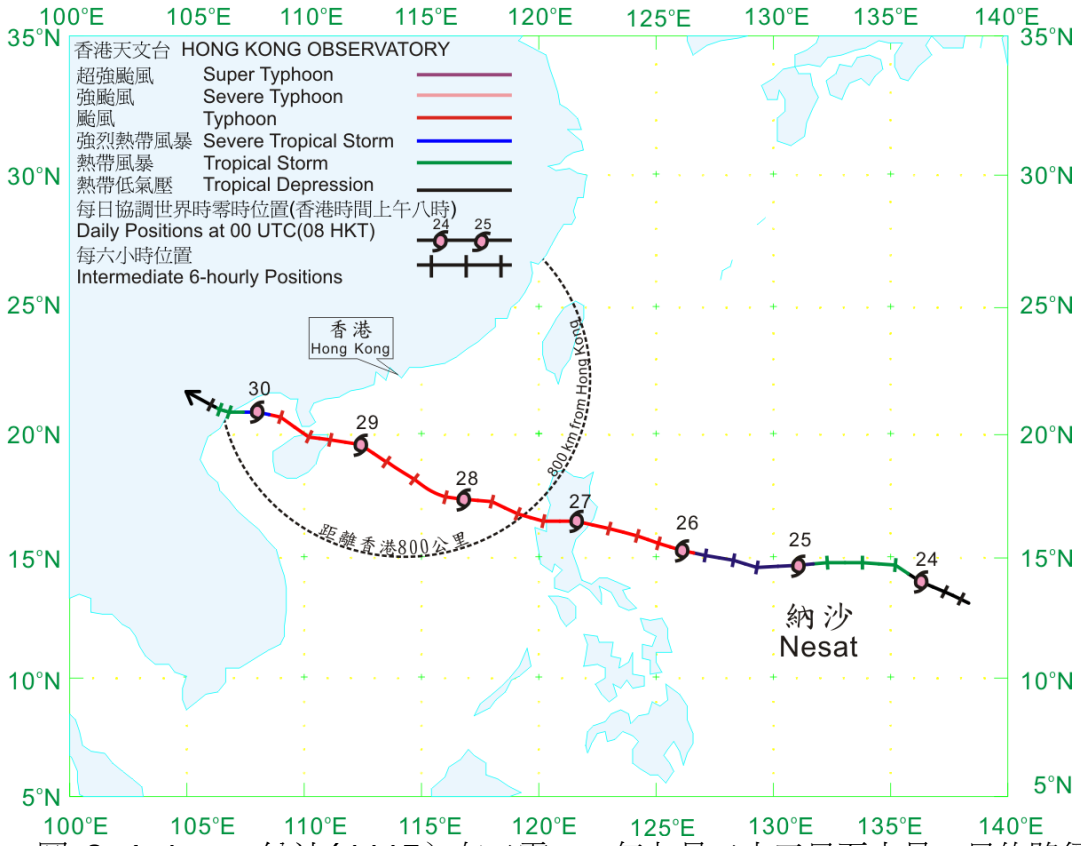


圖 3.4.1　　納沙(1117）在二零一一年九月二十三日至十月一日的路徑圖。

Figure 3.4.1　　Track of Nesat (1117) for 23 September – 1 October 2011.

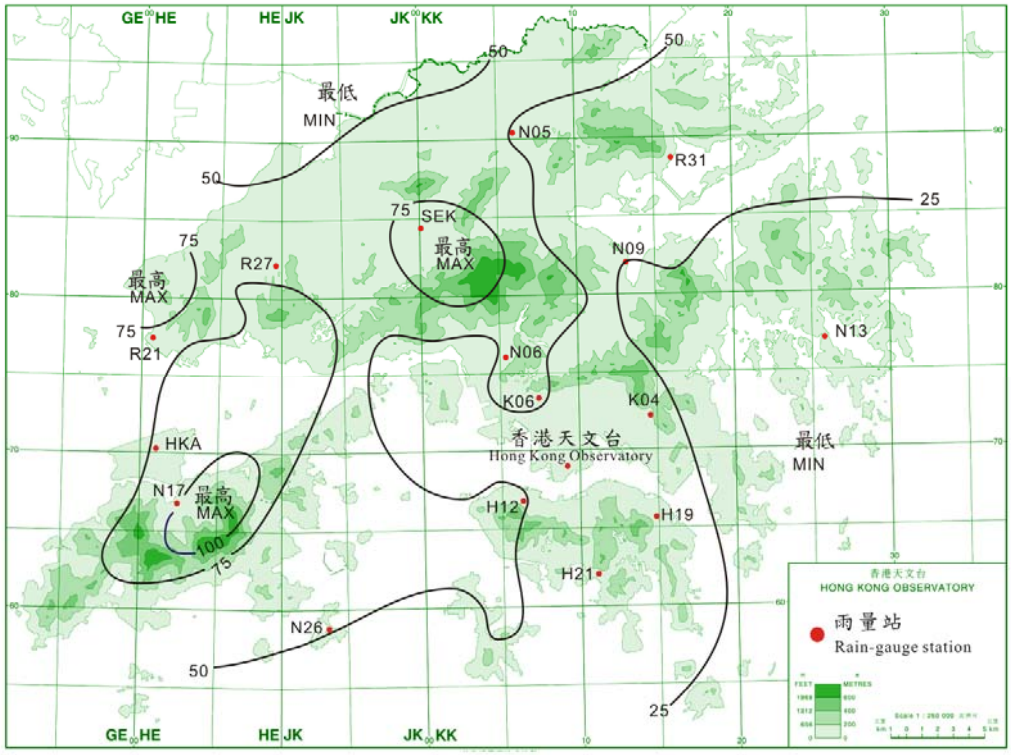


圖 3.4.2　　二零一一年九月二十七日至三十日的雨量分佈(等雨量線單位為毫米)。

Figure 3.4.2　　Rainfall distribution for 27 – 30 September 2011 (isohyets are in millimetres).

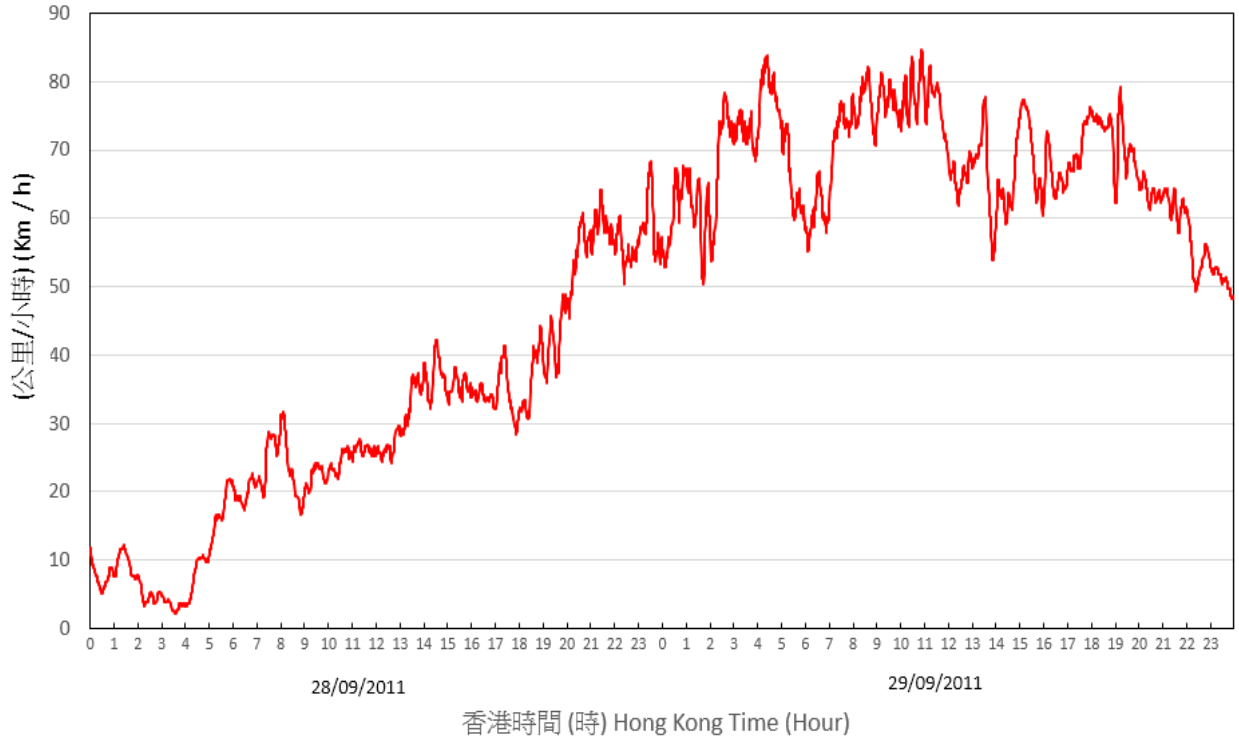


圖 3.4.3　二零一一年九月二十八日至二十九日長洲自動氣象站錄得十分鐘平均風速的時間序列。

Figure 3.4.3　Trace of the 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 28 – 29 September 2011.

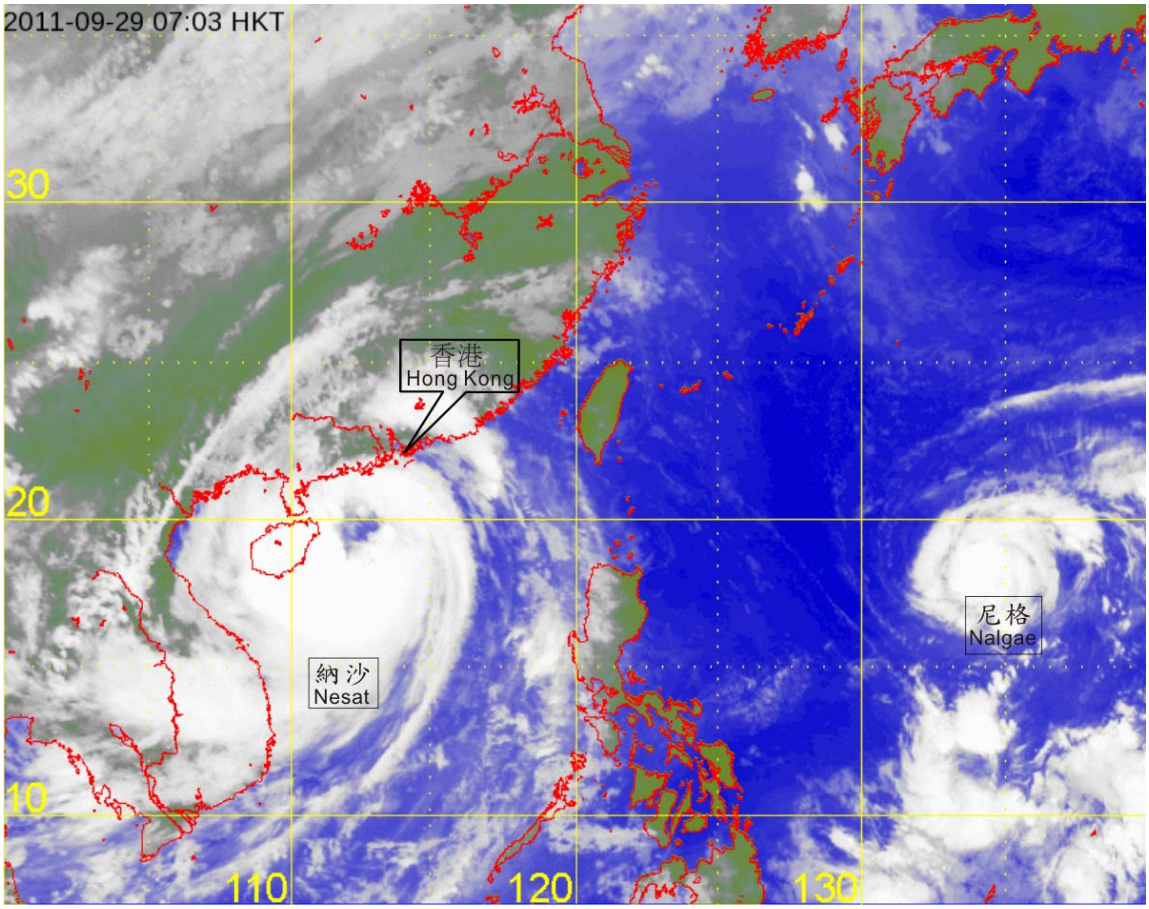


圖 3.4.4　颱風納沙在二零一一年九月二十九日上午 7 時的紅外線衛星圖片。當時納沙位於香港西南偏南約 350 公里，最為接近香港。

Figure 3.4.4　Infra-red satellite imagery at 7 a.m. on 29 September 2011 of Typhoon Nesat. Nesat was at its closest to Hong Kong at about 350 km to the south-southwest at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

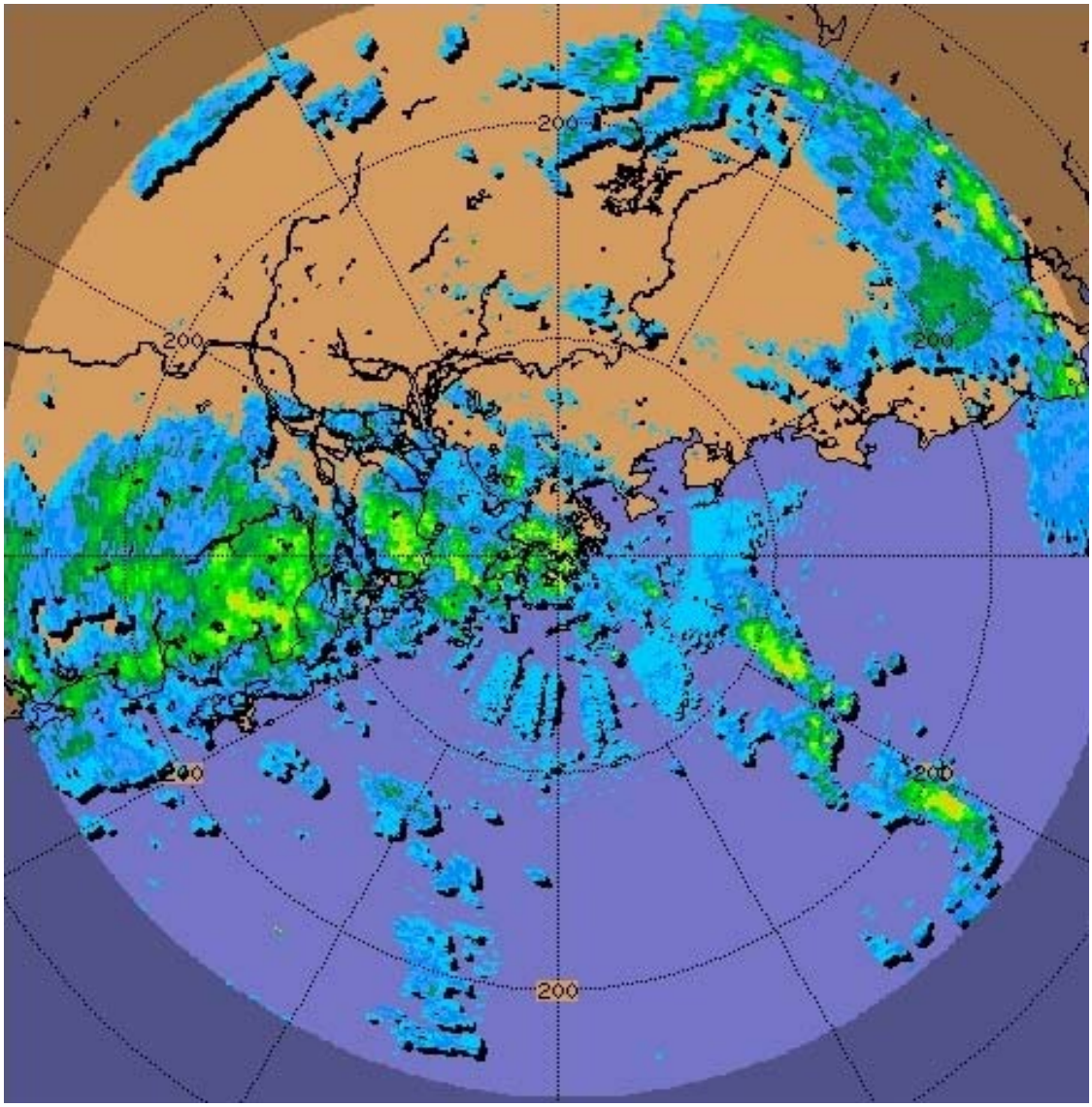


圖 3.4.5　二零一一年九月二十九日上午 10 時的雷達回波圖像，當時颱風納沙的中心集結在香港西南約 370 公里，並向西北偏西移動，移向海南島，其外圍雨帶正影響香港。

Figure 3.4.5　Radar echoes captured at 10:00 a.m. on 29 September 2011. An outer rainband associated with Typhoon Nesat was affecting Hong Kong. The centre of Nesat was located about 370 km southwest of Hong Kong at that time and was moving west-northwestwards towards Hainan Island.

3.5 強颱風尼格(1119)：二零一一年九月二十七日至十月五日

尼格是香港天文台在二零一一年第五個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓尼格於九月二十七日在馬尼拉東北偏東約 1 850 公里的北太平洋西部上形成，並大致向西移動。它於翌日增強為熱帶風暴，並向西至西南偏西移動，九月二十九日進一步增強為強烈熱帶風暴。尼格於九月三十日凌晨在馬尼拉東北偏東的北太平洋西部上增強為颱風。當日黃昏尼格進一步增強為強颱風，並於十月一日早上在馬尼拉東北約 300 公里處的海域上達到其最高強度，中心附近持續風力達到每小時 175 公里。其後尼格橫過呂宋，下午較後時間進入南海。它於隨後兩天向西至西北偏西移動，時速約 14 公里，橫過南海北部。尼格於十月二日凌晨減弱為颱風，下午減弱為強烈熱帶風暴。它於十月四日進一步減弱為熱帶風暴，當日下午橫過海南島南部，晚間進入北部灣及進一步減弱為熱帶低氣壓。尼格於十月五日向西南移動，橫過北部灣南部，日間在海南島附近海域消散。 根據報章報導，尼格吹襲菲律賓期間，導致最少三人死亡。海南島至少有五間房屋倒塌，直接經濟損失超過 2.6 億元人民幣。

香港天文台於十月二日上午 10 時 40 分發出一號戒備信號，當時尼格位於香港東南偏南約 740 公里。當日本港吹和緩至清勁東北風，下午及黃昏時高地吹強風。香港天文台總部於當日下午 4 時 41 分錄得最低瞬時海平面氣壓 1007.6 百帕斯卡，當時尼格位於香港東南偏南約 660 公里。受到東北季候風及尼格的共同影響下，十月三日早上本港風勢增強，離岸間中吹強風，高地風勢間中達烈風程度。天文台在上午 6 時 40 分發出三號強風信號，當時尼格位於香港以南約 530 公里。尼格於當日上午 10 時至下午 5 時左右最接近香港，在香港以南約 510 公里處掠過。隨着尼格稍為減弱及逐漸遠離，本港受東北季候風的影響逐漸顯著，天文台於下午 7 時 10 分取消所有熱帶氣旋警告信號及同時發出強烈季候風信號。在熱帶氣旋警告生效期間，昂坪、大帽山及大老山錄得每小時超過 80 公里的陣風。

受到尼格的外圍雨帶影響，十月二日及三日香港多雲及有幾陣雨，各地區普遍有數毫米的雨量記錄。

尼格吹襲期間，一艘漁船在大鵬灣鴨洲海面上與另一艘拖船相撞，一名漁民受傷。受到東北季候風及尼格的共同影響，十月二日及三日凌晨低窪地區如大澳、沙田及大埔分別出現海水倒灌，造成輕微水浸。一人據報在大嶼山長沙因潮漲被困石灘，事件中無人受傷。

表3.5.1- 3.5.4 分別是尼格影響香港期間各站錄得的最高風速、持續風力達到強風的時段、本港的日雨量及最高潮位資料。圖3.5.1-3.5.4 分別為尼格的路徑圖、本港的雨量分佈圖、尼格的衛星及相關雷達圖像。

3.5 Severe Typhoon Nalgae (1119) : 27 September – 5 October 2011

Nalgae was the fifth tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2011.

Nalgae formed as tropical depression over the western North Pacific about 1 850 km east-northeast of Manila on 27 September and moved generally westwards. It intensified into a tropical storm on the following day and moved west to west-southwestwards. Nalgae intensified further into a severe tropical storm on 29 September and became a typhoon over the western North Pacific to the east-northeast of Manila during the early hours on 30 September. It further strengthened into a severe typhoon that evening, attaining its peak intensity with an estimated maximum sustained wind of 175 km/h near its centre over the seas about 300 km northeast of Manila on the morning of 1 October. Nalgae then crossed Luzon and entered the South China Sea in the late afternoon. It moved west to west-northwestwards across the northern part of the South China Sea at about 14 km/h for the following two days. Nalgae weakened into a typhoon in the early hours on 2 October and a severe tropical storm that afternoon. It weakened further into a tropical storm on 4 October and crossed the southern part of Hainan Island that afternoon, entering Beibu Wan and weakening further into a tropical depression at night. Nalgae moved southwestwards across the southern part of Beibu Wan on 5 October and dissipated over the seas near Hainan that day. According to press reports, at least three people were killed in the Philippines during the passage of Nalgae. In Hainan Island, at least five houses collapsed and direct economic loss exceeded 260 million RMB.

In Hong Kong, the Standby Signal No. 1 was issued at 10:40 a.m. on 2 October when Nalgae was about 740 km south-southeast of Hong Kong. Local winds were moderate to fresh northeasterlies that day, strong on high ground during the afternoon and evening. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1007.6 hPa was recorded at 4:41 p.m. that day when Nalgae was about 660 km south-southeast of Hong Kong. Under the combined effect of the northeast monsoon and Nalgae, local winds strengthened on the morning of 3 October and were strong at times offshore, occasionally reaching gale force on high ground. The Strong Wind Signal No. 3 was issued at 6:40 a.m. when Nalgae was about 530 km south of Hong Kong. Nalgae was closest to Hong Kong between about 10 a.m. to 5 p.m. that day passing about 510 km to the south. As Nalgae weakened slightly and moved gradually away, Hong Kong came increasingly under the influence of the northeast monsoon. The Observatory cancelled all tropical cyclone warning signals at 7:10 p.m. and issued the Strong Monsoon Signal at the same time. Gusts of over 80 km/h were recorded at Ngong Ping, Tai Mo Shan and Tate’s Cairn during the period when the tropical cyclone warning signals were in force.

Under the influence of the outer rainbands of Nalgae, the weather in Hong Kong was cloudy with some rain on 2 and 3 October. Several millimetres of rainfall were generally recorded over the territory.

In Hong Kong, a fishing boat collided with a tugboat off Ap Chau in Mirs Bay and a fisherman was injured during the passage of Nalgae. Under the combined influence of the northeast monsoon and Nalgae, there were reports of sea water backflow in low-lying areas such as Tai O, Sha Tin and Tai Po during the early hours of 2 October and 3 October, resulting in minor flooding in the areas. A person was reported to have been trapped in a beach at Cheung Sha, Lantau Island during high tide. No one was injured during the incident.

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

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

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

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速 (公里/時) Speed (km/h)	日期/月份 Date/Month	時間 Time
黃麻角 (赤柱)	Bluff Head (Stanley)	東北偏北	NNE	49	3/10	06:31	東北	NE	16	3/10	09:00
							東北	NE	16	3/10	10:00
中環碼頭	Central Pier	東北偏北	NNE	41	3/10	09:31	東北偏北	NNE	23	3/10	13:00
長洲	Cheung Chau	東北	NE	65	3/10	17:14	東北偏北	NNE	43	3/10	06:00
長洲泳灘	Cheung Chau Beach	東北偏北	NNE	68	3/10	05:29	東北	NE	47	3/10	18:00
青洲	Green Island	-	-	72	3/10	12:01	-	-	51	3/10	12:00
香港國際機場	Hong Kong International Airport	東北	NE	52	2/10	20:40	東北	NE	36	2/10	21:00
啟德	Kai Tak	北	N	52	3/10	11:31	東北偏北	NNE	19	3/10	08:00
京士柏	King's Park	北	N	43	3/10	09:26	北	N	19	3/10	04:00
							北	N	19	3/10	05:00
流浮山	Lau Fau Shan	東北	NE	58	3/10	08:32	東北偏北	NNE	31	3/10	14:00
		東北	NE	58	3/10	18:55					
昂坪	Ngong Ping	東北偏東	ENE	90	3/10	03:50	東北偏東	ENE	67	3/10	09:00
							東北偏東	ENE	67	3/10	18:00
北角	North Point	東北偏東	ENE	51	2/10	20:27	東北偏東	ENE	22	3/10	18:00
							東北偏東	ENE	22	3/10	19:00
坪洲	Peng Chau	北	N	47	3/10	07:24	北	N	31	3/10	07:00
平洲	Ping Chau	東北	NE	45	2/10	21:59	東北偏東	ENE	12	2/10	23:00
西貢	Sai Kung	東北偏北	NNE	62	3/10	11:08	東北偏北	NNE	31	3/10	12:00
沙洲	Sha Chau	東北偏北	NNE	65	3/10	11:08	東北偏北	NNE	47	3/10	12:00
沙螺灣	Sha Lo Wan	東北	NE	49	3/10	11:32	東北	NE	31	3/10	12:00
沙田	Sha Tin	東北偏北	NNE	51	3/10	16:37	東北偏北	NNE	23	3/10	17:00
石崗	Shek Kong	東北	NE	41	3/10	13:03	東北	NE	20	3/10	12:00
九龍天星碼頭	Star Ferry (Kowloon)	東北偏北	NNE	30	3/10	12:14	東	E	19	2/10	13:00
打鼓嶺	Ta Kwu Ling	東北偏北	NNE	56	3/10	10:00	北	N	25	3/10	12:00
大美督	Tai Mei Tuk	東北	NE	65	3/10	17:02	東北	NE	40	3/10	18:00
大帽山	Tai Mo Shan	東北偏東	ENE	87	3/10	18:03	東北偏東	ENE	68	3/10	10:00
塔門	Tap Mun	北	N	45	3/10	10:26	北	N	20	3/10	07:00
							北	N	20	3/10	11:00
大老山	Tate's Cairn	北	N	85	3/10	05:56	東北偏北	NNE	67	3/10	06:00
鯽魚湖	Tsak Yue Wu	東北偏北	NNE	49	3/10	04:45	東北偏北	NNE	25	3/10	11:00
將軍澳	Tseung Kwan O	東北偏北	NNE	45	3/10	07:40	北	N	14	3/10	11:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	西北	NW	36	3/10	04:59	西北偏北	NNW	16	3/10	06:00
屯門政府合署	Tuen Mun Government Offices	東北偏北	NNE	54	3/10	10:50	東北偏北	NNE	20	3/10	12:00
		東北偏北	NNE	54	3/10	11:24					
橫瀾島	Waglan Island	東北	NE	62	3/10	18:16	東北偏北	NNE	51	3/10	06:00
濕地公園	Wetland Park	東北	NE	43	2/10	19:15	東北	NE	22	3/10	19:00
黃竹坑	Wong Chuk Hang	東南偏東	ESE	54	3/10	09:07	東南偏東	ESE	19	3/10	09:00

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

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

站（參閱圖 1.1） Station (See Fig. 1.1)		最初達到強風*時間 First time strong wind speed* was reached		最後達到強風*時間 Last time strong wind speed* was reached	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	2/10	21:21	3/10	17:48

* 十分鐘平均風速達每小時 41-62 公里

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

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

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

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

站 (參閱圖 3.5.2) Station (See Fig. 3.5.2)			十月二日 2 October	十月三日 3 October	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			3.3	1.6	4.9
香港國際機場 Hong Kong International Airport (HKA)			2.2	1.9	4.1
N26	長洲	Cheung Chau	3.0	5.0	8.0
N05	粉嶺	Fanling	3.0	1.5	4.5
N13	糧船灣	High Island	4.0	2.0	6.0
K04	佐敦谷	Jordan Valley	4.0	3.0	7.0
N06	葵涌	Kwai Chung	2.5	1.5	4.0
H12	半山區	Mid Levels	3.0	2.0	5.0
H21	淺水灣	Repulse Bay	3.0	2.5	5.5
N09	沙田	Sha Tin	2.5	1.0	3.5
H19	筲箕灣	Shau Kei Wan	2.5	3.0	5.5
SEK	石崗	Shek Kong	3.0	2.5	5.5
K06	蘇屋邨	So Uk Estate	3.0	2.0	5.0
R31	大美督	Tai Mei Tuk	2.0	[1.0]	[3.0]
R21	踏石角	Tap Shek Kok	2.5	[1.0]	[3.5]
N17	東涌	Tung Chung	3.5	4.0	7.5
R27	元朗	Yuen Long	3.5	[0.5]	[4.0]

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

表 3.5.4　尼格影響香港期間，香港各潮汐站所錄得的最高潮位及與天文潮位的最大差距
Table 3.5.4　Times and heights of the maximum sea level and the maximum deviation from astronomical tide at tide stations in Hong Kong during the passage of Nalgae

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)			與天文潮位的最大差距* Maximum deviation from astronomical tide*		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	3.25	3/10	01:39	0.86	3/10	13:11
石壁	Shek Pik	3.18	3/10	01:32	0.80	3/10	14:30
大廟灣	Tai Miu Wan	3.31	3/10	01:06	0.96	3/10	01:10
大埔滘	Tai Po Kau	3.39	3/10	00:36	1.04	3/10	00:36
尖鼻咀	Tsim Bei Tsui	3.36	3/10	03:09	0.94	3/10	03:09
橫瀾島	Waglan Island	3.30	3/10	01:05	0.91	3/10	06:46

*潮位差距是基於風暴潮及華南沿岸的東北季候風的共同影響。
*The deviations are due to the combined effect of storm surge and the northeast monsoon prevailing over the south China coast.

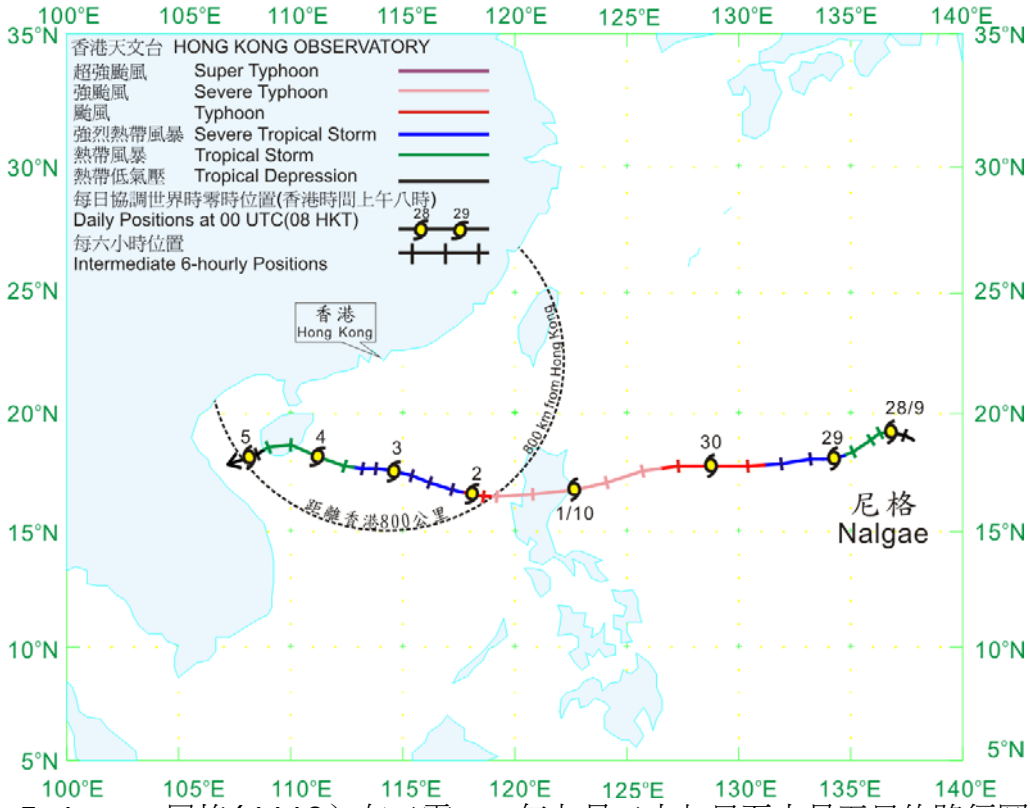


圖 3.5.1 尼格(1119)在二零一一年九月二十七日至十月五日的路徑圖。

Figure 3.5.1 Track of Nalgae (1119) for 27 September – 5 October 2011.

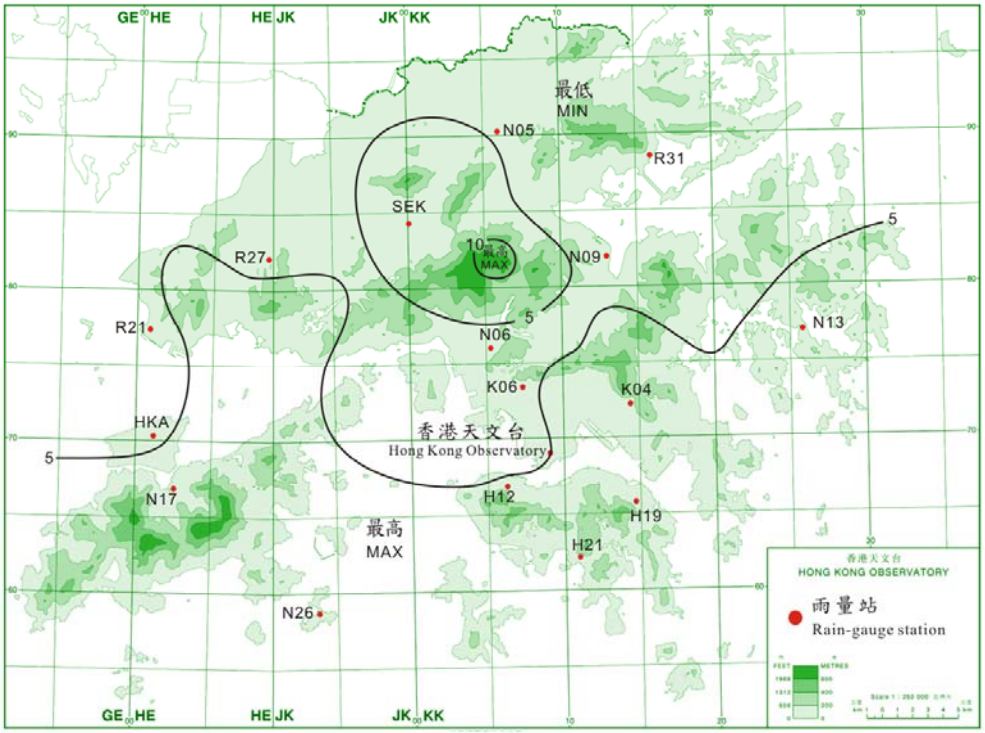


圖 3.5.2 二零一一年十月二日至三日的雨量分佈(等雨量線單位為毫米)。

Figure 3.5.2 Rainfall distribution for 2 – 3 October 2011 (isohyets are in millimetres).

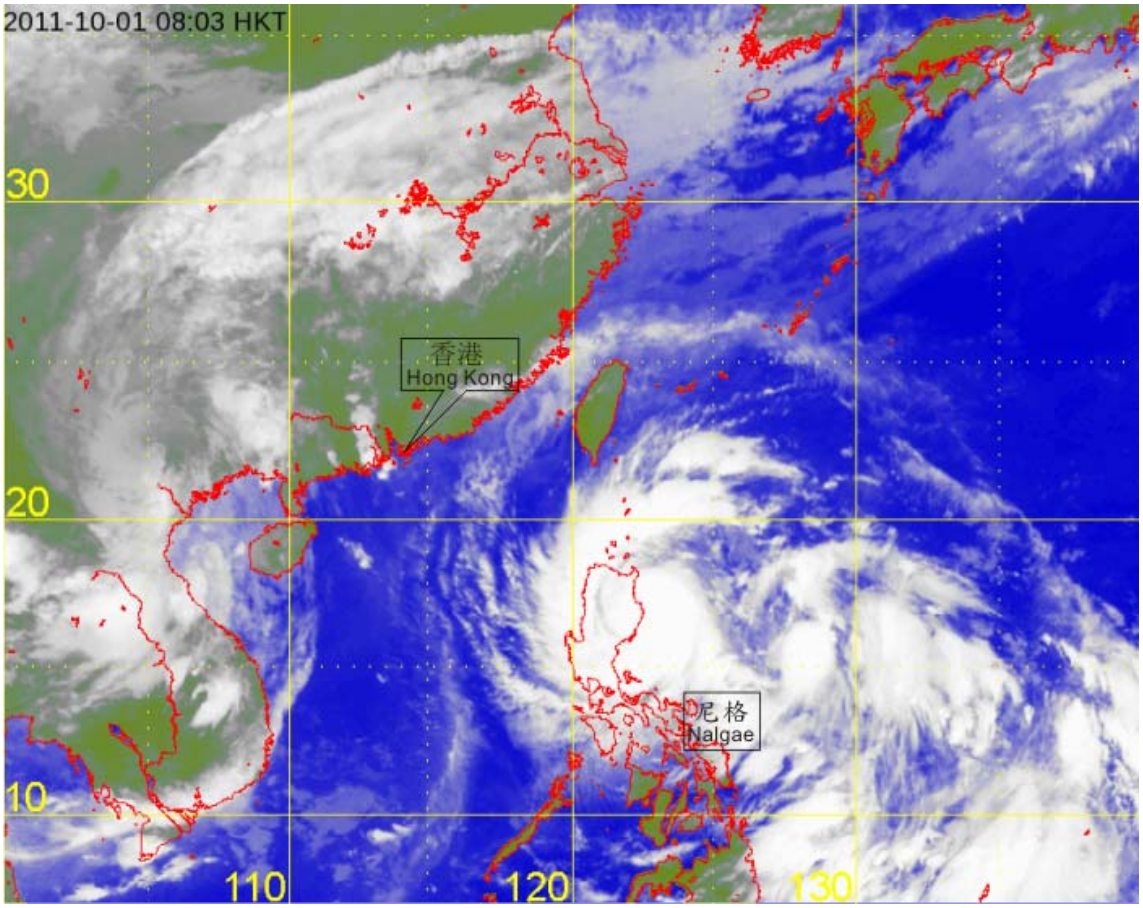


圖 3.5.3　強颱風尼格在二零一一年十月一日上午 8 時的紅外線衛星圖片。當時尼格達到其最高強度，中心附近估計最高持續風速達到每小時 175 公里。

Figure 3.5.3　Infra-red satellite imagery at 8 a.m. on 1 October 2011 of Severe Typhoon Nalgae. Nalgae was at its peak intensity with estimated maximum sustained winds of 175 km/h near its centre at that time.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

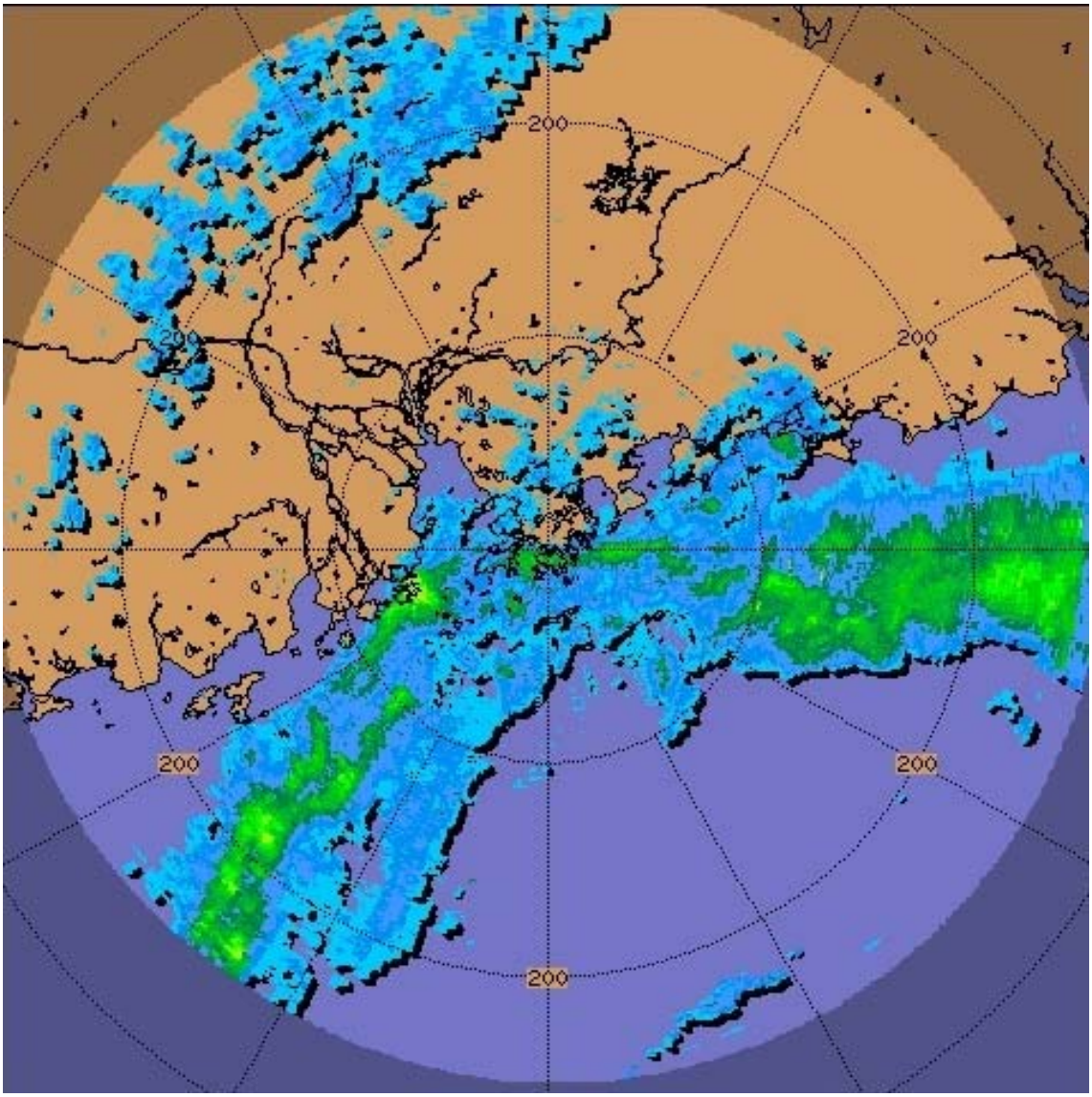


圖 3.5.4　二零一一年十月三日上午 2 時的雷達回波圖像，顯示與尼格相連的外圍雨帶正影響香港。當時強烈熱帶風暴尼格的中心集結在香港東南偏南約 560 公里，並向西北偏西移動，橫過南海北部。

Figure 3.5.4　Radar echoes captured at 2:00 a.m. on 3 October 2011. An outer rainband associated with Severe Tropical Storm Nalgae was affecting Hong Kong. The centre of Nalgae was located about 560 km south-southeast of Hong Kong at that time and was moving west-northwestwards across the northern part of the South China Sea.

第四節　熱帶氣旋統計表

表4.1是二零一一年在北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋一覽。表內所給出的日期只說明某熱帶氣旋在上述範圍內出現的時間，因而不一定包括整個風暴過程。這個限制對表內其他元素亦同樣適用。

表4.2是天文台在二零一一年為船舶發出的熱帶氣旋警告的次數、時段、首個及末個警告發出的時間。當有熱帶氣旋位於香港責任範圍內時（即由北緯10至30度、東經105至125度所包括的範圍），天文台會發出這些警告。表內使用的時間為協調世界時。

表4.3是二零一一年熱帶氣旋警告信號發出的次數及其時段的摘要。表內亦提供每次熱帶氣旋警告信號生效的時間和發出警報的次數。表內使用的時間為香港時間。

表4.4是一九五六至二零一一年間熱帶氣旋警告信號發出的次數及其時段的摘要。

表4.5是一九五六至二零一一年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數。

表4.6是一九五六至二零一一年間天文台發出各種熱帶氣旋警告信號的最長、最短及平均時段。

表 4.7 是二零一一年當熱帶氣旋影響香港時本港的氣象觀測摘要。資料包括熱帶氣旋最接近香港時的位置及時間和當時估計熱帶氣旋中心附近的最低氣壓、京士柏、香港國際機場及橫瀾島錄得的最高風速、香港天文台錄得的最低平均海平面氣壓以及香港各潮汐測量站錄得的最大風暴潮（即實際水位高出潮汐表中預計的部分，單位為米）。

表4.8.1是二零一一年位於香港600公里範圍內的熱帶氣旋及其為香港所帶來的雨量。

表4.8.2是一八八四至一九三九年以及一九四七至二零一一年間十個為香港帶來最多雨量的熱帶氣旋和有關的雨量資料。

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

表4.10是二零一一年間熱帶氣旋在香港所造成的損失。資料參考了各政府部門和公共事業機構所提供的報告及本地報章的報導。

表4.11是一九六零至二零一一年間熱帶氣旋在香港所造成的人命傷亡及破壞。資料參考了各政府部門和公共事業機構所提供的報告及本地報章的報導。

Section 4 TROPICAL CYCLONE STATISTICS AND TABLES

TABLE 4.1 is a list of tropical cyclones in 2011 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 2011, 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 2011. 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 2011 inclusive.

TABLE 4.5 gives the annual number of tropical cyclones in Hong Kong's area of responsibility between 1956 and 2011 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 1956-2011.

TABLE 4.7 is a summary of meteorological information for each tropical cyclone affecting Hong Kong in 2011, including the position, time and the estimated minimum central pressure of each tropical cyclone during its closest approach to Hong Kong, the maximum winds at King’s Park, Hong Kong International Airport and Waglan Island, the minimum mean sea-level pressure recorded at the Hong Kong Observatory and the maximum storm surge (the excess, in metres, of the actual water level over that predicted in the Tide Tables) recorded at various tide stations in Hong Kong.

TABLE 4.8.1 tabulates the amount of rainfall associated with each tropical cyclone that came within 600 km of Hong Kong in 2011.

TABLE 4.8.2 highlights the 10 wettest tropical cyclones in Hong Kong for the period 1884-1939 and 1947-2011.

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 2011. 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: 1960-2011. The information is based on reports from various government departments, public utility companies and local newspapers.

表 4.1　　二零一一年在北太平洋西部及南海區域的熱帶氣旋一覽

TABLE 4.1　LIST OF TROPICAL CYCLONES IN THE WESTERN NORTH PACIFIC AND THE SOUTH CHINA SEA IN 2011

熱帶氣旋名稱	Name of tropical cyclone	編號 Code	路徑起點 Beginning of track				最高強度 (估計) Peak intensity (estimated)		路徑終點 End of track				DISP: 消散 Dissipated XT: 變爲溫帶氣旋 Became Extratropical
			日期/月份 Date/Month	時間+ Time+	位置 Position 北緯 °N	東經 °E	風力 (公里每小時) Winds (km/h)	氣壓 (百帕斯卡) Pressure (hPa)	日期/月份 Date/Month	時間+ Time+	位置 Position 北緯 °N	東經 °E	
熱帶風暴艾利	Tropical Storm Aere	1101	7 / 5	0000	12.8	126.8	85	988	12 / 5	0000	31.2	134.6	DISP
超強颱風桑達	Super Typhoon Songda	1102	20 / 5	1200	8.3	140.5	205	920	29 / 5	0000	30.7	131.6	XP
熱帶風暴莎莉嘉	Tropical Storm Sarika	1103	9 / 6	0600	15.4	119.4	65	995	11 / 6	0000	23.6	116.9	DISP
熱帶風暴海馬	Tropical Storm Haima	1104	18 / 6	1200	15.1	124.9	85	985	25 / 6	0600	19.5	103.7	DISP
強烈熱帶風暴米雷	Severe Tropical Storm Meari	1105	21 / 6	1200	11.8	131.3	110	972	27 / 6	0000	38.5	124.3	DISP
超強颱風馬鞍	Super Typhoon Ma-on	1106	11 / 7	1200	18.1	157.3	185	930	24 / 7	0600	39.5	149.2	XP
熱帶低氣壓蝎虎	Tropical Depression Tokage	1107	15 / 7	0600	14.0	133.4	45	1000	15 / 7	1800	14.1	135.5	DISP
強烈熱帶風暴洛坦	Severe Tropical Storm Nock-ten	1108	25 / 7	0000	12.8	128.1	105	980	30 / 7	1800	19.1	104.4	DISP
超強颱風梅花	Super Typhoon Muifa	1109	26 / 7	1200	9.0	144.5	185	930	9 / 8	0000	44.3	126.5	XT
強烈熱帶風暴苗柏	Severe Tropical Storm Merbok	1110	3 / 8	0000	23.2	161.8	90	980	9 / 8	1200	41.9	162.7	XT
熱帶低氣壓	Tropical Depression	-	10 / 8	1200	25.4	136.5	45	1002	13 / 8	0600	32.0	142.7	DISP
超強颱風南瑪都	Super Typhoon Nanmadol	1111	23 / 8	0000	15.4	127.4	195	920	31 / 8	0600	24.7	118.3	DISP
強烈熱帶風暴塔拉斯	Severe Tropical Storm Talas	1112	24 / 8	1200	16.6	141.7	110	975	5 / 9	0000	39.4	136.3	XT
熱帶風暴奧鹿	Tropical Storm Noru	1113	2 / 9	0000	20.7	150.3	75	994	6 / 9	0600	39.4	150.1	XT
熱帶風暴玫瑰	Tropical Storm Kulap	1114	7 / 9	0000	21.2	135.4	65	995	9 / 9	1800	30.5	128.1	DISP
強颱風洛克	Severe Typhoon Roke	1115	13 / 9	1200	22.2	138.0	155	950	22 / 9	0000	42.7	146.6	XT
颱風桑卡	Typhoon Sonca	1116	14 / 9	1200	20.6	154.4	130	970	20 / 9	0600	40.7	160.2	XT
颱風納沙	Typhoon Nesat	1117	23 / 9	1200	13.3	138.0	145	955	30 / 9	1800	21.2	106.0	DISP
熱帶風暴海棠	Tropical Storm Haitang	1118	24 / 9	1800	15.6	112.1	65	994	27 / 9	0600	17.0	106.8	DISP
強颱風尼格	Severe Typhoon Nalgae	1119	27 / 9	1200	18.9	137.8	175	935	5 /10	0000	18.2	108.2	DISP
熱帶低氣壓榕樹	Tropical Depression Banyan	1120	10 / 10	0600	7.5	131.8	55	998	15 /10	0000	18.6	116.9	DISP
熱帶風暴天鷹	Tropical Storm Washi	1121	14 / 12	0000	5.7	140.6	85	992	19 /12	1200	9.2	111.4	DISP

+ 時間爲協調世界時。 + Times are given in UTC.

表 4.2　　二零一一年爲船舶發出的熱帶氣旋警告
TABLE 4.2　TROPICAL CYCLONE WARNINGS FOR SHIPPING ISSUED IN 2011

熱帶氣旋	Tropical cyclone	發出警告的次數 No. of warnings issued	發出的日期及時間 Date and time of issue of				時段 (小時) Duration (hours)
			首次警告 First warning		末次警告 Last warning		
			日期/月份 Date/Month	時間+ Time+	日期/月份 Date/Month	時間+ Time+	
熱帶風暴艾利	Tropical Storm Aere	28	7 / 5	1800	11 / 5	0000	78
超強颱風桑達	Super Typhoon Songda	16	26 / 5	1200	28 / 5	0900	45
* 熱帶風暴莎莉嘉	* Tropical Storm Sarika	14	9 / 6	0900	11 / 6	0000	39
* 熱帶風暴海馬	* Tropical Storm Haima	51	18 / 6	1200	24 / 6	1800	150
強烈熱帶風暴米雷	Severe Tropical Storm Meari	11	24 / 6	1200	25 / 6	1500	27
* 強烈熱帶風暴洛坦	* Severe Tropical Storm Nock-ten	41	25 / 7	2100	30 / 7	1500	114
超強颱風梅花	Super Typhoon Muifa	4	6 / 8	0900	6 / 8	1800	9
超強颱風南瑪都	Super Typhoon Nanmadol	47	25 / 8	0900	31 / 8	0000	135
熱帶風暴海棠	Tropical Storm Haitang	21	24 / 9	2100	27 / 9	0300	54
* 颱風納沙	* Typhoon Nesat	37	26 / 9	0900	30 / 9	1500	102
* 強颱風尼格	* Severe Typhoon Nalgae	37	30 / 9	1500	5 / 10	0300	108
熱帶低氣壓榕樹	Tropical Depression Banyan	26	12 / 10	0300	15 / 10	0600	75
	共 Total	333					912

* 這些熱帶氣旋引致天文台需要發出熱帶氣旋警告信號。

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

+ 時間爲協調世界時。

+ Times are given in UTC.

表 4.3　二零一一年天文台所發出的熱帶氣旋警告信號及警報發出的次數

TABLE 4.3　TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG AND NUMBER OF WARNING BULLETINS ISSUED IN 2011

摘要 SUMMARY

信號 Signal	次數 No. of occasions	總時段 Total duration	
		時 h	分 min
1	8	121	25
3	5	80	5
8 西北 NW	-	-	
8 西南 SW	-	-	
8 東北 NE	-		
8 東南 SE	1	11	30
9	-	-	
10	-	-	
共 Total	14	213	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*
熱帶風暴莎莉嘉 Tropical Storm Sarika	23	1	10/6	09:40	11/6	07:15
熱帶風暴海馬 Tropical Storm Haima	77	1	20/6	21:35	22/6	05:45
		3	22/6	05:45	23/6	10:25
		1	23/6	10:25	23/6	20:45
強烈熱帶風暴洛坦 Severe Tropical Storm Nock-ten	35	1	28/7	08:40	28/7	18:45
		3	28/7	18:45	29/7	14:10
		1	29/7	14:10	29/7	16:40
颱風納沙 Typhoon Nesat	64	1	27/9	22:40	28/9	17:20
		3	28/9	17:20	29/9	04:40
		8 東南 SE	29/9	04:40	29/9	16:10
		3	29/9	16:10	30/9	00:20
		1	30/9	00:20	30/9	06:25
強颱風尼格 Severe Typhoon Nalgae	35	1	2/10	10:40	3/10	06:40
		3	3/10	06:40	3/10	19:10

* 香港時間（協調世界時加八小時）

* Hong Kong Time （UTC + 8 hours）

表 4.4　一九五六至二零一一年間每年各熱帶氣旋警告信號的發出次數及總時段

TABLE 4.4　FREQUENCY AND TOTAL DURATION OF DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS : 1956-2011

信號 Signals / 年份 Year	1	3	8 西北 NW	8 西南 SW	8 東北 NE	8 東南 SE	9	10	總時段 Total duration 時 h	分 min
1956	5	4	0	0	0	0	0	0	191	25
1957	4	9	1	1	2	2	0	1	295	45
1958	4	5	0	0	1	0	0	0	214	5
1959	1	1	0	0	0	0	0	0	36	35
1960	11	7	0	2	2	2	1	1	432	35
1961	6	7	1	2	1	0	1	1	192	55
1962	4	3	0	1	1	0	1	1	158	10
1963	4	5	0	0	1	0	0	0	175	50
1964	11	14	1	3	5	3	3	2	570	15
1965	7	6	0	0	1	1	0	0	239	40
1966	6	5	0	0	2	2	0	0	284	40
1967	8	6	0	0	2	1	0	0	339	10
1968	7	7	0	1	1	0	1	1	290	10
1969	4	2	0	0	0	0	0	0	110	15
1970	6	8	2	1	2	0	0	0	286	45
1971	9	10	1	3	2	2	1	1	323	25
1972	8	6	0	0	1	1	0	0	288	20
1973	8	6	1	1	1	0	1	0	416	50
1974	12	10	0	0	2	1	1	0	525	20
1975	8	6	1	0	0	1	1	1	292	20
1976	6	6	0	0	1	2	0	0	351	30
1977	8	6	0	0	1	0	0	0	395	10
1978	8	9	1	1	3	2	0	0	462	10
1979	5	5	1	0	2	2	1	1	281	15
1980	10	8	0	0	1	1	0	0	414	5
1981	5	4	0	0	1	1	0	0	202	20
1982	7	4	0	0	0	0	0	0	247	35
1983	8	7	0	1	2	2	1	1	289	42
1984	6	6	0	0	1	0	0	0	280	2
1985	5	4	1	0	0	1	0	0	193	35
1986	6	7	0	1	1	0	0	0	305	0
1987	6	1	0	0	0	0	0	0	165	45
1988	6	4	0	0	0	0	0	0	204	10
1989	7	8	0	0	2	2	0	0	306	10
1990	6	4	0	0	0	0	0	0	245	10
1991	8	6	0	0	1	1	0	0	349	55
1992	5	5	0	0	1	1	0	0	167	5
1993	8	9	0	0	2	4	0	0	325	40
1994	4	3	0	0	0	0	0	0	138	10
1995	8	6	2	2	1	1	0	0	348	50
1996	7	2	0	0	0	1	0	0	189	0
1997	2	3	0	1	1	0	1	0	97	30
1998	5	2	0	0	0	0	0	0	188	35
1999	10	13	4	3	2	0	2	1	520	0
2000	7	3	0	0	0	0	0	0	329	5
2001	6	6	1	1	2	1	0	0	253	35
2002	3	2	0	0	0	1	0	0	144	25
2003	4	5	1	1	1	1	1	0	158	0
2004	3	2	1	1	1	0	0	0	77	35
2005	3	1	0	0	0	0	0	0	142	45
2006	10	3	0	0	0	0	0	0	317	50
2007	4	3	0	1	0	0	0	0	86	50
2008	8	9	2	2	3	2	1	0	347	0
2009	13	9	1	1	1	2	1	0	255	30
2010	8	3	0	0	0	0	0	0	220	0
2011	8	5	0	0	0	1	0	0	213	0
共 Total	366	310	23	31	58	45	19	12	14878	29
平均 Mean	6.5	5.5	0.4	0.6	1.0	0.8	0.3	0.2	265	41

表 4.5　一九五六至二零一一年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數

TABLE 4.5　ANNUAL NUMBER OF TROPICAL CYCLONES IN HONG KONG'S AREA OF RESPONSIBILITY AND THE NUMBER THAT NECESSITATED THE DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS IN HONG KONG : 1956-2011

年份 Year	每年位於香港責任範圍內的熱帶氣旋總數 Annual number of tropical cyclones in Hong Kong's area of responsibility	每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數 Annual number of tropical cyclones necessitating the display of signals in Hong Kong
1956	23	5
1957	12	6
1958	15	5
1959	18	2
1960	18	9
1961	24	6
1962	20	4
1963	13	4
1964	26	10
1965	16	6
1966	17	6
1967	17	8
1968	12	6
1969	11	4
1970	20	6
1971	20	9
1972	15	5
1973	17	9
1974	21	11
1975	12	7
1976	10	5
1977	10	8
1978	20	8
1979	18	6
1980	17	10
1981	15	5
1982	16	5
1983	15	7
1984	14	5
1985	15	5
1986	16	4
1987	12	5
1988	17	6
1989	17	7
1990	18	6
1991	14	6
1992	11	5
1993	14	9
1994	20	4
1995	17	8
1996	15	7
1997	10	2
1998	15	5
1999	12	8
2000	20	7
2001	14	6
2002	10	3
2003	12	4
2004	15	3
2005	15	3
2006	16	7
2007	12	2
2008	17	6
2009	17	8
2010	11	5
2011	12	5
平均 Mean	15.6	5.9

表 4.6　　一九五六至二零一一年間天文台發出熱帶氣旋警告信號的時段

TABLE 4.6　DURATION OF TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG : 1956-2011

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	347	42 53	161 0 (桃麗達Tilda, 1964)	4 30 (熱帶低氣壓 T.D., 2000)	265 41	570 15 (1964)	36 35 (1959)
三號或以上 3 or higher	231	29 37	124 15 (瑪麗Mary, 1960)	4 30 (熱帶低氣壓 T.D., 2000)	122 11	306 35 (1974)	15 5 (2004)
八號或以上 8 or higher	81	14 57	66 50 (瑪麗Mary, 1960)	2 40 (雲茵Wynne, 1984)	21 38	100 55 (1964)	0 0
8 西北 NW	23	5 47	15 45	1 30	2 23	18 0	0 0
8 西南 SW	31	4 49	10 45	2 0	2 40	16 10	0 0
8 東北 NE	58	7 49	35 35	2 0	8 6	40 20	0 0
8 東南 SE	45	7 26	21 45	0 20	5 59	31 15	0 0
九號或以上 9 or higher	20	7 2	12 25 (約克York, 1999)	2 0 (杜鵑Dujuan, 2003)	2 31	19 25 (1964)	0 0
10	12	6 34	11 0 (約克York, 1999)	2 30 (愛麗斯Alice, 1961)	1 24	12 10 (1964)	0 0

註：( ) 內爲創造該記錄的熱帶氣旋名稱及年份。

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

表 4.7　　二零一一年當熱帶氣旋影響香港時本港的氣象觀測摘要

TABLE 4.7　A SUMMARY OF METEOROLOGICAL OBSERVATIONS RECORDED IN HONG KONG DURING THE PASSAGES OF TROPICAL CYCLONES IN 2011

熱帶氣旋 名稱 Name of tropical cyclone	當最接近香港時 Nearest approach to Hong Kong							香港天文台錄得的最低 海平面氣壓(百帕斯卡) Minimum M.S.L. pressure (hPa) at the Hong Kong Observatory				最大風暴潮(米) Maximum storm surge (metres)					
	月份 Month	日期 Date	時間* Hour*	方位 Direction	距離 (公里) Distance (km)	移動方向 及速度 (公里每小時) Movement (km/h)	估計最低 中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	月份 Month	日期 Date	時間* Hour*	瞬時 Inst. 每小時 Hourly	鰂魚涌 Quarry Bay	石壁 Shek Pik	大廟灣 Tai Miu Wan	大埔滘 Tai Po Kau	尖鼻咀 Tsim Bei Tsui	橫瀾島 Waglan Island
熱帶風暴莎莉嘉 Tropical Storm Sarika	6	11	03	東北偏東 ENE	280	北 N 21	996	6	10	18:06 - 18:10#	1001.7	0.15	0.11	0.10	0.19	0.19	0.17
										17:00, 18:00	1001.8						
熱帶風暴海馬 Tropical Storm Haima	6	22	20	西南偏南 SSW	240	西北 NW 9	985	6	22	16:31 - 17:11#	995.2	0.51	0.56	0.55	0.57	0.51	0.48
										17:00	995.3						
強烈熱帶風暴洛坦 Severe Tropical Storm Nock-ten	7	29	14	西南 SW	440	西北 NW 24	980	7	29	06:26	1000.8	0.35	0.33	0.47	0.40	0.32	0.39
										05:00	1001.0						
颱風納沙 Typhoon Nesat	9	29	07	西南偏南 SSW	350	西北 NW 24	965	9	29	03:29 - 03:55	999.0	0.71+	0.80+	0.83+	0.80+	0.75+	0.66+
										02:00, 04:00	999.2						
強颱風尼格 Severe Typhoon Nalgae	10	3	10 - 17	南 S	510	西 W 13	980	10	2	16:41 - 18:45#	1007.6	0.86^	0.80^	0.96^	1.04^	0.94^	0.91^
									2	17:00	1007.8						
									3	05:00, 1500							

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

\# 最初及最後錄得的時間　\# First and last time recorded

\+ 潮位差距是基於風暴潮及中國東南部沿岸的東北季候風的共同影響。

\+ The deviations are due to the combined effect of storm surge and the northeast monsoon prevailing over the coast of southeastern China.

^ 潮位差距是基於風暴潮及華南沿岸的東北季候風的共同影響。

^ The deviations are due to the combined effect of storm surge and the northeast monsoon prevailing over the south China coast.

表 4.7 (續) TABLE 4.7 (cont'd)

熱帶氣旋名稱 Name of tropical cyclone	月份 Month	最高60分鐘平均風向及風速 (公里每小時) Maximum 60-min mean wind in points and km/h			最高10分鐘平均風向及風速 (公里每小時) Maximum 10-min mean wind in points and km/h			最高陣風風向及風速 (公里每小時) Maximum gust peak speed in km/h with direction in points		
		京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island
熱帶風暴莎莉嘉 Tropical Storm Sarika	6	東南偏東 ESE 13	西南偏南 SSW 20	東南 SE 14	東南偏東 ESE 16	西南偏西 WSW 34	東南 SE 19	東 E 27	西南偏西 WSW 45	東南 SE 22
熱帶風暴海馬 Tropical Storm Haima	6	東南偏東 ESE 31	東南偏東 ESE 52	東南 SE 67	東南偏東 ESE 36	東南偏東 ESE 59	東南 SE 75	東南偏東 ESE 68	東南偏東 ESE 87	東南 SE 90
強烈熱帶風暴洛坦 Severe Tropical Storm Nock-ten	7	東南偏東 ESE 27	東 E 41	東 E 54	東 E 31	東北 NE 54	東 E 72	東 E 65	東北 NE 85	東 E 92
颱風納沙 Typhoon Nesat	9	東 E 34	東 E 63	東 E 83	東 E 40	東 E 77	東北偏東 ENE 88	東 E 87	東 E 110	東 E 110
強颱風尼格 Severe Typhoon Nalgae	10	北 N 20	東北 NE 36	東北偏北 NNE 51	東北偏北 NNE 23	東北 NE 40	東北偏北 NNE 52	北 N 43	東北 NE 52	東北 NE 62

表 4.8.1　二零一一年位於香港600公里範圍內的熱帶氣旋及其爲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 2011

熱帶氣旋名稱 Name of tropical cyclone	熱帶氣旋位於香港600公里範圍內的時期 Period when tropical cyclone within 600 km of Hong Kong (T_1 → T_2) 日期/月份 Date/Month 時間* Time*	香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm) (i) 在香港600公里內 within 600 km of Hong Kong (T_1 → T_2)	(ii) 在 T_2 之後的24小時內 24-hour period after T_2	(iii) 在 T_2 之後的48小時內 48-hour period after T_2	(iv) 在 T_2 之後的72小時內 72-hour period after T_2	(i) + (iv) 共 Total T_1 → (T_2+72 小時 hours)
熱帶風暴莎莉嘉 Tropical Storm Sarika	(T_1) 10 / 6 0500 - (T_2) 11 / 6 0800	0.5	28.8	39.5	45.4	45.9
熱帶風暴海馬 Tropical Storm Haima	(T_1) 20 / 6 1100 - (T_2) 24 / 6 0700	50.3	0.0	微量 Trace	微量 Trace	50.3
強烈熱帶風暴洛坦 Severe Tropical Storm Nock-ten	(T_1) 28 / 7 0600 - (T_2) 30 / 7 0000	12.4	微量 Trace	微量 Trace	微量 Trace	12.4
超強颱風南瑪都 # Super Typhoon Nanmadol #	(T_1) 29 / 8 1400 - (T_2) 31 / 8 1400	0.2	0.6	0.6	23.2	23.4
颱風納沙 Typhoon Nesat	(T_1) 28 / 9 1000 - (T_2) 30 / 9 0400	33.3	15.3	15.4	20.0	53.3
強颱風尼格 Severe Typhoon Nalgae	(T_1) 2 /10 2200 - (T_2) 4 /10 1400	+1.6	0.1	0.1	0.2	1.8
熱帶低氣壓榕樹 # Tropical Depression Banyan #	(T_1) 14 /10 1400 - (T_2) 15 /10 0800	微量 Trace	0.0	0.0	0.0	微量 Trace
					共 Total	185.8

* 香港時間（協調世界時加八小時）。

T_1 - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T_2 - 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

\# 該熱帶氣旋並未導致天文台需要發出熱帶氣旋警告信號。

\+ 欄 (i) 有關強颱風尼格的雨量與欄(iv)有關颱風納沙的雨量出現了1.3毫米的重疊部份。

* Hong Kong Time （UTC + 8 hours）.

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

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

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

\+ Figure in column (i) of S.T. Nalgae overlaps the rainfall amount in column (iv) of T. Nesat by 1.3 mm.

表 4.8.2　一八八四至一九三九年及一九四七至二零一一年間十個爲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, 1947-2011)

熱帶氣旋 Tropical Cyclone			香港天文台錄得的雨量(毫米) Rainfall at the Hong Kong Observatory (mm)				
年份 Year	月份 Month	名稱 Name	(i) 在香港600公里內 within 600 km of Hong Kong ($T_1 \rightarrow T_2$)	(ii) 在 T_2 之後的 24 小時內 24-hour period after T_2	(iii) 在 T_2 之後的 48 小時內 48-hour period after T_2	(iv) 在 T_2 之後的 72 小時內 72-hour period after T_2	(i) + (iv) 共 Total $T_1 \rightarrow$ (T_2+72 小時 hours)
1999	8	森姆 Sam	368.1	178.9	248.1	248.4	616.5
1926	7	熱帶氣旋 T.C.	34.8 #	534.0 #	561.1 #	562.2 #	597.0
1916	6	熱帶氣旋 T.C.	494.8 #	27.9 #	59.4 #	67.2 #	562.0
1965	9	愛娜斯 Agnes	404.6	8.9	64.3	126.1	530.7
1978	7	愛娜斯 Agnes	502.4	12.3	12.3	16.6	519.0
1976	8	愛倫 Ellen	90.7	394.2	421.0	425.4	516.1
1993	9	黛蒂 Dot	459.6	37.9	37.9	37.9	497.5
1982	8	黛蒂 Dot	41.2	322.5	403.1	450.5	491.7
1995	8	海倫 Helen	241.4	146.2	235.2	239.5	480.9
1904	8	熱帶氣旋 T.C.	446.5 #	0.0 #	3.7 #	26.7 #	473.2

T_1 - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T_2 - 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

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

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

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

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

表 4.9　　一九四六至二零一一年間引致天文台需要發出十號颶風信號的颱風

TABLE 4.9　TYPHOONS REQUIRING THE ISSUING OF THE HURRICANE SIGNAL NO. 10 DURING THE PERIOD 1946-2011

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

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

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

* 估計，超出風速記錄圖的上限。

* Estimated, exceeding upper limit of anemogram.

表 4.10　　二零一一年熱帶氣旋在香港所造成的損失

TABLE 4.10　DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG IN 2011

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	工業 Industry	共 Total
熱帶風暴海馬 Tropical Storm Haima	6				1 個 unit	1 宗 case					0.00569	0.00569
強烈熱帶風暴洛坦 Severe Tropical Storm Nock-ten	7										0.00702	0.00702
颱風納沙 Typhoon Nesat	9	農地 Farmland: 234 公頃 hectares 農作物 Crops: 1283 噸 tons	欄杆 Railing: 85 米 m 混凝土表面 Concrete deck surface: 6 平方米 m^2				20.28000	0.15600	0.00998		0.01404	20.46002

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

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

表 4.11　一九六零至二零一一年間熱帶氣旋在香港所造成的人命傷亡及破壞

TABLE 4.11　CASUALTIES AND DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG : 1960-2011

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

表 4.11 (續)
TABLE 4.11 (cont'd)

年份 Year	日期 / 月份 Date / Month	Name of cyclone tropical	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
1981	3 / 7 - 7 / 7	S.T.S. Lynn	林茵	0	0	32	0	0	3
1982	27 / 6 - 2 / 7	T.S. Tess	戴絲	0	0	16	0	1	0
	22 / 7 - 30 / 7	T. Andy	安迪	0	0	0	0	0	1
	5 / 9 - 16 / 9	T. Irving	伊文	0	0	0	0	0	2
1983	12 / 7 - 19 / 7	T. Vera	維娜	0	0	0	0	1	0
	29 / 8 - 9 / 9	T. Ellen	愛倫	10	12	333	44	135	225
	10 /10 - 14 /10	T. Joe	喬伊	0	0	58	2	0	3
	20 /10 - 26 /10	S.T.S. Lex	力士	0	0	0	0	0	1
1984	27 / 8 - 7 / 9	T. Ike	艾克	0	0	1	0	0	0
1985	19 / 6 - 25 / 6	T. Hal	哈爾	0	1	13	0	4	2
	1 / 9 - 7 / 9	T. Tess	戴絲	2	0	12	6	1	3
	13 /10 - 22 /10	T. Dot	黛蒂	0	0	1	0	0	0
1986	3 / 7 - 12 / 7	T. Peggy	蓓姬	1	0	26	3	0	3
	9 / 8 - 12 / 8	T.D. -	-	0	0	3	0	1	5
	18 / 8 - 6 / 9	T. Wayne	韋恩	3	1	15+	0	3	0
	11 /10 - 19 /10	T. Ellen	愛倫	0	0	4	1	2	1
1987	16 /10 - 27 /10	T. Lynn	林茵	0	0	1	0	0	0
1988	14 / 7 - 20 / 7	T. Warren	華倫	0	1	12	1	2	1
	19 / 9 - 22 / 9	T. Kit	吉蒂	0	0	0	0	0	1
	18 /10 - 23 /10	T. Pat	帕特	2	0	1	0	0	0
	21 /10 - 29 /10	T. Ruby	露比	0	0	4	0	0	0
1989	16 / 5 - 21 / 5	T. Brenda	布倫達	6	1	119	0	3	5
	11 / 7 - 19 / 7	T. Gordon	戈登	2	0	31	1	0	8
	8 /10 - 14 /10	T. Dan	丹尼	0	0	0	1	0	1
1990	15 / 5 - 19 / 5	T. Marian	瑪麗安	0	0	0	0	0	1
	15 / 6 - 19 / 6	S.T.S. Nathan	彌敦	5	1	1	1	0	2
	21 / 6 - 30 / 6	T. Percy	珀西	1	0	0	0	0	0
	27 / 7 - 31 / 7	S.T.S. Tasha	泰莎	0	0	1	0	1	0
	25 / 8 - 30 / 8	T. Becky	貝姬	0	1	0	0	0	0
	10 / 9 - 20 / 9	T. Ed	義德	0	0	1	0	0	0
1991	15 / 7 - 20 / 7	T. Amy	艾美	0	0	1	1	0	2
	20 / 7 - 24 / 7	S.T.S. Brendan	布倫登	0	0	17	1	1	13
	13 / 8 - 18 / 8	T. Fred	法雷德	0	0	0	0	1	0
1992	9 / 7 - 14 / 7	T. Eli	艾里	0	0	23	0	0	1
	17 / 7 - 18 / 7	T.S. Faye	菲爾	2	0	24	1	0	3
	19 / 7 - 23 / 7	S.T.S. Gary	加里	0	0	18	2	0	0
1993	21 / 6 - 28 / 6	T. Koryn	高蓮	0	0	183	0	0	2
	16 / 8 - 21 / 8	T. Tasha	泰莎	0	0	35	0	0	7
	9 / 9 - 14 / 9	T. Abe	艾貝	1	0	0	0	0	0
	15 / 9 - 17 / 9	S.T.S. Becky	貝姬	1	0	130	0	0	10
	23 / 9 - 27 / 9	T. Dot	黛蒂	0	1	48	0	1	0
	28 /10 - 5 /11	T. Ira	艾拉	2	0	30	0	1	0
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

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
1998	7 / 8 - 11 / 8	S.T.S. Penny	彭妮	1	0	1	0	0	0
	12 / 9 - 14 / 9	T.D. -	-	0	0	10	0	0	0
	15 /10 - 27 /10	T. Babs	寶絲	0	0	14	0	0	0
1999	28 / 4 - 2 / 5	T. Leo	利奧	0	0	14	0	0	0
	2 / 6 - 8 / 6	T. Maggie	瑪姬	0	0	5	0	2	0
	25 / 7 - 28 / 7	T.S. -	-	0	0	18	0	0	0
	19 / 8 - 23 / 8	T. Sam	森姆	4	0	328	0	0	0
	12 / 9 - 17 / 9	T. York	約克	2	0	500	3	*	*
	24 / 9 - 26 / 9	S.T.S. Cam	錦雯	1	0	23	0	0	0
2000	15 / 7 - 16 / 7	T.D. -	-	0	1	6	0	0	0
	27 / 8 - 1 / 9	S.T.S. Maria	瑪莉亞	2	0	0	0	0	0
	5 / 9 - 10 / 9	T. Wukong	悟空	0	0	1	0	0	1
2001	30 / 6 - 3 / 7	T. Durian	榴槤	0	0	1	0	0	0
	1 / 7 - 8 / 7	T. Utor	尤特	1	0	1	0	1	0
	23 / 7 - 26 / 7	T. Yutu	玉兔	0	0	10	0	0	0
	28 / 8 - 1 / 9	T.S. Fitow	菲特	2	0	0	0	0	0
2002	15 / 8 - 20 / 8	S.T.S. Vongfong	黃蜂	0	0	2	0	0	1
	10 / 9 - 13 / 9	S.T.S. Hagupit	黑格比	0	0	32	0	0	3
2003	16 / 7 - 23 / 7	S.T.S. Koni	天鵝	0	0	15	0	0	0
	17 / 7 - 25 / 7	T. Imbudo	伊布都	1	0	45	0	2	8
	17 / 8 - 26 / 8	T. Krovanh	科羅旺	0	0	11	0	0	2
	29 / 8 - 3 / 9	T. Dujuan	杜鵑	0	4	24	0	1	4
2004	14 / 7 - 16 / 7	T.S. Kompasu	圓規	0	0	12	0	0	0
2005	10 / 8 - 14 / 8	S.T.S. Sanvu	珊瑚	0	0	0	0	0	1
	16 / 9 - 19 / 9	T.S. Vicente	韋森特	2	0	0	0	0	0
	21 / 9 - 28 / 9	T. Damrey	達維	0	0	5	0	0	1
2006	9 / 5 - 18 / 5	T. Chanchu	珍珠	0	0	6	0	1	0
	27 / 6 - 29 / 6	T.S. Jelawat	杰拉華	1	0	0	0	0	0
	31 / 7 - 4 / 8	T. Prapiroon	派比安	0	0	8	0	1	4
	6 / 8 - 10 / 8	S.T.S. Bopha	寶霞	0	0	0	0	0	1
	23 / 8 - 25 / 8	T.D. -	-	0	0	0	0	0	1
	12 / 9 - 13 / 9	T.D. -	-	0	0	1	0	0	0
	27 /10 - 6 / 11	T. Cimaron	西馬侖	0	0	4	0	0	0
2007	5 / 8 - 11 / 8	S.T.S. Pabuk	帕布	1	0	17	0	0	0
2008	15 / 4 - 20 / 4	T. Neoguri	浣熊	0	0	2	0	0	0
	18 / 6 - 26 / 6	T. Fengshen	風神	0	0	17	0	0	0
	4 / 8 - 8 / 8	S.T.S. Kammuri	北冕	0	0	37	0	0	0
	17 / 8 - 23 / 8	T. Nuri	鸚鵡	2	0	112	0	0	0
	19 / 9 - 25 / 9	T. Hagupit	黑格比	0	0	58	0	10	0
2009	15 / 7 - 19 / 7	T. Molave	莫拉菲	0	0	5	0	3	0
	1 / 8 - 9 / 8	S.T.S. Goni	天鵝	4	0	10	0	1	0
	9 / 9 - 12 / 9	T.S. Mujigae	彩虹	0	0	1	0	0	0
	12 / 9 - 16 / 9	T. Koppu	巨爵	0	0	74	0	0	0
2010	19 / 7 - 23 / 7	T. Chanthu	燦都	4	0	30	0	0	0
2011	18 / 6 - 25 / 6	T.S. Haima	海馬	0	0	3	0	1	0
	25 / 7 - 31 / 7	S.T.S. Nock-ten	洛坦	0	0	4	0	0	1
	23 / 9 - 1 /10	T. Nesat	納沙	0	0	26	0	1	1
	27 / 9 - 5 /10	S.T. Nalgae	尼格	0	0	1	0	0	0

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

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

* 缺乏數據 Data unavailable.

+ 被雷電擊中 Struck by lightning.

第五節　二零一一年熱帶氣旋的位置及強度數據

以下是二零一一年位於北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋。其每六小時之位置及強度刊於本節。

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

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

Section 5 TROPICAL CYCLONE POSITION AND INTENSITY DATA, 2011

Six-hourly position and intensity data are tabulated in this section for the following tropical cyclones in 2011 over the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°).

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

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

熱帶風暴艾利(1101)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM AERE (1101)

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	7	0000	T.D.	1000	16	12.8	126.8
		0600	T.S.	996	18	13.0	126.2
		1200	T.S.	996	18	13.3	125.6
		1800	T.S.	992	21	13.6	124.8
	8	0000	T.S.	988	23	14.1	124.3
		0600	T.S.	988	23	14.6	123.5
		1200	T.S.	988	23	15.1	123.1
		1800	T.S.	988	23	15.6	122.9
	9	0000	T.S.	988	23	16.3	122.6
		0600	T.S.	990	21	17.2	122.2
		1200	T.S.	995	18	17.8	122.3
		1800	T.S.	995	18	19.2	122.4
	10	0000	T.S.	995	18	20.3	121.8
		0600	T.S.	995	18	21.0	122.6
		1200	T.D.	998	16	22.2	123.9
		1800	T.D.	998	16	23.5	124.7
	11	0000	T.D.	996	16	25.2	126.1
		0600	T.D.	996	16	26.6	127.6
		1200	T.D.	997	16	28.4	129.6
		1800	T.D.	997	16	30.0	132.0
	12	0000	T.D.	998	16	31.2	134.6
			消散 Dissipated				

超強颱風桑達(1102)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON SONGDA (1102)

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	20	1200	T.D.	1002	13	8.3	140.5
		1800	T.D.	1002	13	8.4	139.5
	21	0000	T.D.	1000	16	8.6	138.8
		0600	T.D.	1000	16	8.8	138.3
		1200	T.D.	1000	16	9.1	137.8
		1800	T.S.	996	18	9.4	137.4
	22	0000	T.S.	995	21	9.5	137.0
		0600	T.S.	994	21	9.7	136.6
		1200	T.S.	988	23	10.1	135.9
		1800	S.T.S.	985	25	10.5	135.0
	23	0000	S.T.S.	985	25	10.8	134.4
		0600	S.T.S.	985	25	11.2	133.5
		1200	S.T.S.	985	25	11.5	132.5
		1800	S.T.S.	985	25	11.6	131.8
	24	0000	S.T.S.	985	25	12.0	131.1
		0600	S.T.S.	980	28	12.3	130.2
		1200	S.T.S.	975	31	12.4	129.4
		1800	T.	965	36	12.3	128.6
	25	0000	T.	960	39	12.3	128.2
		0600	S.T.	940	46	12.6	127.8
		1200	S.T.	935	49	13.1	127.4
		1800	S.T.	935	49	13.8	127.2
	26	0000	Super T.	930	52	14.7	126.5
		0600	Super T.	920	57	15.6	125.7
		1200	Super T.	920	57	16.2	125.1
		1800	Super T.	920	57	17.2	124.5
	27	0000	Super T.	920	57	18.1	123.9
		0600	Super T.	925	54	19.3	123.4
		1200	Super T.	930	52	20.4	123.1
		1800	S.T.	935	49	21.5	123.3
	28	0000	S.T.	940	46	23.0	123.8
		0600	S.T.	945	43	24.8	124.9
		1200	T.	950	41	26.3	126.6
		1800	T.	965	36	28.6	129.2
	29	0000	S.T.S. 變為溫帶氣旋 Became Extratropical	975	31	30.7	131.6

熱帶風暴莎莉嘉(1103)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM SARIKA (1103)

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	9	0600	T.D.	1002	13	15.4	119.4
		1200	T.D.	1000	13	16.1	118.6
		1800	T.D.	998	16	17.3	117.9
	10	0000	T.S.	995	18	18.9	117.6
		0600	T.S.	995	18	20.2	117.1
		1200	T.S.	995	18	21.3	117.0
		1800	T.S.	996	18	22.6	116.9
	11	0000	T.D.	998	16	23.6	116.9
			消散 Dissipated				

熱帶風暴海馬(1104)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM HAIMA (1104)

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	18	1200	T.D.	1004	13	15.1	124.9
		1800	T.D.	1004	13	15.9	124.5
	19	0000	T.D.	1002	16	16.9	124.2
		0600	T.D.	1002	16	17.7	123.5
		1200	T.D.	1000	16	19.0	122.2
		1800	T.D.	1001	16	19.7	120.9
	20	0000	T.D.	1001	16	20.0	119.8
		0600	T.D.	1001	16	20.0	118.9
		1200	T.D.	1000	16	19.7	117.5
		1800	T.D.	998	16	19.5	116.7
	21	0000	T.D.	998	16	19.4	116.3
		0600	T.D.	998	16	19.3	115.9
		1200	T.D.	997	16	19.2	115.4
		1800	T.D.	995	16	19.3	114.8
	22	0000	T.S.	992	18	19.8	114.0
		0600	T.S.	988	21	20.2	113.3
		1200	T.S.	985	23	20.4	113.1
		1800	T.S.	985	23	20.7	112.5
	23	0000	T.S.	985	23	21.1	111.7
		0600	T.S.	986	21	21.4	111.0
		1200	T.S.	988	18	21.1	110.1
		1800	T.S.	988	18	21.1	109.1
	24	0000	T.S.	986	21	20.9	108.5
		0600	T.S.	985	21	20.5	107.4
		1200	T.S.	986	21	20.3	106.4
		1800	T.D.	992	16	20.2	105.3
	25	0000	T.D.	993	13	20.0	104.3
		0600	T.D.	993	13	19.5	103.7
			消散 Dissipated				

強烈熱帶風暴米雷(1105)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM MEARI (1105)

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	21	1200	T.D.	1002	13	11.8	131.3
		1800	T.D.	1000	13	12.9	130.2
	22	0000	T.D.	998	16	13.6	129.2
		0600	T.S.	995	18	14.0	128.7
		1200	T.S.	995	18	14.3	128.2
		1800	T.S.	995	18	14.6	127.8
	23	0000	T.S.	995	18	15.5	127.0
		0600	T.S.	992	21	16.7	127.0
		1200	T.S.	992	21	17.9	126.9
		1800	T.S.	992	21	18.6	126.4
	24	0000	T.S.	990	23	20.6	125.7
		0600	T.S.	988	23	22.1	125.6
		1200	S.T.S.	975	28	23.8	125.0
		1800	S.T.S.	975	28	25.5	124.2
	25	0000	S.T.S.	972	31	27.0	123.4
		0600	S.T.S.	972	31	27.7	123.3
		1200	S.T.S.	978	28	29.3	123.7
		1800	S.T.S.	980	28	32.1	124.6
	26	0000	S.T.S.	982	25	35.1	124.4
		0600	S.T.S.	982	25	36.7	123.0
		1200	S.T.S.	982	25	37.2	122.7
		1800	T.S.	985	21	37.5	123.0
	27	0000	T.D.	990	16	38.5	124.3
			消散 Dissipated				

超強颱風馬鞍(1106)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON MA-ON (1106)

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	11	1200	T.D.	1006	13	18.1	157.3
		1800	T.D.	1004	16	18.4	156.6
	12	0000	T.D.	1002	16	18.6	155.9
		0600	T.S.	1000	18	18.9	155.2
		1200	T.S.	996	21	19.3	154.2
		1800	T.S.	990	23	19.4	153.5
	13	0000	S.T.S.	985	25	19.6	152.7
		0600	S.T.S.	985	25	19.7	151.4
		1200	S.T.S.	980	28	19.8	150.0
		1800	S.T.S.	975	31	19.9	148.5
	14	0000	T.	970	33	20.0	147.5
		0600	T.	970	33	20.1	146.1
		1200	T.	960	39	20.2	144.9
		1800	T.	960	39	20.3	143.7
	15	0000	S.T.	950	43	20.4	142.5
		0600	S.T.	950	43	20.6	141.4
		1200	S.T.	950	43	20.6	140.4
		1800	S.T.	945	46	20.8	139.5
	16	0000	S.T.	945	46	21.1	138.8
		0600	Super T.	930	52	21.2	137.9
		1200	Super T.	930	52	21.9	137.1
		1800	Super T.	930	52	22.8	136.3
	17	0000	Super T.	930	52	23.5	135.6
		0600	S.T.	935	49	24.5	134.6
		1200	S.T.	935	49	25.2	133.8
		1800	S.T.	935	49	26.0	133.4
	18	0000	S.T.	940	46	27.1	133.3
		0600	S.T.	945	43	28.5	133.2
		1200	S.T.	945	43	29.7	132.9
		1800	S.T.	945	43	30.8	132.8
	19	0000	T.	955	41	31.8	132.8
		0600	T.	960	39	32.7	133.1
		1200	T.	960	39	33.3	134.3
		1800	T.	965	36	33.6	134.6
	20	0000	S.T.S.	975	31	33.7	135.6
		0600	S.T.S.	980	28	33.6	136.8
		1200	S.T.S.	980	28	33.2	137.9
		1800	S.T.S.	980	28	32.3	138.6
	21	0000	S.T.S.	985	25	31.1	139.4
		0600	T.S.	990	23	30.7	140.9
		1200	T.S.	990	23	30.5	141.7
		1800	T.S.	990	23	29.8	142.2
	22	0000	T.S.	990	23	29.1	143.0
		0600	T.S.	990	23	29.4	143.9
		1200	T.S.	990	23	30.6	144.3
		1800	T.S.	990	23	31.5	144.6
	23	0000	T.S.	990	23	32.4	145.0
		0600	T.S.	990	23	33.4	145.5
		1200	T.S.	990	23	34.5	146.2
		1800	T.S.	990	23	36.3	146.9
	24	0000	T.S.	990	23	37.8	147.9
		0600	T.S.	990	23	39.5	149.2
		變為溫帶氣旋 Became Extratropical					

熱帶低氣壓蝎虎(1107)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION TOKAGE (1107)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
七月 JUL	15	0600	T.D.	1000	13	14.0	133.4
		1200	T.D.	1000	13	14.0	134.2
		1800	T.D.	1000	13	14.1	135.5
			消散 Dissipated				

強烈熱帶風暴洛坦(1108)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM NOCK-TEN (1108)

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	25	0000	T.D.	1001	13	12.8	128.1
		0600	T.D.	998	16	13.3	127.2
		1200	T.D.	998	16	13.7	126.4
		1800	T.D.	998	16	14.1	125.2
	26	0000	T.D.	996	16	14.0	124.2
		0600	T.S.	994	18	14.0	123.7
		1200	T.S.	992	21	14.4	123.1
		1800	T.S.	990	23	15.0	122.7
	27	0000	S.T.S.	980	29	15.6	122.2
		0600	S.T.S.	982	25	16.6	121.5
		1200	S.T.S.	982	25	17.4	120.3
		1800	S.T.S.	982	25	17.7	118.8
	28	0000	S.T.S.	982	25	18.1	116.9
		0600	S.T.S.	982	25	18.2	115.5
		1200	S.T.S.	980	29	18.2	114.2
		1800	S.T.S.	980	29	18.3	113.4
	29	0000	S.T.S.	980	29	18.3	112.6
		0600	S.T.S.	980	29	19.0	111.8
		1200	S.T.S.	982	25	19.8	110.3
		1800	S.T.S.	982	25	19.5	108.9
	30	0000	S.T.S.	982	25	19.4	107.9
		0600	T.S.	985	23	19.3	106.7
		1200	T.S.	990	18	19.2	105.4
		1800	T.D.	994	16	19.1	104.4
			消散 Dissipated				

超強颱風梅花(1109)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON MUIFA (1109)

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	26	1200	T.D.	1006	13	9.0	144.5
		1800	T.D.	1006	13	9.5	142.8
	27	0000	T.D.	1006	13	10.0	141.8
		0600	T.D.	1004	13	10.3	141.1
		1200	T.D.	1002	16	10.7	140.2
		1800	T.D.	1002	16	11.5	138.5
	28	0000	T.D.	1000	16	11.7	136.9
		0600	T.D.	1000	16	11.6	135.7
		1200	T.S.	995	18	11.6	134.9
		1800	T.S.	990	21	12.2	134.0
	29	0000	T.S.	990	21	12.8	133.9
		0600	T.S.	990	21	13.4	134.0
		1200	T.S.	988	23	13.9	134.0
		1800	T.S.	988	23	14.7	134.0
	30	0000	S.T.S.	985	25	15.9	133.8
		0600	S.T.S.	975	31	16.2	133.0
		1200	T.	955	41	16.5	132.7
		1800	S.T.	935	49	16.7	132.4
	31	0000	Super T.	930	52	16.9	132.5
		0600	Super T.	930	52	17.1	132.8
		1200	Super T.	930	52	17.8	133.4
		1800	Super T.	930	52	18.6	133.5
八月 Aug	1	0000	S.T.	940	49	19.0	133.7
		0600	S.T.	950	43	19.8	134.1
		1200	S.T.	950	43	20.6	134.1
		1800	S.T.	950	43	21.6	134.2
	2	0000	S.T.	950	43	22.1	134.1
		0600	S.T.	950	43	22.7	134.1
		1200	S.T.	945	46	23.3	133.8
		1800	S.T.	945	46	23.8	133.3
	3	0000	S.T.	945	46	24.2	132.7
		0600	S.T.	950	43	24.3	132.0
		1200	S.T.	950	43	24.4	131.4
		1800	S.T.	950	43	24.5	130.5
	4	0000	S.T.	950	43	24.7	129.6
		0600	S.T.	950	43	24.7	129.1
		1200	S.T.	950	43	24.9	128.7
		1800	S.T.	950	43	25.0	128.1
	5	0000	S.T.	950	43	25.2	127.8
		0600	S.T.	950	43	25.8	127.2
		1200	S.T.	950	43	26.1	126.9
		1800	S.T.	950	43	26.4	126.4
	6	0000	T.	955	41	27.2	126.0
		0600	T.	960	39	28.4	125.4
		1200	T.	960	39	29.3	124.8
		1800	T.	965	36	30.3	124.5
	7	0000	T.	965	36	31.9	124.4
		0600	T.	970	33	33.5	124.4
		1200	T.	970	33	34.8	123.7
		1800	S.T.S.	975	31	35.7	123.5
	8	0000	S.T.S.	980	28	37.4	123.9
		0600	S.T.S.	985	25	38.6	124.3
		1200	T.S.	990	21	40.6	124.7
		1800	T.S.	992	18	42.4	125.1
	9	0000	T.D.	995	13	44.3	126.5
			變為溫帶氣旋 Became Extratropical				

強烈熱帶風暴苗柏(1110)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM MERBOK (1110)

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	0000	T.D.	1004	13	23.2	161.8
		0600	T.S.	1000	18	23.2	160.8
		1200	T.S.	1000	18	23.3	159.8
		1800	T.S.	1000	18	23.5	159.1
	4	0000	T.S.	1000	18	24.1	158.3
		0600	T.S.	998	18	24.7	157.2
		1200	T.S.	998	18	24.9	156.8
		1800	T.S.	998	18	25.3	156.3
	5	0000	T.S.	994	21	26.2	155.6
		0600	T.S.	990	23	26.9	155.3
		1200	T.S.	990	23	27.2	154.8
		1800	T.S.	990	23	27.5	154.4
	6	0000	S.T.S.	985	25	28.1	154.0
		0600	S.T.S.	985	25	28.7	153.8
		1200	S.T.S.	985	25	29.3	153.7
		1800	S.T.S.	985	25	30.1	153.7
	7	0000	S.T.S.	985	25	30.8	153.9
		0600	S.T.S.	985	25	31.6	154.1
		1200	S.T.S.	985	25	32.4	154.8
		1800	S.T.S.	985	25	33.1	155.5
	8	0000	S.T.S.	980	25	34.2	156.2
		0600	S.T.S.	980	25	35.7	157.7
		1200	S.T.S.	980	25	37.3	159.1
		1800	S.T.S.	980	25	39.1	160.2
	9	0000	S.T.S.	980	25	40.4	160.6
		0600	T.S.	985	23	41.3	161.2
		1200	T.S. 變為溫帶氣旋 Became Extratropical	985	23	41.9	162.7

熱帶低氣壓由八月十日至十三日的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 10 - 13 AUGUST

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
八月 AUG	10	1200	T.D.	1004	13	25.4	136.5
		1800	T.D.	1002	13	25.9	136.4
	11	0000	T.D.	1002	13	26.6	136.6
		0600	T.D.	1002	13	27.3	137.2
		1200	T.D.	1002	13	28.0	137.7
		1800	T.D.	1002	13	28.6	138.1
	12	0000	T.D.	1002	13	28.9	139.0
		0600	T.D.	1002	13	29.4	139.9
		1200	T.D.	1004	13	30.1	140.7
		1800	T.D.	1004	13	30.8	141.6
	13	0000	T.D.	1004	13	31.5	142.2
		0600	T.D. 消散 Dissipated	1004	13	32.0	142.7

超強颱風南瑪都(1111)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON NANMADOL (1111)

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	23	0000	T.D.	1000	16	15.4	127.4
		0600	T.D.	1000	16	15.6	127.4
		1200	T.S.	995	18	15.7	127.4
		1800	T.S.	995	18	15.8	127.3
	24	0000	T.S.	992	21	16.0	127.0
		0600	T.S.	988	23	16.1	126.8
		1200	S.T.S.	985	25	16.1	126.5
		1800	S.T.S.	980	28	16.1	126.1
	25	0000	S.T.S.	975	31	16.1	125.6
		0600	T.	970	33	16.3	125.1
		1200	T.	960	39	16.5	124.5
		1800	S.T.	950	43	16.5	124.1
	26	0000	Super T.	930	52	16.8	123.9
		0600	Super T.	920	54	17.2	123.6
		1200	Super T.	920	54	17.5	123.3
		1800	Super T.	925	52	18.0	122.7
	27	0000	Super T.	930	52	18.2	122.4
		0600	S.T.	945	46	18.6	122.0
		1200	S.T.	950	43	19.3	121.7
		1800	S.T.	950	43	19.6	121.4
	28	0000	T.	960	39	20.4	121.3
		0600	T.	960	39	21.1	121.2
		1200	T.	960	39	21.5	121.1
		1800	T.	965	36	22.1	120.9
	29	0000	T.	970	33	22.7	120.5
		0600	S.T.S.	980	28	23.3	119.9
		1200	S.T.S.	980	28	23.6	119.6
		1800	S.T.S.	985	25	23.8	119.4
	30	0000	T.S.	988	23	24.1	119.2
		0600	T.S.	988	23	24.3	119.1
		1200	T.S.	990	21	24.4	119.1
		1800	T.S.	995	18	24.5	118.9
	31	0000	T.D.	996	16	24.6	118.5
		0600	T.D.	996	13	24.7	118.3
			消散 Dissipated				

強烈熱帶風暴塔拉斯(1112)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM TALAS (1112)

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	24	1200	T.D.	1000	13	16.6	141.7
		1800	T.D.	998	16	17.1	141.3
	25	0000	T.D.	998	16	17.8	141.0
		0600	T.S.	996	18	18.8	140.6
		1200	T.S.	995	18	19.7	140.4
		1800	T.S.	990	21	20.3	140.2
	26	0000	T.S.	985	23	20.8	140.1
		0600	T.S.	985	23	21.4	140.1
		1200	S.T.S.	980	25	22.1	139.9
		1800	S.T.S.	980	25	22.3	139.6
	27	0000	S.T.S.	980	25	22.4	139.6
		0600	S.T.S.	980	25	22.5	139.6
		1200	S.T.S.	980	25	22.6	139.5
		1800	S.T.S.	978	28	22.7	139.5
	28	0000	S.T.S.	978	28	22.8	139.5
		0600	S.T.S.	978	28	23.0	139.7
		1200	S.T.S.	978	28	23.2	140.1
		1800	S.T.S.	978	28	23.5	140.1
	29	0000	S.T.S.	978	28	23.7	140.0
		0600	S.T.S.	978	28	23.9	140.0
		1200	S.T.S.	975	31	24.2	140.0
		1800	S.T.S.	975	31	24.7	140.0
	30	0000	S.T.S.	975	31	25.1	140.0
		0600	S.T.S.	975	31	25.8	139.8
		1200	S.T.S.	975	31	26.1	139.3
		1800	S.T.S.	975	31	26.4	138.7
	31	0000	S.T.S.	975	31	26.5	137.9
		0600	S.T.S.	975	31	26.9	137.5
		1200	S.T.S.	975	31	27.1	137.2
		1800	S.T.S.	975	31	27.3	136.8
九月 Sep	1	0000	S.T.S.	975	31	27.8	136.5
		0600	S.T.S.	975	31	28.3	136.3
		1200	S.T.S.	975	31	28.8	135.9
		1800	S.T.S.	975	31	29.3	135.5
	2	0000	S.T.S.	975	31	30.2	135.0
		0600	S.T.S.	975	31	31.2	134.6
		1200	S.T.S.	975	31	32.2	134.3
		1800	S.T.S.	980	28	33.0	133.8
	3	0000	S.T.S.	980	28	33.4	133.9
		0600	S.T.S.	985	25	34.1	133.9
		1200	S.T.S.	985	25	34.7	133.9
		1800	T.S.	990	23	35.4	133.7
	4	0000	T.S.	992	21	35.8	133.7
		0600	T.S.	994	21	36.1	133.9
		1200	T.S.	994	21	36.7	134.1
		1800	T.S.	994	21	37.3	134.5
	5	0000	T.S.	994	21	39.4	136.3

變為溫帶氣旋
Became Extratropical

熱帶風暴奧鹿(1113)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM NORU (1113)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
九月 Sep	2	0000	T.D.	1002	16	20.7	150.3
		0600	T.D.	1002	16	20.9	149.0
		1200	T.D.	1002	16	20.3	148.2
		1800	T.D.	1002	16	20.0	148.0
	3	0000	T.D.	1002	16	19.8	148.2
		0600	T.D.	1000	16	20.6	149.3
		1200	T.S.	998	18	22.2	150.3
		1800	T.S.	996	21	24.7	151.4
	4	0000	T.S.	996	21	27.5	151.4
		0600	T.S.	994	21	29.4	150.8
		1200	T.S.	994	21	30.8	150.1
		1800	T.S.	994	21	32.2	149.6
	5	0000	T.S.	995	18	33.4	149.6
		0600	T.S.	995	18	35.1	150.0
		1200	T.S.	995	18	36.5	148.5
		1800	T.S.	995	18	36.8	148.4
	6	0000	T.S.	995	18	37.9	149.4
		0600	T.S.	995	18	39.4	150.1
			變為溫帶氣旋 Became Extratropical				

熱帶風暴玫瑰(1114)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM KULAP (1114)

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	7	0000	T.D.	1002	13	21.2	135.4
		0600	T.D.	998	16	21.8	135.7
		1200	T.S.	995	18	22.4	135.7
		1800	T.S.	995	18	23.6	135.2
	8	0000	T.S.	995	18	24.6	134.2
		0600	T.S.	995	18	25.5	133.6
		1200	T.D.	998	16	26.3	132.7
		1800	T.D.	998	16	27.2	131.5
	9	0000	T.D.	1000	13	28.1	130.9
		0600	T.D.	1002	13	29.3	130.1
		1200	T.D.	1004	13	30.1	128.8
		1800	T.D.	1004	13	30.5	128.1
			消散 Dissipated				

強颱風洛克(1115)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON ROKE (1115)

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	13	1200	T.D.	999	13	22.2	138.0
		1800	T.D.	998	16	23.8	137.9
	14	0000	T.D.	998	16	24.3	137.5
		0600	T.D.	1000	13	24.6	136.8
		1200	T.D.	999	13	25.4	135.5
		1800	T.D.	998	13	25.5	134.0
	15	0000	T.S.	995	18	25.5	133.0
		0600	T.S.	990	18	25.7	131.5
		1200	T.S.	990	18	25.9	131.0
		1800	T.S.	990	18	26.1	130.4
	16	0000	T.S.	990	18	26.2	130.2
		0600	T.S.	988	21	26.3	130.0
		1200	T.S.	988	21	26.1	129.6
		1800	T.S.	985	23	25.7	129.5
	17	0000	T.S.	985	23	25.3	129.6
		0600	S.T.S.	980	25	25.1	129.9
		1200	S.T.S.	975	28	24.8	130.2
		1800	S.T.S.	975	28	24.8	130.5
	18	0000	S.T.S.	975	28	25.2	131.0
		0600	S.T.S.	975	28	25.9	130.8
		1200	S.T.S.	975	28	26.2	130.4
		1800	S.T.S.	975	28	26.4	130.3
	19	0000	S.T.S.	972	31	26.7	130.3
		0600	S.T.S.	972	31	27.7	130.4
		1200	T.	970	33	28.2	130.2
		1800	T.	965	36	28.2	130.6
	20	0000	T.	960	39	28.9	131.6
		0600	T.	955	41	29.3	132.3
		1200	S.T.	950	43	30.3	133.6
		1800	S.T.	950	43	31.8	134.6
	21	0000	S.T.	950	43	33.1	136.0
		0600	T.	955	41	34.9	137.8
		1200	T.	965	36	37.1	140.7
		1800	T.	975	33	40.5	143.6
	22	0000	S.T.S. 變為溫帶氣旋 Became Extratropical	980	31	42.7	146.6

颱風桑卡(1116)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON SONCA (1116)

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	14	1200	T.D.	1010	13	20.6	154.4
		1800	T.D.	1008	13	21.0	154.9
	15	0000	T.D.	1006	16	21.4	155.1
		0600	T.S.	1004	18	22.1	155.2
		1200	T.S.	1004	18	22.7	154.8
		1800	T.S.	1004	18	23.0	154.1
	16	0000	T.S.	1002	18	22.9	152.9
		0600	T.S.	1002	18	23.0	151.7
		1200	T.S.	1000	21	23.1	150.2
		1800	T.S.	1000	21	23.3	148.9
	17	0000	T.S.	996	23	24.6	147.7
		0600	S.T.S.	990	25	25.6	146.0
		1200	S.T.S.	985	28	26.4	144.4
		1800	S.T.S.	985	28	27.4	143.4
	18	0000	S.T.S.	980	31	28.7	142.7
		0600	T.	975	33	30.2	142.5
		1200	T.	975	33	31.7	142.5
		1800	T.	975	33	33.1	142.9
	19	0000	T.	970	36	34.6	144.3
		0600	T.	970	36	36.0	146.1
		1200	T.	970	36	37.2	148.4
		1800	T.	970	36	38.6	151.5
	20	0000	T.	975	33	39.8	155.4
		0600	S.T.S. 變為溫帶氣旋 Became Extratropical	980	31	40.7	160.2

颱風納沙(1117)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON NESAT (1117)

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	23	1200	T.D.	1000	13	13.3	138.0
		1800	T.D.	1000	13	13.6	137.3
	24	0000	T.D.	998	16	14.0	136.3
		0600	T.S.	994	18	14.7	135.2
		1200	T.S.	992	21	14.8	133.8
		1800	T.S.	990	23	14.8	132.3
	25	0000	S.T.S.	985	25	14.7	131.1
		0600	S.T.S.	980	28	14.6	129.3
		1200	S.T.S.	976	31	14.9	128.3
		1800	S.T.S.	976	31	15.1	127.1
	26	0000	T.	970	33	15.3	126.1
		0600	T.	970	33	15.6	125.1
		1200	T.	960	39	15.9	124.2
		1800	T.	955	41	16.2	123.0
	27	0000	T.	960	39	16.5	121.6
		0600	T.	965	36	16.5	120.2
		1200	T.	965	36	16.8	119.1
		1800	T.	965	36	17.3	118.0
	28	0000	T.	965	36	17.4	116.8
		0600	T.	965	36	17.5	116.0
		1200	T.	965	36	18.2	114.7
		1800	T.	965	36	18.9	113.5
	29	0000	T.	965	36	19.6	112.4
		0600	T.	965	36	19.8	111.1
		1200	T.	968	36	19.9	110.2
		1800	T.	970	33	20.7	109.0
	30	0000	S.T.S.	975	31	20.9	108.0
		0600	T.S.	988	23	20.9	106.8
		1200	T.S.	995	21	21.0	106.4
		1800	T.D.	998	16	21.2	106.0
			消散 Dissipated				

熱帶風暴海棠(1118)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM HAITANG (1118)

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	24	1800	T.D.	998	13	15.6	112.1
	25	0000	T.D.	996	13	16.4	113.1
		0600	T.S.	994	18	17.0	112.7
		1200	T.S.	994	18	16.9	112.0
		1800	T.S.	994	18	16.9	111.8
	26	0000	T.S.	994	18	16.7	111.2
		0600	T.S.	994	18	16.5	110.8
		1200	T.S.	994	18	16.4	110.0
		1800	T.S.	994	18	16.6	109.0
	27	0000	T.S.	994	18	16.6	107.9
		0600	T.D.	998	16	17.0	106.8
			消散 Dissipated				

強颱風尼格(1119)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON NALGAE (1119)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
九月 Sep	27	1200	T.D.	1004	13	18.9	137.8
		1800	T.D.	1004	13	19.1	137.4
	28	0000	T.D.	1000	16	19.2	136.8
		0600	T.S.	990	21	19.2	136.3
		1200	T.S.	990	21	18.9	135.9
		1800	T.S.	988	23	18.4	135.1
	29	0000	S.T.S.	980	28	18.1	134.3
		0600	S.T.S.	980	28	18.1	133.2
		1200	S.T.S.	975	31	17.9	131.9
		1800	T.	970	33	17.8	130.4
	30	0000	T.	970	33	17.8	128.8
		0600	T.	955	39	17.8	127.3
		1200	S.T.	945	46	17.6	125.7
		1800	S.T.	945	46	17.1	124.1
十月 Oct	1	0000	S.T.	935	49	16.8	122.7
		0600	S.T.	950	43	16.6	120.8
		1200	S.T.	950	43	16.5	119.2
		1800	T.	955	41	16.5	118.6
	2	0000	T.	965	36	16.6	118.1
		0600	S.T.S.	975	31	16.8	117.2
		1200	S.T.S.	975	31	17.1	116.2
		1800	S.T.S.	975	31	17.4	115.4
	3	0000	S.T.S.	980	28	17.6	114.6
		0600	S.T.S.	985	25	17.7	113.8
		1200	S.T.S.	985	25	17.7	113.2
		1800	T.S.	988	23	17.8	112.4
	4	0000	T.S.	990	21	18.2	111.2
		0600	T.S.	990	21	18.7	110.0
		1200	T.S.	995	18	18.6	109.0
		1800	T.D.	998	16	18.3	108.5
	5	0000	T.D.	1000	13	18.2	108.2
			消散 Dissipated				

熱帶低氣壓榕樹(1120)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION BANYAN (1120)

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	10	0600	T.D.	1002	13	7.5	131.8
		1200	T.D.	1002	13	7.6	130.6
		1800	T.D.	1002	13	7.7	129.9
	11	0000	T.D.	1000	13	8.1	128.9
		0600	T.D.	1000	13	8.6	128.2
		1200	T.D.	998	16	9.6	127.0
		1800	T.D.	998	16	10.7	125.8
	12	0000	T.D.	998	16	11.5	124.5
		0600	T.D.	998	16	11.9	122.9
		1200	T.D.	998	16	12.1	121.9
		1800	T.D.	998	16	12.3	121.0
	13	0000	T.D.	1000	13	12.9	119.9
		0600	T.D.	1000	13	13.4	119.0
		1200	T.D.	1000	13	14.2	118.1
		1800	T.D.	1000	13	15.4	117.8
	14	0000	T.D.	1000	13	17.3	117.3
		0600	T.D.	1000	13	17.7	117.2
		1200	T.D.	1000	13	18.1	117.1
		1800	T.D.	1000	13	18.3	117.0
	15	0000	T.D.	1000	13	18.6	116.9
			消散 Dissipated				

熱帶風暴天鷹(1121)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM WASHI(1121)

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	14	0000	T.D.	1006	13	5.7	140.6
		0600	T.D.	1004	13	5.9	139.4
		1200	T.D.	1006	13	6.5	138.0
		1800	T.D.	1004	13	6.8	136.2
	15	0000	T.D.	1002	16	7.3	134.3
		0600	T.S.	1000	18	7.4	133.0
		1200	T.S.	1000	18	7.7	131.0
		1800	T.S.	1000	18	7.6	129.4
	16	0000	T.S.	995	21	7.5	128.3
		0600	T.S.	992	23	7.8	126.9
		1200	T.S.	995	21	8.2	125.6
		1800	T.S.	998	18	8.4	124.3
	17	0000	T.S.	998	18	8.8	122.5
		0600	T.S.	998	18	9.0	121.5
		1200	T.S.	998	18	9.5	120.5
		1800	T.S.	998	18	10.0	118.7
	18	0000	T.S.	998	18	10.0	115.7
		0600	T.S.	998	18	9.8	115.7
		1200	T.S.	998	18	9.8	114.9
		1800	T.S.	998	18	9.8	114.2
	19	0000	T.S.	998	18	9.7	113.1
		0600	T.D.	1000	16	9.6	112.2
		1200	T.D.	1002	13	9.2	111.4
			消散 Dissipated				