二零一三年的熱帶氣旋路徑圖
TRACKS OF TROPICAL CYCLONES IN 2013

每日協調世界時零時位置(香港時間上午八時),
符號中央數目字代表該月的日子
Daily Positions at 00 UTC(08 HKT),
the number in the symbol represents
the date of the month

每六小時位置
Intermediate 6-hourly Positions

超強颱風 Super Typhoon
強颱風 Severe Typhoon
颱風 Typhoon
強烈熱帶風暴 Severe Tropical Storm
熱帶風暴 Tropical Storm
熱帶低氣壓 Tropical Depression

香港
Hong Kong

萬宜
MAN-YI
九月SEP

聖帕
SEPAT
十月OCT

帕布
PABUK
九月SEP

利奇馬
LEKIMA
十月OCT

丹娜絲
DANAS
十月OCT

韋帕
WIPHA
十月OCT

摩羯
YAGI
六月JUN

范斯高
FRANCISCO
十月OCT

麗琵
LEEPI
六月JUN

桃芝
TORAJI
九月SEP

康妮
KONG-REY
八月AUG

玉兔
YUTU
九月SEP

佩娃
PEWA
八月AUG

玉兔
YUTU(1316)
八月AUG

蘇力
SOULIK
七月JUL

菲特
FITOW
十月OCT

潭美
TRAMI
八月AUG

溫比亞
RUMBIA
七月JUL

天兔
USAGI
九月SEP

尤特
UTOR
八月AUG

西馬侖
CIMARON
七月JUL

桃芝
TORAJI(1317)
九月SEP

聖帕
SEPAT(1322)
九月SEP

海燕
HAIYAN
十一月NOV

飛燕
JEBI
八月AUG

貝碧嘉
BEBINCA
六月JUN

山竹
MANGKHUT
八月AUG

蝴蝶
WUTIP
九月SEP

熱帶低氣壓
T.D.
九月SEP

百合
NARI
十月OCT

羅莎
KROSA
十一月NOV

楊柳
PODUL
十一月NOV

熱帶低氣壓
T.D.
十一月NOV

萬宜
MAN-YI(1318)
九月SEP

蘇力
SOULIK(1307)
七月JUL

帕布
PABUK(1320)
九月SEP

丹娜絲
DANAS(1324)
十月OCT

韋帕
WIPHA(1326)
十月OCT

范斯高
FRANCISCO(1327)
十月OCT

利奇馬
LEKIMA(1328)
十月OCT

海燕
HAIYAN(1330)
十一月NOV

烏娜拉
UNALA
八月AUG

烏娜拉
UNALA(1314)
八月AUG

佩娃
PEWA(1313)
八月AUG

潭美
TRAMI(1312)
八月AUG

摩羯
YAGI(1303)
六月JUN

天兔
USAGI(1319)
九月SEP

貝碧嘉
BEBINCA(1305)
六月JUN

羅莎
KROSA(1329)
十月OCT

西馬侖
CIMARON(1308)
七月JUL

蝴蝶
WUTIP(1321)
九月SEP

飛燕
JEBI(1309)
七月JUL

尤特
UTOR(1311)
八月AUG

麗琵
LEEPI(1304)
六月JUN

百合
NARI(1325)
十月OCT

菲特
FITOW(1323)
九月SEP

山竹
MANGKHUT (1310)
八月AUG

楊柳
PODUL(1331)
十一月NOV

熱帶低氣壓
T.D.
十一月NOV

溫比亞
RUMBIA(1306)
六月JUN

清松
SONAMU (1301)
一月JAN

珊珊
SHANSHAN (1302)
二月FEB

清松
SONAMU
一月JAN

珊珊
SHANSHAN
二月FEB

香港天文台
HONG KONG OBSERVATORY

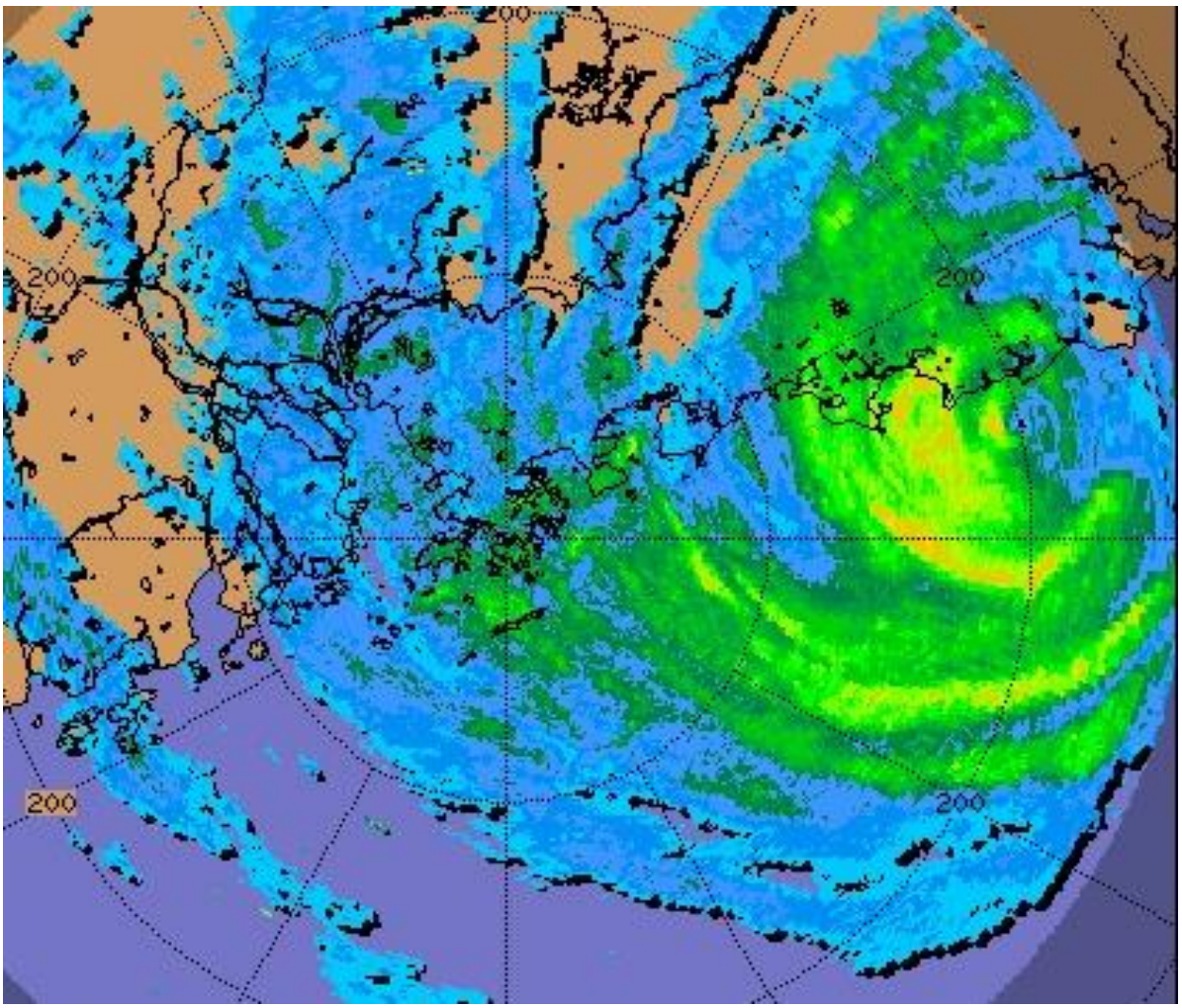
90°E 95°E 100°E 105°E 110°E 115°E 120°E 125°E 130°E 135°E 140°E 145°E 150°E 155°E 160°E 165°E 170°E 175°E 180°

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

二零一三年熱帶氣旋

TROPICAL CYCLONES IN 2013



二零一五年二月出版
Published February 2015

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
強颱風天兔於二零一三年九月二十二日下午5時的雷達回波圖像。

Cover
Radar echoes of Severe Typhoon Usagi captured at 5:00 p.m. on 22 September 2013.

目錄

		頁
1. 引言		
1.1	熱帶氣旋刊物的沿革	13
1.2	熱帶氣旋等級	13
1.3	熱帶氣旋命名	14
1.4	資料來源	14
1.5	年報內容	14
1.6	香港的熱帶氣旋警告系統	15
2. 二零一三年熱帶氣旋概述		
2.1	二零一三年的熱帶氣旋回顧	24
2.2	每月概述	25
3. 二零一三年影響香港的熱帶氣旋		
3.1	熱帶風暴貝碧嘉(1305)：六月二十日至二十四日	44
3.2	強烈熱帶風暴溫比亞 (1306)：六月二十八日至七月二日	53
3.3	熱帶風暴西馬侖(1308)：七月十六日至十九日	62
3.4	強烈熱帶風暴飛燕 (1309)：七月三十一日至八月三日	69
3.5	超強颱風尤特 (1311)：八月九日至十六日	78
3.6	超強颱風天兔 (1319)：九月十七日至二十三日	91
3.7	強颱風羅莎 (1329)：十月二十九日至十一月四日	105
4. 熱帶氣旋統計表		113
5. 二零一三年熱帶氣旋的位置及強度數據		130

CONTENTS

		page
1.	INTRODUCTION	
	1.1 Evolution of tropical cyclone publications	16
	1.2 Classification of tropical cyclones	16
	1.3 Naming of tropical cyclones	17
	1.4 Data sources	17
	1.5 Content	18
	1.6 Hong Kong's Tropical Cyclone Warning System	18
2.	TROPICAL CYCLONE OVERVIEW FOR 2013	
	2.1 Review of tropical cyclones in 2013	31
	2.2 Monthly overview	32
3.	TROPICAL CYCLONES AFFECTING HONG KONG IN 2013	
	3.1 Tropical Storm Bebinca (1305): 20 - 24 June	45
	3.2 Severe Tropical Storm Rumbia (1306): 28 June - 2 July	54
	3.3 Tropical Storm Cimaron (1308): 16 - 19 July	63
	3.4 Severe Tropical Storm Jebi (1309): 31 July - 3 August	70
	3.5 Super Typhoon Utor (1311): 9 - 16 August	80
	3.6 Super Typhoon Usagi (1319): 17 - 23 September	93
	3.7 Severe Typhoon Krosa (1329): 29 October - 4 November	106
4.	TROPICAL CYCLONE STATISTICS AND TABLES	114
5.	TROPICAL CYCLONE POSITION AND INTENSITY DATA, 2013	130

圖

		頁
卷首插圖: 二零一三年北太平洋西部及南海區域的熱帶氣旋路徑圖		
1.1	年報內提及的測風站及潮汐測量站之分佈地點	23
2.1	二零一三年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈	40
2.2	二零一三年七個影響香港的熱帶氣旋的路徑圖	40
2.3	超強颱風海燕(1330)在二零一三年十一月八日上午2時的紅外線衛星圖片	41
3.1.1	貝碧嘉(1305)在二零一三年六月二十日至二十四日的路徑圖	50
3.1.2	二零一三年六月二十一日至二十二日的雨量分佈	50
3.1.3	熱帶風暴貝碧嘉在二零一三年六月二十一日下午8時的紅外線衛星圖片	51
3.1.4	二零一三年六月二十二日上午5時的雷達回波圖像	52
3.2.1	溫比亞(1306)在二零一三年六月二十八日至七月二日的路徑圖	59
3.2.2	二零一三年六月三十日至七月二日的雨量分佈	59
3.2.3	強烈熱帶風暴溫比亞在二零一三年七月一日中午的紅外線衛星圖片	60
3.2.4	二零一三年七月一日下午3時的雷達回波圖像	61
3.3.1	西馬侖(1308)在二零一三年七月十六日至十九日的路徑圖	66
3.3.2	二零一三年七月十八日的雨量分佈	66
3.3.3	熱帶風暴西馬侖在二零一三年七月十七日下午十一時的紅外線衛星圖片	67
3.3.4	二零一三年七月十八日下午3時的雷達回波圖像	68
3.4.1	飛燕(1309)在二零一三年七月三十一日至八月三日的路徑圖	75
3.4.2	二零一三年八月一日至二日的雨量分佈	75
3.4.3	強烈熱帶風暴飛燕在二零一三年八月二日下午2時的紅外線衛星圖片	76
3.4.4	二零一三年八月二日下午3時的雷達回波圖像	77
3.5.1a	尤特(1311)二零一三年八月九日至十六日的路徑圖	86
3.5.1b	尤特(1311)接近香港時的路徑圖	86
3.5.2	二零一三年八月十二日至十五日的雨量分佈	87
3.5.3	二零一三年八月十四日上午5時香港各站錄得的風向和風速	87
3.5.4a	二零一三年八月十三日至十五日長洲自動氣象站錄得的十分鐘平均風速	88
3.5.4b	二零一三年八月十三日至十五日長洲自動氣象站錄得的海平面氣壓	88

3.5.5	超強颱風尤特在二零一三年八月十一日下午8時的紅外線衛星圖片	89
3.5.6	二零一三年八月十四日下午一時的雷達回波圖像	90
3.6.1a	天兔 (1319)二零一三年九月十七日至二十三日的路徑圖	99
3.6.1b	天兔 (1319)接近香港時的路徑圖	99
3.6.2	二零一三年九月二十一日至二十三日的雨量分佈	100
3.6.3	二零一三年九月二十二日下午9時香港各站錄得的風向和風速	100
3.6.4a	二零一三年九月二十二日至二十三日橫瀾島自動氣象站錄得的十分鐘平均風速	101
3.6.4b	二零一三年九月二十二日至二十三日橫瀾島自動氣象站錄得的海平面氣壓	101
3.6.5a	天兔在二零一三年九月二十日下午2時的紅外線衛星圖片	102
3.6.5b	天兔在二零一三年九月二十二日下午4時的可見光衛星圖片	103
3.6.6	二零一三年九月二十二日午夜時的雷達回波圖像	104
3.7.1a	二零一三年十月二十九日至十一月四日羅莎 (1329)的路徑圖	110
3.7.1b	羅莎(1329)接近香港時的路徑圖	110
3.7.2	二零一三年十一月一日至三日的雨量分佈	111
3.7.3	羅莎在二零一三年十一月二日下午2時的紅外線衛星圖片	112

FIGURE

		page
FRONTISPIECE:	Tracks of tropical cyclones in the western North Pacific and the South China Sea in 2013	
1.1	Locations of anemometers and tide gauge stations mentioned in this annual report	23
2.1	Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2013	40
2.2	Tracks of the seven tropical cyclones affecting Hong Kong in 2013	40
2.3	Infra-red satellite imagery of Super Typhoon Haiyan (1330) at peak intensity at 2 a.m. on 8 November 2013	41
3.1.1	Track of Bebinca (1305) for 20 - 24 June 2013	50
3.1.2	Rainfall distribution for 21 - 22 June 2013	50
3.1.3	Infra-red satellite imagery at 8 p.m. on 21 June 2013 of Tropical Storm Bebinca	51
3.1.4	Radar echoes captured at 5 a.m. on 22 June 2013	52
3.2.1	Track of Rumbia (1306) for 28 June - 2 July 2013	59
3.2.2	Rainfall distribution for 30 June - 2 July 2013	59
3.2.3	Infra-red satellite imagery at noon on 1 July 2013 of Severe Tropical Storm Rumbia	60
3.2.4	Radar echoes captured at 3 p.m. on 1 July 2013	61
3.3.1	Track of Cimaron (1308) on 16 - 19 July 2013	66
3.3.2	Rainfall distribution for 18 July 2013	66
3.3.3	Infra-red satellite imagery at 11 p.m. on 17 July 2013 of Tropical Storm Cimaron	67
3.3.4	Radar echoes at 3 p.m. on 18 July 2013	68
3.4.1	Track of Jebi (1309) on 31 July - 3 August 2013	75
3.4.2	Rainfall distribution for 1 - 2 August 2013	75
3.4.3	Infra-red satellite imagery at 2 p.m. on 2 August 2013 as Severe Tropical Storm Jebi	76
3.4.4	Image of radar echoes at 3 p.m. on 2 August 2013	77
3.5.1a	Track of Utor (1311) for 9 -16 August 2013	86
3.5.1b	Track of Utor (1311) near Hong Kong	86
3.5.2	Rainfall distribution for 12 - 15 August 2013	87
3.5.3	Winds recorded at various stations in Hong Kong at 5:00 a.m. on 14 August 2013	87
3.5.4a	Trace of 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 13 - 15 August 2013	88

3.5.4b	Trace of mean sea-level pressure recorded at Cheung Chau automatic weather station on 13 - 15 August 2013	88
3.5.5	Infra-red satellite imagery at 8 p.m. on 11 August 2013 of Super Typhoon Utor	89
3.5.6	Image of radar echoes at 1 p.m. on 14 August 2013	90
3.6.1a	Track of Usagi (1319) for 17 - 23 September 2013	99
3.6.1b	Track of Usagi (1319) near Hong Kong	99
3.6.2	Rainfall distribution for 21 - 23 September 2013	100
3.6.3	Winds recorded at various stations in Hong Kong at 9:00 p.m. on 22 September 2013	100
3.6.4a	Trace of 10-minute mean wind speed recorded at Waglan Island automatic weather station on 22 - 23 September 2013	101
3.6.4b	Trace of mean sea-level pressure recorded at Waglan Island automatic weather station on 22 - 23 September 2013	101
3.6.5a	Infra-red satellite imagery at 2 p.m. on 20 September 2013 of Usagi	102
3.6.5b	Visible satellite imagery at 4 p.m. on 22 September 2013 of Usagi	103
3.6.6	Image of radar echoes at midnight on 22 September 2013	104
3.7.1a	Track of Krosa (1329) on 29 October - 4 November 2013	110
3.7.1b	Track of Krosa (1329) near Hong Kong	110
3.7.2	Rainfall distribution on 1 - 3 November 2013	111
3.7.3	Infra-red satellite imagery at 2 p.m. on 2 November 2013 of Krosa	112

表

		頁
1.1	二零一三年一月一日起生效的熱帶氣旋名單	19
1.2	年報內各氣壓表的位置及海拔高度	20
1.3	年報內各風速表的位置及海拔高度	21
1.4	二零一三年香港熱帶氣旋警告信號的意義	22
2.1	在香港責任範圍內(10°-30°N, 105°-125°E)熱帶氣旋出現之每月分佈	42
2.2	影響香港的熱帶氣旋之每月分佈	43
3.1.1	在貝碧嘉影響下，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	47
3.1.2	在貝碧嘉影響下，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	48
3.1.3	貝碧嘉影響香港期間，香港天文台總部及其他各站所錄得的日雨量	49
3.1.4	貝碧嘉影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮	49
3.2.1	在溫比亞影響下，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	56
3.2.2	在溫比亞影響下，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	57
3.2.3	溫比亞影響香港期間，香港天文台總部及其他各站所錄得的日雨量	58
3.2.4	溫比亞影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮	58
3.3.1	在西馬侖影響下，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	64
3.3.2	西馬侖影響香港期間，香港天文台總部及其他各站所錄得的日雨量	65
3.3.3	西馬侖影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮	65
3.4.1	在飛燕影響下，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	72
3.4.2	在飛燕影響下，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	73
3.4.3	飛燕影響香港期間，香港天文台總部及其他各站所錄得的日雨量	74
3.4.4	飛燕影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮	74
3.5.1	在尤特影響下，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	83
3.5.2	在尤特影響下，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	84
3.5.3	尤特影響香港期間，香港天文台總部及其他各站所錄得的日雨量	85

3.5.4	尤特影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮	85
3.6.1	在天兔影響下，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	96
3.6.2	在天兔影響下，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	97
3.6.3	天兔影響香港期間，香港天文台總部及其他各站所錄得的日雨量	98
3.6.4	天兔影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮	98
3.7.1	在羅莎影響下，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	108
3.7.2	羅莎影響香港期間，香港天文台總部及其他各站所錄得的日雨量	109
3.7.3	羅莎影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮	109
4.1	二零一三年在北太平洋西部及南海區域的熱帶氣旋一覽	115
4.2	二零一三年為船舶發出的熱帶氣旋警告	116
4.3	二零一三年天文台所發出的熱帶氣旋警告信號及警報發出的次數	117
4.4	一九五六至二零一三年間每年各熱帶氣旋警告信號的發出次數及總時段	118
4.5	一九五六至二零一三年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數	119
4.6	一九五六至二零一三年間天文台發出熱帶氣旋警告信號的時段	120
4.7	二零一三年當熱帶氣旋影響香港時本港的氣象觀測摘要	121
4.8.1	二零一三年位於香港600公里範圍內的熱帶氣旋及其為本港帶來雨量期間，天文台錄得的雨量	123
4.8.2	一八八四至一九三九年及一九四七至二零一三年間十個為香港帶來最多雨量的熱帶氣旋	124
4.9	一九四六至二零一三年間引致天文台需要發出十號颶風信號的颱風	125
4.10	二零一三年熱帶氣旋在香港所造成的損失	126
4.11	一九六零至二零一三年間熱帶氣旋在香港所造成的人命傷亡及破壞	127

TABLES

		page
1.1	Tropical cyclone name list effective from 1 January 2013	19
1.2	Positions and elevations of various barometers mentioned in this annual report	20
1.3	Positions and elevations of various anemometers mentioned in this annual report	21
1.4	Meaning of tropical cyclone warning signals in Hong Kong in 2013	22
2.1	Monthly distribution of the occurrence of tropical cyclones in Hong Kong's area of responsibility	42
2.2	Monthly distribution of tropical cyclones affecting Hong Kong	43
3.1.1	Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when tropical cyclone warning signals for Bebinca were in force	47
3.1.2	Periods during which sustained strong winds were reached at the eight reference anemometers in the tropical cyclone warning system when warning signals for Bebinca were in force	48
3.1.3	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Bebinca	49
3.1.4	Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Bebinca	49
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 Rumbia were in force	56
3.2.2	Periods during which sustained strong winds were reached among the eight reference anemometers in the tropical cyclone warning system when warning signals for Rumbia were in force	57
3.2.3	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Rumbia	58
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 Rumbia	58
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 Cimaron were in force	64
3.3.2	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Cimaron	65
3.3.3	Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Cimaron	65
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 Jebi were in force	72
3.4.2	Periods during which sustained strong winds were reached among the eight reference anemometers in the tropical cyclone warning system when warning signals for Jebi were in force	73
3.4.3	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Jebi	74
3.4.4	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Jebi	74
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 Utor were in force	83

3.5.2	Periods during which sustained strong and gale force winds were reached among the eight reference anemometers in the tropical cyclone warning system when warning signals for Utor were in force	84
3.5.3	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Utor	85
3.5.4	Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Utor	85
3.6.1	Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Usagi were in force	96
3.6.2	Periods during which sustained strong and gale force winds were reached among the eight reference anemometers in the tropical cyclone warning system when warning signals for Usagi were in force	97
3.6.3	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Usagi	98
3.6.4	Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Usagi	98
3.7.1	Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Krosa were in force	108
3.7.2	Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Krosa	109
3.7.3	Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Krosa	109
4.1	List of tropical cyclones in the western North Pacific and the South China Sea in 2013	115
4.2	Tropical cyclone warnings for shipping issued in 2013	116
4.3	Tropical cyclone warning signals issued in Hong Kong and number of warning bulletins issued in 2013	117
4.4	Frequency and total duration of display of tropical cyclone warning signals :1956-2013	118
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 - 2013	119
4.6	Duration of tropical cyclone warning signals issued in Hong Kong: 1956-2013	120
4.7	A summary of meteorological observations recorded in Hong Kong during the passages of tropical cyclones in 2013	121
4.8.1	Rainfall associated with each tropical cyclone that came within 600 km of Hong Kong in 2013	123
4.8.2	Ten wettest tropical cyclones in Hong Kong (1884 - 1939, 1947 - 2013)	124
4.9	Typhoons requiring the issuing of the Hurricane Signal No. 10 during the period 1946-2013	125
4.10	Damage caused by tropical cyclones in Hong Kong in 2013	126
4.11	Casualties and damage caused by tropical cyclones in Hong Kong: 1960-2013	127

第一節　引言

1.1 熱帶氣旋刊物的沿革

除了在一九四零至一九四六年因二次大戰而中斷外，天文台自一八八四年以來便一直進行地面氣象觀測，並將整理好的數據撮列於由天文台出版的《氣象資料》年刊內。天文台在一九四七年開始進行高空氣象觀測後，該年刊便分成兩冊：分別是《氣象資料第一冊（地面觀測）》及《氣象資料第二冊（高空觀測）》。一九八一年，年刊第二冊改稱為《無線電探空儀觀測摘要》，而第一冊亦於一九八七年改稱為《香港地面觀測年報》。一九九三年，該兩刊物由一本名為《香港氣象觀測摘要》的新刊物所取代。這份摘要載列了地面及高空的氣象數據。

一八八四至一九三九年期間，部分對香港造成破壞的颱風的報告，曾以附錄形式載於《氣象資料》年刊內。而在一九四七至一九六七年出版的《天文台年報》，更擴充了有關熱帶氣旋的內容，收納所有導致香港吹烈風的熱帶氣旋的報告。其後，年刊系列加推《氣象資料第三冊（熱帶氣旋摘要）》，以記載每年北太平洋西部及南海區域所有熱帶氣旋的資料。此冊第一期在一九七一年出版，內容包括一九六八年赤道至北緯45度、東經100至160度範圍內所有熱帶氣旋的報告。由一九八五年開始，第三冊的覆蓋範圍東面邊界由東經160度伸展至180度。一九八七年，第三冊改稱為《熱帶氣旋年報》，內容大致上維持不變。年報由一九九七年起以中英雙語刊印，一年後加設電腦光碟版，二零零零年以網上版取代印刷版。

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

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

1.2 熱帶氣旋等級

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

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

（iv） 颱風#（T.）的最高持續風速為每小時118至149公里。
（v） 強颱風* (S.T.)的最高持續風速為每小時150至184公里。
（vi） 超強颱風* (SuperT.)的最高持續風速為每小時185公里或以上。

1.3 熱帶氣旋命名

從一九四七年至一九九九年，北太平洋西部及南海區域的熱帶氣旋非正式地採用美國軍方「聯合颱風警報中心」所編訂的名單上的名字。由二零零零年開始，日本氣象廳根據一套新名單為每個達到熱帶風暴強度的熱帶氣旋命名。這套名單(表1.1)經颱風委員會通過，共有140個名字，分別由亞太區內14個國家或地區提供。這些名字除了用於為國際航空及航海界發放的預測和警報外，也是向國際傳媒發放熱帶氣旋消息時採用的規範名稱。而名單會每年檢討和更新，通常導致嚴重傷亡的熱帶氣旋會依照受影響國家或地區的要求而被刪除。提供該名字的國家或地區會建議新名字取代。

另外，日本氣象廳在一九八一年起已獲委託為每個在北太平洋西部及南海區域出現而達到熱帶風暴強度的熱帶氣旋編配一個四位數字編號。例如編號"1301"代表在二零一三年區內第一個被日本氣象廳分類為熱帶風暴或更強的熱帶氣旋。在年報內，此編號會顯示在熱帶氣旋名稱後的括弧內，例如強烈熱帶風暴清松(1301)。

1.4 資料來源

年報內的海平面氣壓及地面風資料，是根據天文台氣象站及測風站網絡所錄得的數據。表1.2及1.3分別是該些網絡內各站的位置及海拔高度。

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

年報內的雨量資料來自天文台氣象站和雨量站網絡及土力工程處的雨量站。

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

1.5 年報內容

年報第二節是二零一三年所有影響北太平洋西部及南海區域的熱帶氣旋的概述。

年報第三節是二零一三年影響香港的熱帶氣旋的個別詳細報告，內容包括：

（i） 該熱帶氣旋對香港造成的影響；
（ii） 發出熱帶氣旋警告信號的過程；

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

（iii） 香港各地錄得的最高陣風風速及最高每小時平均風速；
（iv） 香港天文台錄得的最低平均海平面氣壓；
（v） 香港天文台及其他地方錄得的每日總雨量；
（vi） 香港各潮汐測量站錄得的最高潮位及最大風暴潮；及
（vii） 氣象衛星雲圖及雷達圖像。

有關熱帶氣旋的各種資料及統計表載於年報第四節內。

二零一三年每個熱帶氣旋的每六小時位置，連同當時的最低中心氣壓及最高持續風速，則表列於年報第五節內。

年報依照內文需要採用了不同的時間系統。正式的時間以協調世界時（即UTC）為準。至於在熱帶氣旋的敘述中，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定義。

由二零零七年開始，發出 3 號和 8 號信號的參考範圍由維多利亞港擴展至由八個涵蓋全港並接近海平面的參考測風站組成的網絡(圖 1.1 顯示 2013 年所採用的八個參考測風站)。這些測風站處於較為空曠的位置，地理上的考慮也包括山脈地勢的自然分隔，可概括地反映全港的風勢。

當參考網絡中半數或以上的測風站錄得或預料持續風速達到指標的風速限值，而且風勢可能持續時，天文台會考慮發出 3 號或 8 號信號。

Section 1 INTRODUCTION

1.1 Evolution of tropical cyclone publications

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

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

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

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

1.2 Classification of tropical cyclones

To enhance public awareness of stronger typhoons, the Observatory further categorised 'Typhoon' into 'Typhoon', 'Severe Typhoon' and 'Super Typhoon' starting from the 2009 tropical cyclone season. Tropical cyclones are now classified into the following six categories according to the maximum sustained surface winds near their centres:

(a) A TROPICAL DEPRESSION (T.D.) has maximum sustained winds of less than 63 km/h.
(b) A TROPICAL STORM (T.S.) has maximum sustained winds in the range 63-87 km/h.
(c) A SEVERE TROPICAL STORM (S.T.S.) has maximum sustained winds in the range 88-117 km/h.
(d) A TYPHOON[#] (T.) has maximum sustained winds of 118-149 km/h.
(e) A SEVERE TYPHOON* (S.T.) has maximum sustained winds of 150-184 km/h.
(f) A SUPER TYPHOON* (SuperT.) has maximum sustained winds of 185 km/h or more.

1.3 Naming of tropical cyclones

Over the western North Pacific and the South China Sea between 1947 and 1999, tropical cyclone names were assigned by the U.S. Armed Forces' Joint Typhoon Warning Center according to a pre-determined but unofficial list. With effect from 2000, the Japan Meteorological Agency has been assigned the responsibility to name tropical cyclones attaining tropical storm intensity according to a new list adopted by the Typhoon Committee. It contains a total of 140 names contributed by 14 countries or territories within the Asia Pacific region (Table 1.1). Apart from being used in forecasts and warnings issued to the international aviation and shipping communities, the names are also used officially in information on tropical cyclones issued to the international press. The list is reviewed every year, and usually names of tropical cyclones that have caused serious damage or casualty will be retired upon the requests of countries or territories affected. Countries or territories providing those names will then propose new names as replacement.

Besides, since 1981, Japan Meteorological Agency has been delegated with the responsibility of assigning to each tropical cyclone in the western North Pacific and the South China Sea attaining tropical storm intensity a numerical code of four digits. For example, the first tropical cyclone of tropical storm intensity or above, as classified by Japan Meteorological Agency, within the region in 2013 was assigned the code "1301". In this report, the associated code immediately follows the name of the tropical cyclone in bracket, e.g. Severe Tropical Storm Sonamu (1301).

1.4 Data sources

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

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

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

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

* New categories adopted since 2009

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

1.5 Content

In Section 2, an overview of all the tropical cyclones over the western North Pacific and the South China Sea in 2013 is presented.

The reports in Section 3 are individual accounts of the life history of tropical cyclones affecting Hong Kong in 2013. They include the following information:-

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

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

Six-hourly positions together with the corresponding estimated minimum central pressures and maximum sustained surface winds for individual tropical cyclones in 2013 are tabulated in Section 5.

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

1.6 Hong Kong’s Tropical Cyclone Warning System

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

Starting from 2007, the reference for the issuance of No.3 and No.8 signals has been expanded from the Victoria Harbour to a network of eight near-sea level reference anemometers covering the whole of Hong Kong. The eight reference anemometers adopted in 2013 are depicted in Figure 1.1. The reference anemometers have good exposure and geographical distribution, taking into account the physical separation created by Hong Kong’s natural terrain. Together, they are used to represent the overall wind condition in Hong Kong.

The Observatory will consider issuing the No. 3 or No. 8 signal, as the case may be, when half or more anemometers in the reference network register or are expected to register sustained strong winds or gale/storm force winds, and that the windy conditions are expected to persist.

表 1.1　　二零一三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 2013

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	天鴿 Hato
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	雷伊 Rai	古超 Guchol
菲律賓	Philippines	西馬侖 Cimaron	海貝思 Hagibis	莫拉菲 Molave	馬勒卡 Malakas	泰利 Talim
韓國	RO Korea	飛燕 Jebi	浣熊 Neoguri	天鵝 Goni	鮎魚 Megi	杜蘇芮 Doksuri
泰國	Thailand	山竹 Mangkhut	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：在二零一三年，西北太平洋和南海的熱帶氣旋名單上，新增一個新名字「天鴿」，取代舊有名字「天鷹」。
Note: In 2013, a new name "Hato" has been adopted for tropical cyclones in the western North Pacific and South China Sea, replacing "Washi".

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

站 Station		位置 Position		氣壓表的海拔高度(米) Elevation of barometer above M.S.L. (m)
		北緯 Latitude N	東經 Longitude E	
香港天文台總部	Hong Kong Observatory Headquarters	22°18’07”	114°10’27”	40
長洲	Cheung Chau	22°12’04”	114°01’36”	79
香港國際機場	Hong Kong International Airport	22°18’34”	113°55’19”	7
京士柏	King’s Park	22°18’43”	114°10’22”	66
流浮山	Lau Fau Shan	22°28’08”	113°59’01”	36
坪洲	Peng Chau	22°17’28”	114°02’36”	35
橫瀾島	Waglan Island	22°10’56”	114°18’12”	60

表 1.3　　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 annual report

站 Station		位置 Position		風速表的海拔高度(米) Elevation of anemometer above M.S.L. (m)
		北緯 Latitude N	東經 Longitude E	
黃麻角(赤柱)	Bluff Head (Stanley)	22°11’51”	114°12’43”	103
中環碼頭	Central Pier	22°17’20”	114°09’21”	30
長洲*	Cheung Chau*	22°12’04”	114°01’36”	99
長洲泳灘	Cheung Chau Beach	22°12’39”	114°01’45”	27
青洲	Green Island	22°17’06”	114°06’46”	107
香港國際機場*	Hong Kong International Airport*	22°18’34”	113°55’19”	14#
啟德*	Kai Tak*	22°18’35”	114°12’48”	16
京士柏	King’s Park	22°18’43”	114°10’22”	90
流浮山*	Lau Fau Shan*	22°28’08”	113°59’01”	50
昂坪	Ngong Ping	22°15’31”	113°54’46”	607
北角	North Point	22°17’40”	114°11’59”	26
坪洲	Peng Chau	22°17’28”	114°02’36”	47
平洲	Ping Chau	22°32’48”	114°25’42”	39
西貢*	Sai Kung*	22°22’32”	114°16’28”	32
沙洲	Sha Chau	22°20’45”	113°53’28”	31
沙螺灣	Sha Lo Wan	22°17’28”	113°54’25”	71
沙田*	Sha Tin*	22°24’09”	114°12’36”	16
石崗	Shek Kong	22°26’10”	114°05’05”	26
九龍天星碼頭	Star Ferry (Kowloon)	22°17’35”	114°10’07”	18
打鼓嶺*	Ta Kwu Ling*	22°31’43”	114°09’24”	28
大美督	Tai Mei Tuk	22°28’31”	114°14’15”	71
大帽山	Tai Mo Shan	22°24’38”	114°07’28”	966
大埔滘	Tai Po Kau	22°26’33”	114°11’03”	11
塔門	Tap Mun	22°28’17”	114°21’38”	35
大老山	Tate's Cairn	22°21’28”	114°13’04”	587
將軍澳	Tseung Kwan O	22°18’57”	114°15’20”	52
青衣島蜆殼油庫*	Tsing Yi Shell Oil Depot*	22°20’48”	114°05’11”	43
屯門政府合署	Tuen Mun Government Offices	22°23’26”	113°58’36”	69
橫瀾島	Waglan Island	22°10’56”	114°18’12”	83
濕地公園	Wetland Park	22°28’00”	114°00’32”	15
黃竹坑	Wong Chuk Hang	22°14’52”	114°10’25”	30

所指風速表在北跑道近中間位置

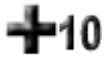
Refer to the wind sensor at the middle of the north runway

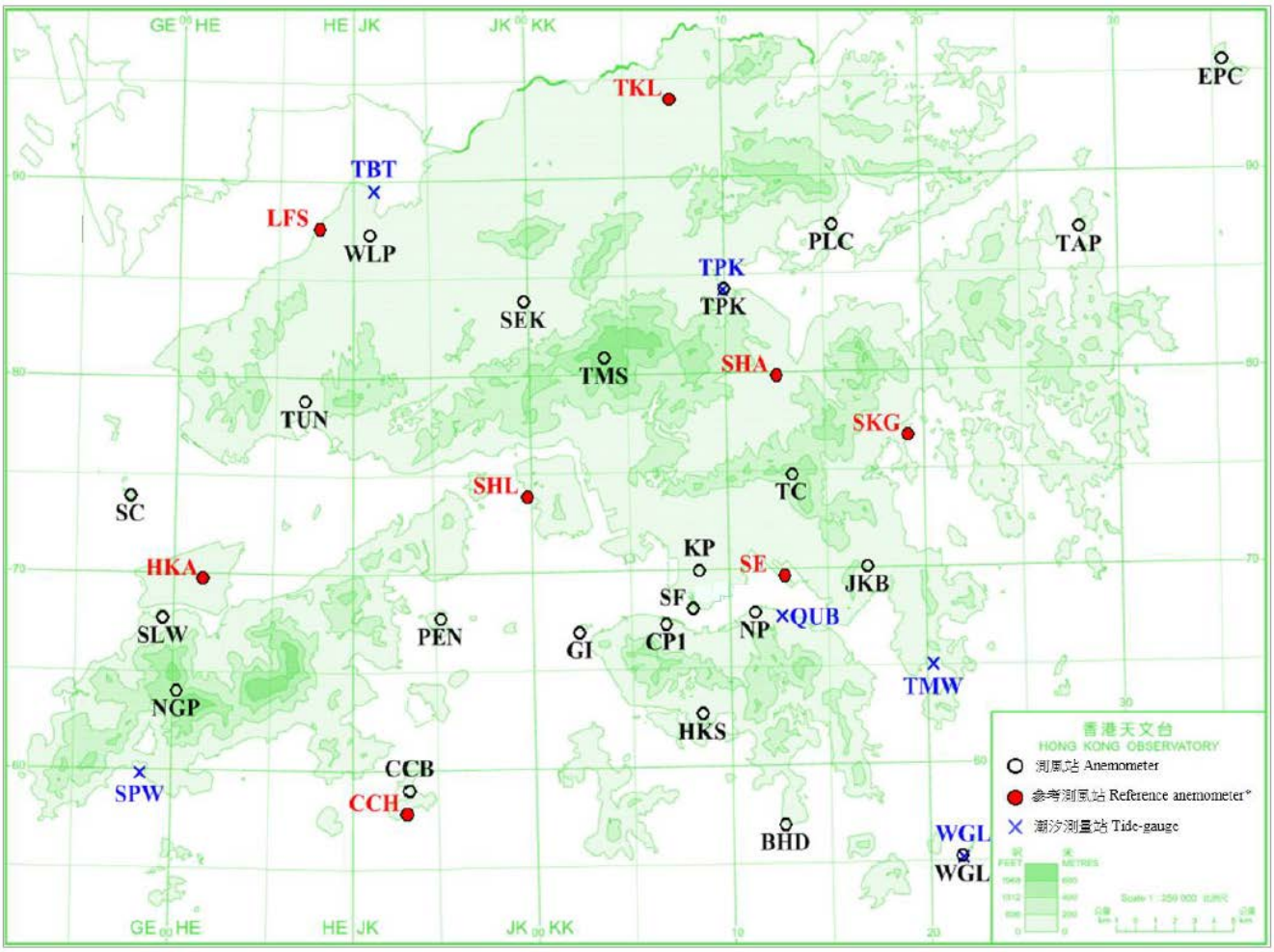
* 參考測風站

* Reference anemometer

表 1.4　　二零一三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 2013

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



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

測風站 Anemometers	
BHD	黃麻角(赤柱) Bluff Head (Stanley)
CCB	長洲泳灘 Cheung Chau Beach
CP1	中環碼頭 Central Pier
EPC	平洲 Ping Chau
GI	青洲 Green Island
HKS	黃竹坑 Wong Chuk Hang
JKB	將軍澳 Tseung Kwan O
KP	京士柏 King's Park
NGP	昂坪 Ngong Ping.
NP	北角 North Point
PEN	坪洲 Peng Chau
PLC	大美督 Tai Mei Tuk
SC	沙洲 Sha Chau
SEK	石崗 Shek Kong
SF	九龍天星碼頭 Star Ferry (Kowloon)
SLW	沙螺灣 Sha Lo Wan
TAP	塔門 Tap Mun
TC	大老山 Tate's Cairn
TPK	大埔滘 Tai Po Kau
TMS	大帽山 Tai Mo Shan

測風站 Anemometers	
TUN	屯門政府合署 Tuen Mun Government Offices
WLP	濕地公園 Wetland Park
WGL	橫瀾島 Waglan Island

參考測風站* Reference anemometers*	
CCH	長洲 Cheung Chau
LFS	流浮山 Lau Fau Shan
HKA	香港國際機場 Hong Kong International Airport
SE	啟德 Kai Tak
SHA	沙田 Sha Tin
SHL	青衣島蜆殼油庫 Shell Oil Depot
SKG	西貢 Sai Kung
TKL	打鼓嶺 Ta Kwu Ling

潮汐測量站 Tide-gauge	
QUB	鰂魚涌 Quarry Bay
SPW	石壁 Shek Pik
TBT	尖鼻咀 Tsim Bei Tsui
TMW	大廟灣 Tai Miu Wan
TPK	大埔滘 Tai Po Kau
WGL	橫瀾島 Waglan Island

圖 1.1　　年報內提及的測風站及潮汐測量站之分佈地點。

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

第二節　二零一三年熱帶氣旋概述

2.1　二零一三年的熱帶氣旋回顧

2.1.1　北太平洋西部（包括南海區域）的熱帶氣旋

二零一三年有33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），多於1961-2010年約30個的長期年平均數目。全年有14個熱帶氣旋達到颱風或以上強度，較1961-2010年的長期年平均數目(15個)略少，其中有七個熱帶氣旋更達到超強颱風程度(中心附近最高持續風速達到每小時185公里或以上)，是自二零零六年以來最多熱帶氣旋達到超強颱風程度的年份。

年內首個熱帶氣旋在一月形成，最後一個則在十一月形成。圖2.1是二零一三年在北太平洋西部及南海區域熱帶氣旋數目之逐月分佈。

二零一三年內有十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，兩個登陸日本，七個橫過菲律賓及九個登陸越南。

二零一三年北太平洋西部及南海區域最強的熱帶氣旋是十一月的超強颱風海燕(1330)（圖2.3），其中心附近最高持續風速估計為每小時285公里，而最低海平面氣壓為890百帕斯卡（表4.1）。它亦是本區域自一九七九年十月超強颱風泰培以來最強的熱帶氣旋。

2.1.2　香港責任範圍內的熱帶氣旋

在二零一三年的33個熱帶氣旋中，有19個出現在香港責任範圍（即北緯10至30度、東經105至125度），較1961-2010年約16個的長期年平均數目多3個（表2.1），當中有九個在香港責任範圍內形成。年內，香港天文台總共發出444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

二零一三年共有14個熱帶氣旋影響南海區域（即北緯10至25度、東經105至120度），較1961-2010年約12個的長期年平均數目多，當中有七個在南海上形成，其餘七個從北太平洋西部及南海以南海域進入南海。

2.1.4　影響香港的熱帶氣旋

二零一三年香港的颱風季節於六月二十一日開始，當天熱帶低氣壓貝碧嘉(1305)在南海北部轉向西北方向移動，天文台發出一號戒備信號。在十一月三日，隨著熱帶風暴羅莎(1329)向西南方向移離本港，天文台取消所有熱帶氣旋警告信號，二零一三年颱風季節隨即結束。

年內共有七個熱帶氣旋影響香港（圖2.2），略多於1961-2010年約六個的長期年平均數目(表2.2)。這七個熱帶氣旋分別為六月的熱帶風暴貝碧嘉(1305)及強烈熱帶風暴溫比亞(1306)、七月的熱帶風暴西馬侖(1308)及強烈熱帶風暴飛燕(1309)、八月的超強颱風尤特(1311)、九月的超強颱風天兔(1319)及十月的強颱風羅莎(1329)。天文台在尤特及天兔影響香港期間曾發出八號烈風或暴風信號，是年內發出的最高熱帶氣旋警告信號。貝碧嘉、溫比亞及飛燕吹襲期間天文台曾發出三號強風信號。西馬侖及羅莎則只需發出一號戒備信號。

2.1.5 熱帶氣旋的雨量

二零一三年各熱帶氣旋為香港帶來的雨量（即該熱帶氣旋在出現於香港600公里範圍內至其消散或離開香港600公里範圍之後72小時期間，天文台錄得的雨量）共為645.4毫米（表4.8.1），約佔年內總雨量2847.3毫米的百分之23，比1981-2010年平均值的678.0毫米少約5%。

超強颱風尤特(1311)為天文台總部帶來154.1毫米的雨量(表4.8.1)，是年內為香港帶來最多雨量的熱帶氣旋。

2.2 每月概述

這一節逐月介紹二零一三年北太平洋西部及南海區域的熱帶氣旋概況。影響香港的各熱帶氣旋及傷亡報告則詳述於第三節。

一月

熱帶低氣壓清松(1301)於一月三日在馬尼拉以南約660公里的蘇祿海上形成，並向西移動，橫過菲律賓西南部。清松於一月四日進入南海南部，並增強為熱帶風暴。翌日下午進一步增強為強烈熱帶風暴，並達到其最高強度，中心附近最高持續風力達每小時90公里。清松於一月七日晚上在南海南部上轉向南緩慢移動，並於翌日清晨減弱為熱帶低氣壓，隨後轉向東南移動，最後於一月九日清晨在沙撈越西北的南海南部上消散。

二月

熱帶低氣壓珊珊(1302)於二月二十二日在胡志明市東南偏南約630公里的南海南部上形成，並大致向南移動，其中心附近最高持續風力為每小時45公里。珊珊於二月二十三日在沙撈越西北的南海南部上消散。

三月至五月

二零一三年三月至五月期間並無熱帶氣旋在北太平洋西部及南海區域上形成。

六月

熱帶低氣壓摩羯(1303)於六月八日在馬尼拉東北偏東約1 040公里的北太平洋西部上形成，向東北偏北移動。摩羯於翌日增強為熱帶風暴。它於六月十一日早上在沖繩島以東的北太平洋西部上增強為強烈熱帶風暴，並達到其最高強度，中心附近最高持續風力為每小時90公里。摩羯於當日晚上在日本以南海域上減弱為熱帶風暴，並轉向北移動。翌日再轉向東至東北方向移動，並繼續減弱，最後於六月十三日在日本以南海域上消散。

熱帶低氣壓麗琵(1304)於六月十七日在馬尼拉以東約650公里的北太平洋西部上形成，並向北移動，翌日增強為熱帶風暴。麗琵於六月十九日橫過台灣以東海域，並達到其最高強度，中心附近最高持續風力為每小時85公里。麗琵於六月二十日橫過東海，於翌日晚上轉向東北偏北移動，最後在日本九州以西的海面上減弱為低壓區。

熱帶低氣壓貝碧嘉(1305)於六月二十日在東沙以南約560公里的南海中部上形成，初時向北至東北方向移動，於六月二十一日採取西北途徑移動，並在東沙西南偏南處增強為熱帶風暴。當日黃昏貝碧嘉達到其最高強度，中心附近最高持續風力為每小時85公里，並轉

向西至西北偏西移動，橫過南海北部。它於翌日橫過海南島，晚上進入北部灣。貝碧嘉於六月二十三日逐漸轉向北移動，橫過北部灣，六月二十四日在越南北部沿岸登陸後在內陸消散。

熱帶低氣壓溫比亞(1306)於六月二十八日在馬尼拉東南偏東約990公里的北太平洋西部海面上形成，並向西北至西北偏西方向移動，翌日增強為熱帶風暴，橫過菲律賓中部。溫比亞於六月三十日進入南海中部，翌日早上在南海北部進一步增強為強烈熱帶風暴，並達到其最高強度，中心附近最高持續風力為每小時105公里，晚上轉向西北移動，橫過海南島以東海域。溫比亞於七月二日早上在湛江附近登陸，橫過廣西，並減弱為熱帶風暴，晚上在內陸消散。

七月

熱帶低氣壓蘇力(1307)於七月七日在關島之東北約890公里的北太平洋西部海面上形成，並向西移動。蘇力在太平洋上空逐漸增強，於七月九日在關島之西北約830公里處成為颱風。當時蘇力向西北偏西移動，翌日增強為超強颱風，並達到其最高強度，中心附近最高持續風力為每小時210公里。它於七月十一日減弱為強颱風，橫過台灣以東海域，七月十三日早上吹襲台灣北部後減弱為颱風，下午橫過台灣海峽，在福建沿岸登陸，黃昏時進入福建內陸並減弱為強烈熱帶風暴。蘇力於七月十四日凌晨進一步減弱為熱帶風暴，日間在江西消散。根據報章報導，蘇力吹襲期間，台灣有三人死亡、超過120人受傷、逾1.14萬戶停電。此外，福建約有990間房屋倒塌。福建、浙江及江西直接經濟損失合共超過20億元人民幣。

熱帶低氣壓西馬侖(1308)於七月十六日在馬尼拉東北偏東約390公里的北太平洋西部海面上形成，並向西北移動。它於七月十七日掠過呂宋東北端，橫過呂宋海峽，途中增強為熱帶風暴，並達到其最高強度，中心附近最高持續風力為每小時65公里。西馬侖於七月十八日凌晨進入南海東北部，早上轉向偏北方向移動，傍晚在福建沿岸登陸。它於七月十九日凌晨在福建減弱為熱帶低氣壓，隨後在內陸消散。

熱帶低氣壓飛燕(1309)於七月三十一日在西沙之東南偏東約450公里的南海中部上空形成，並向西北偏西移動，當日下午增強為熱帶風暴，翌日採取西北途徑移動，橫過西沙附近海域。飛燕於八月二日早上在西沙之東北偏北增強為強烈熱帶風暴，當日下午達到其最高強度，中心附近最高持續風力為每小時105公里，傍晚在海南島東北端登陸，晚上轉向西北偏西移動，橫過海南島。飛燕於八月三日凌晨橫過北部灣，早上在越南北部沿岸登陸，下午減弱為熱帶風暴，晚上在越南北部消散。

八月

熱帶低氣壓山竹(1310)於八月五日在西沙之東南約790公里的南海中部上空形成，並向西北偏西至西北方向移動，翌日在西沙之西南增強為熱帶風暴。山竹於八月七日達到其最高強度，中心附近最高持續風力為每小時75公里，並掠過海南島西南沿岸，晚上在越南北部沿岸登陸，翌日在老撾北部消散。根據報章報導，山竹吹襲越南期間，導致最少三人死亡、14間房屋倒塌及超過700間房屋被毀。

熱帶低氣壓尤特(1311)於八月九日在馬尼拉以東約1 350公里的北太平洋西部上空形成，初時向西移動，翌日採取西北偏西的途徑移動及逐漸增強為颱風。尤特於八月十一日繼續增強，傍晚在馬尼拉之東北偏東約290公里處成為超強颱風，達到其最高強度，中心附

近最高持續風力為每小時195公里。它於八月十二日凌晨橫過呂宋及減弱為強颱風，上午進入南海，翌日在香港以南的南海北部上轉向西北移動。尤特於八月十四日下午減弱為颱風，並在陽江附近登陸，傍晚橫過廣東西部沿岸，晚上再減弱為強烈熱帶風暴。翌日尤特轉向偏北方向移動，橫過廣西，並逐漸減弱為熱帶低氣壓，八月十六日在廣西內陸消散。

熱帶低氣壓潭美(1312)於八月十七日在台灣高雄東南偏東約550公里的海面上空形成，並大致向東南偏東緩慢移動，隨後兩天逐漸增強為強烈熱帶風暴。潭美於八月二十日轉向西北移動，翌日進一步增強為颱風，並達到其最高強度，中心附近最高持續風力為每小時120公里，晚上掠過台灣以北海域。潭美於八月二十二日凌晨在福建沿岸登陸，日間逐漸減弱為熱帶風暴，翌日在湖南消散。潭美吹襲台灣期間，造成多處地區水浸，有三人死亡、11人受傷。潭美為福建、汕頭及湖南帶來暴雨，導致最少八人死亡，六人失蹤、超過30人受傷。此外，潭美吹襲福建期間，有300艘漁船沉沒，直接經濟損失約21億元人民幣。

強烈熱帶風暴佩娃(1313)在北太平洋中部上空形成，並於八月十八日越過國際換日線，進入北太平洋西部，並向西北移動，翌日達到其最高強度，中心附近最高持續風力為每小時110公里。它於八月二十日在威克島之東南偏東處減弱為熱帶風暴，並採取西北偏西途徑移動。佩娃於八月二十二日轉向西北移動，翌日移動減慢，最後於八月二十四日在威克島以北的北太平洋西部上消散。

熱帶低氣壓烏娜拉(1314)也是來自北太平洋中部，並於八月十九日越過國際換日線進入北太平洋西部，中心附近的最高持續風力為每小時55公里。烏娜拉向西移動，晚上在海面上消散。

熱帶低氣壓康妮(1315)於八月二十六日在馬尼拉東北偏東約610公里的北太平洋西部上空形成，並大致向西北移動，當晚增強為熱帶風暴，翌日轉向北移動。康妮於八月二十八日增強為強烈熱帶風暴，並以偏北路徑橫過台灣以東海域，翌日達到其最高強度，中心附近最高持續風力為每小時105公里，黃昏時隨即減弱為熱帶風暴。八月三十日康妮轉向東北移動，晚上在東海演變為一個溫帶氣旋。康妮吹襲台灣期間，有一名漁民失蹤。

熱帶低氣壓玉兔(1316)於八月三十一日在威克島東北偏北約1 380公里的北太平洋西部上空形成，並向東北緩慢移動，晚上達到其最高強度，中心附近最高持續風速為每小時55公里。其後數天玉兔移動仍然緩慢，九月三日在海面上消散。

九月

熱帶低氣壓桃芝(1317)於九月一日在台北之東北偏東約240公里的海面上空形成，並大致向東北移動，翌日在沖繩島以西處增強為熱帶風暴。桃芝於九月三日達到其最高強度，中心附近最高持續風速為每小時85公里。它於九月四日在日本九州南部登陸後逐漸演變為溫帶氣旋。根據報章報導，桃芝吹襲期間，日本西部地區出現水災，當局呼籲七千名民眾離開家園暫避。

熱帶低氣壓萬宜(1318)於九月十二日在關島以北約960公里的北太平洋西部上空形成，並向西至西北偏西移動，翌日增強為熱帶風暴。萬宜於九月十四日採取西北偏北途徑移動，並進一步增強為強烈熱帶風暴，翌日在日本以南的海面上轉向東北偏北移動，並達到其最高強度，中心附近最高持續風速為每小時105公里。萬宜於九月十六日早上在日本本州南部登陸並逐漸減弱，當日傍晚在日本以東海域演變為溫帶氣旋。萬宜吹襲日本期間，為廣泛地區帶來大雨及水浸，造成最少三人死亡，四人失蹤、逾百人受傷及超過17 000戶停電。

熱帶低氣壓天兔(1319)於九月十七日在馬尼拉東北偏東約1 240公里的北太平洋西部上空形成，並大致向西移動及逐漸增強，翌日成為颱風。天兔於九月十九日採取一個西北途徑移動，並在呂宋以東的太平洋上進一步增強為超強颱風，翌日達到其最高強度，中心附近最高持續風速為每小時205公里。天兔於九月二十一日向西北偏西移動，橫過呂宋海峽後進入南海及減弱為強颱風。它於九月二十二日橫過南海東北部，傍晚在廣東汕尾附近登陸，晚上橫過廣東沿岸地區，翌日在廣西內陸消散。

一股熱帶低氣壓於九月十八日在峴港以東約320公里的南海中部上空形成，並向西至西北偏西移動，橫過海南島以南海域。其中心附近最高持續風速為每小時55公里。該熱帶低氣壓於翌日在越南中部登陸後消散。

熱帶低氣壓帕布(1320)於九月二十一日在關島之東北偏北約700公里的北太平洋西部上空形成，並向西至西北偏西移動，當日下午增強為熱帶風暴。它於九月二十二日再增強為強烈熱帶風暴，兩天後在硫黃島附近進一步增強為颱風，並達到其最高強度，中心附近最高持續風速為每小時140公里。帕布於九月二十五日在日本以南的太平洋上轉向東北移動，翌日在日本以東的北太平洋西部上演變為一個溫帶氣旋。

熱帶低氣壓蝴蝶(1321)於九月二十六日在西沙東南偏東約620公里的南海中部上空形成，並大致向西北移動，翌日增強為熱帶風暴。蝴蝶於九月二十八日緩慢橫過西沙以東海域，並增強為強烈熱帶風暴。它於九月二十九日採取偏西途徑移動在西沙以南掠過，並逐漸增強為強颱風及達到其最高強度，中心附近最高持續風速為每小時155公里，但隨即於翌日凌晨減弱為颱風。蝴蝶於九月三十日在越南中部沿岸登陸，並減弱為強烈熱帶風暴，十月一日在老撾與泰國邊境交界上消散。蝴蝶吹襲期間，三艘漁船在西沙海域上沉沒，導致四人死亡、58人失蹤。蝴蝶在越南亦導致三人死亡、35人受傷及95 000間房屋受損。

熱帶低氣壓聖帕(1322)於九月三十日在硫黃島之東北偏東約710公里的北太平洋西部上空形成，並向西至西北偏西移動，當日下午增強為熱帶風暴，並於晚上達到其最高強度，中心附近最高持續風速為每小時75公里。聖帕於十月一日下午轉向北至東北偏北移動，翌日掠過日本東南海域，並於十月三日演變為一股溫帶氣旋。

熱帶低氣壓菲特(1323)於九月三十日在馬尼拉以東約1 250公里的北太平洋西部上空形成，並大致向西北偏北移動，隨後三天逐漸增強為颱風。菲特於十月五日在琉球群島附近轉向西北偏西移動，並增強為強颱風及達到其最高強度，中心附近最高持續風速為每小時155公里，翌日橫過台灣以北海域，並減弱為颱風。菲特於十月七日凌晨在福建沿岸登陸後迅速減弱，傍晚在內陸消散。根據報章報導，菲特吹襲福建期間，造成五人死亡、四人失蹤、約2 300間房屋倒塌、超過18萬公頃農作物受災、直接經濟損失超過47億元人民幣。

十月

熱帶低氣壓丹娜絲(1324)於十月四日在關島之東北偏北約350公里的北太平洋西部上空形成，並向西北偏西移動及逐漸增強，於十月六日成為颱風。丹娜絲於翌日在沖繩島東南偏東處進一步增強為超強颱風及達到其最高強度，中心附近最高持續風速為每小時195公里，並採取西北途徑移動，在沖繩島東北面掠過。丹娜絲於十月八日逐漸轉向東北移動，橫過日本以西海域，並逐漸減弱為強烈熱帶風暴，翌日在日本海上演變為溫帶氣旋。丹娜絲吹襲期間，濟洲及韓國南部部分地區出現水浸及電力中斷。

熱帶低氣壓百合(1325)於十月九日在馬尼拉以東約990公里的北太平洋西部上空形成，並向西至西北偏西移動。百合於十月十一日在呂宋以東增強成為颱風，並達到其最高強度，中心附近最高持續風速為每小時145公里。百合當晚橫過呂宋，隨後三天橫過南海中部，在西沙以南掠過，十月十五日在越南中部沿岸登陸，並逐漸減弱為熱帶低氣壓，晚上在老撾消散。百合在菲律賓造成13人死亡，超過二百萬人沒有電力供應。而在越南亦有五人死亡，49人受傷。

熱帶低氣壓韋帕(1326)於十月十日在關島以西約200公里的北太平洋西部上空形成，翌日逐漸增強為強烈熱帶風暴及向西北移動。韋帕於十月十三日在硫黃島之西南偏南增強為強颱風，翌日達到其最高強度，中心附近最高持續風速為每小時175公里。韋帕於十月十五日轉向東北移動，橫過日本以南海域，並減弱為颱風，翌日橫過日本東部沿岸海域後演變為溫帶氣旋。韋帕為日本東部帶來水災，觸發山泥傾瀉，造成至少17人死亡、51人失蹤、20人受傷、約300間房屋倒塌或受損，逾三萬戶停電。

熱帶低氣壓范斯高(1327)於十月十六日在關島以東約230公里的北太平洋西部上空形成，初時向西南偏西移動，翌日增強成為颱風，並轉向西北偏北移動。它於十月十八日進一步增強為超強颱風，翌日達到其最高強度，中心附近最高持續風速為每小時230公里。范斯高於十月二十一日減弱為強颱風，兩天後進一步減弱為颱風。它於十月二十四日轉向北移動，橫過沖繩島以東海域。范斯高於十月二十五日減弱為強烈熱帶風暴，並向東北移動，橫過日本以南海域，翌日在日本東南的太平洋上演變為一股溫帶氣旋。

熱帶低氣壓利奇馬(1328)於十月二十日在威克島西南偏南約1 190公里的北太平洋西部上空形成，初時向東北偏北移動。利奇馬在太平洋上逐漸增強並轉向西北移動，於十月二十二日早上增強為颱風，傍晚在關島之東北偏東約1 200公里處成為超強颱風，翌日達到其最高強度，中心附近最高持續風速為每小時220公里。它於十月二十五日在硫黃島以東掠過，並逐漸轉向東北移動，翌日減弱為颱風，隨後在日本以東的太平洋演變為溫帶氣旋。

熱帶低氣壓羅莎(1329)於十月二十九日在馬尼拉以東約1 580公里的北太平洋西部上空形成，並大致向西至西北偏西移動，翌日逐漸增強為強烈熱帶風暴。它於十月三十一日進一步增強為颱風，並橫過呂宋北端，於翌日進入南海北部。羅莎於十一月二日轉為移動緩慢及增強為強颱風，並達到其最高強度，中心附近最高持續風速為每小時165公里。它於十一月三日轉向西南移動，並逐漸減弱為熱帶風暴，翌日晚上在南海中部上消散。根據報章報導，羅莎在菲律賓造成三人死亡、兩人失蹤及超過17 000間房屋受損。

十一月

熱帶低氣壓海燕(1330)於十一月三日在關島東南偏東約1 600公里的北太平洋西部上空形成，並向西北偏西移動及逐漸增強，兩日後在關島西南偏南約780公里增強成為颱風。它於十一月六日進一步增強成為超強颱風，於十一月八日達到其最高強度，中心附近最高持續風速為每小時285公里，其風眼在衛星圖像上清晰可見。海燕橫過菲律賓中部，於十一月九日進入南海並轉向西北移動，晚上在西沙之西南掠過及減弱為強颱風。翌日海燕橫過北部灣，並減弱為颱風。它於十一月十一日在越南北部沿岸登陸，並迅速減弱為熱帶低氣壓及轉向東北偏東移動，翌日在廣西消散。

根據報章報導，海燕吹襲菲律賓中部期間，為該區帶來廣泛水浸，並為沿岸地區帶來巨浪，觸發山泥傾瀉、引致多間房屋及樹木倒塌、電力供應中斷、海陸空交通癱瘓，超過6 000人死亡，約1 800人失蹤及28 000人受傷，直接經濟損失超過103億披索（約19億港元）。海燕在海南、廣西及廣東造成七人死亡，四人失蹤、超過9400間房屋倒塌或受損、逾295萬公頃農地受災，直接經濟損失超過44億元人民幣。此外，海燕亦導致越南最少有13人死亡、81人受傷。雖然本港沒有直接受到海燕的影響，在海燕及東北季候風的共同影響下，本港風勢頗大，海面有大浪及出現湧浪，一人在大嶼山長沙游泳時失蹤，及後証實死亡。

一股熱帶低氣壓於十一月五日在南沙以東約280公里的南海南部上空形成，並向西至西北偏西移動。其中心附近最高持續風速為每小時55公里。該熱帶低氣壓於翌日在越南南部沿岸登陸後在內陸消散。

熱帶低氣壓楊柳(1331)於十一月十四日在南沙東北偏北約130公里的南海南部上空形成，並向西至西北偏西移動。其中心附近最高持續風速為每小時55公里。楊柳於翌日在越南南部沿岸登陸後在內陸消散。楊柳為越南中部帶來大雨及嚴重水浸，導致最少34人死亡，11人失蹤。

十二月

十二月並無熱帶氣旋在北太平洋西部及南海區域上形成。

備註：人命傷亡及財物損毀數據是根據報章報導輯錄而成。

Section 2 TROPICAL CYCLONE OVERVIEW FOR 2013

2.1 Review of tropical cyclones in 2013

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

In 2013, a total of 33 tropical cyclones occurred over the western North Pacific and the South China Sea bounded by the Equator, 45°N, 100°E and 180°, slightly more than the long term (1961-2010) average figure of around 30. During the year, 14 of the tropical cyclones attained typhoon intensity or above, close to the long term average (15) of 1961 – 2010. Seven of them reached super typhoon intensity (maximum 10-minute wind speed of 185 km/h or above near the centre), the highest since 2006.

The first tropical cyclone of the year formed in January and the last one in November. Figure 2.1 shows the monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2013.

During the year, nine 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, two made landfall over Japan, seven traversed the Philippines and nine made landfall over Vietnam.

The most intense tropical cyclone in 2013 over the western North Pacific and the South China Sea was Super Typhoon Haiyan (1330) in November (Figure 2.3) with an estimated maximum sustained wind speed of 285 km/h and a minimum sea-level pressure of 890 hPa near its centre (Table 4.1). Haiyan was also the most intense tropical cyclone in the region since Super Typhoon Tip in October 1979.

2.1.2 Tropical cyclones in Hong Kong's area of responsibility

Amongst the 33 tropical cyclones in 2013, 19 of them occurred inside Hong Kong's area of responsibility (i.e. the area bounded by 10°N, 30°N, 105°E and 125°E), more than the long term annual average figure of around 16 by three (Table 2.1). Nine of them developed within Hong Kong's area of responsibility. Altogether, 444 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory in 2013 (Table 4.2).

2.1.3 Tropical cyclones over the South China Sea

14 tropical cyclones affected the South China Sea bounded by 10°N, 25°N, 105°E and 120°E in 2013, more than the long term annual average of around 12. Seven of them formed over the area while the other seven moved into the area from the western North Pacific or from the sea areas to the south.

2.1.4 Tropical cyclones affecting Hong Kong

In 2013, the typhoon season in Hong Kong started on 21 June when Tropical Depression Bebinca (1305) over the northern part of the South China Sea turned to move northwestwards, necessitating the issuance of the Standby Signal No. 1. The typhoon season ended on 3 November when Tropical Storm Krosa (1329) moved southwestwards away from Hong Kong and all tropical cyclone warning signals were cancelled.

Seven tropical cyclones affected Hong Kong during 2013 (Figure 2.2), slightly more than the long term (1961-2010) average figure of about six in a year (Table 2.2). These seven tropical cyclones were Tropical Storm Bebinca (1305) and Severe Tropical Storm Rumbia (1306) in June, Tropical Storm Cimaron (1308) and Severe Tropical Storm Jebi (1309) in July, Super Typhoon Utor (1311) in August, Super Typhoon Usagi (1319) in September and Severe Typhoon Krosa (1329) in October. The No. 8 Gale or Storm Signal was issued during the passages of Utor and Usagi, the highest tropical cyclone warning signal in 2013. The Strong Wind Signal No. 3 was issued during the passages of Bebinca, Rumbia and Jebi. Cimaron and Krosa only necessitated the issuance of Standby Signal No. 1 in Hong Kong.

2.1.5 Tropical cyclone rainfall

Tropical cyclone rainfall (total rainfall recorded at the Hong Kong Observatory from the time when a tropical cyclone comes within 600 km of Hong Kong to 72 hours after it has dissipated or moved more than 600 km away from Hong Kong) in 2013 was 645.4 mm (Table 4.8.1). This accounted for approximately 23 % of the year's total rainfall of 2847.3 mm and was about 5 % below the 1981-2010 average of 678.0 mm.

Super Typhoon Utor (1311) brought 154.1 mm of rainfall to the Hong Kong Observatory Headquarters (Table 4.8.1) and was the wettest tropical cyclone in 2013.

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

Sonamu (1301) formed as a tropical depression over Sulu Sea about 660 km south of Manila on 3 January and moved westwards across the southwestern part of the Philippines. Sonamu entered the southern part of the South China Sea on 4 January, intensified into a tropical storm. It further intensified into a severe tropical storm on the following afternoon, reaching its peak intensity with an estimated maximum sustained wind of 90 km/h near its centre. Sonamu turned to move southwards slowly over the southern part of the South China Sea on the night of 7 January and weakened into a tropical depression the following morning. It then turned to move southeastwards and finally dissipated over the southern part of the South China Sea to the northwest of Sarawak on the morning of 9 January.

FEBRUARY

Shanshan (1302) formed as a tropical depression over the southern part of the South China Sea about 630 km south-southeast of Ho Chi Minh City on 22 February and moved generally southwards. The estimated maximum sustained wind near the centre of Shanshan was about 45 km/h. Shanshan dissipated over the southern part of the South China Sea to the northwest of Sarawak on 23 February.

MARCH TO MAY

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

JUNE

Yagi (1303) formed as a tropical depression over the western North Pacific about 1 040 km east-northeast of Manila on 8 June and moved north-northeastwards. Yagi intensified into a tropical storm on the next day. It intensified into a severe tropical storm over the western North Pacific to the east of Okinawa on the morning of 11 June, reaching peak intensity with an estimated sustained wind of 90 km/h near its centre. Yagi weakened into a tropical storm over the seas south of Japan that night, and turned to move northwards. It then turned to move east to northeastwards on the following day and continued to weaken. Yagi finally dissipated over the seas south of Japan on 13 June.

Leepi (1304) formed as a tropical depression over the western North Pacific about 650 km east of Manila on 17 June and moved northwards. It intensified into a tropical storm on the following day. Leepi crossed the seas east of Taiwan on 19 June, reaching peak intensity with an estimated sustained wind of 85 km/h near its centre. It moved across the East China Sea on 20 June and turned to move north-northeastwards the following night, before weakening into an area of low pressure over the seas to the west of Kyushu, Japan.

Bebinca (1305) formed as a tropical depression over the central part of the South China Sea about 560 km south of Dongsha on 20 June and moved north to northeastwards initially. Bebinca took up a northwesterly track and intensified into a tropical storm to the south-southwest of Dongsha on 21 June. It reached its peak intensity with an estimated sustained wind of 85 km/h near its centre and turned to move west to west-northwestwards across the northern part of the South China Sea that evening. Bebinca crossed Hainan Island on 22 June and entered Beibu Wan at night. It gradually turned to move northwards across Beibu Wan on 23 June. Bebinca dissipated inland after making landfall over the coast of northern Vietnam on 24 June.

Rumbia (1306) formed as a tropical depression over the western North Pacific about 990 km east-southeast of Manila on 28 June and moved northwest to west-northwestwards. It intensified into a tropical storm and moved across the central Philippines the next day. Rumbia entered the central part of the South China Sea on 30 June and intensified further into a severe tropical storm over the northern part of the South China Sea the next morning, reaching its peak intensity with estimated sustained winds of 105 km/h near its centre. It turned northwestward over the seas east of Hainan Island that night and made landfall near Zhanjiang in the morning on 2 July. Rumbia then moved across Guangxi and weakened into a tropical storm before dissipating over the inland areas that night.

JULY

Soulik (1307) formed as a tropical depression over the western North Pacific about 890 km northeast of Guam on 7 July and moved westward. It gradually intensified and became a typhoon about 830 km northwest of Guam on 9 July. Moving west-northwestward, Soulik intensified further into a super typhoon on 10 July, reaching its peak intensity with estimated sustained winds of 210 km/h near its centre. It weakened into a severe typhoon the next day and crossed the seas east of Taiwan. Soulik swept past northern Taiwan and weakened into a typhoon in the morning on 13 July. After crossing the Taiwan Strait, it made landfall over the coast of Fujian that afternoon and weakened into a severe tropical storm in the evening. Soulik weakened further into a tropical storm in the early hours on 14 July and dissipated over Jiangxi that day. According to press reports, three people were killed, over 120 people were injured and electricity supply to more than 1.14 million households were interrupted in Taiwan during the passage of Soulik. In addition, some

990 houses collapsed in Fujian. The total direct economic loss in Fujian, Zhejiang and Jiangxi exceeded 2 billion RMB.

Cimaron (1308) formed as a tropical depression over the western North Pacific about 390 km east-northeast of Manila on 16 July and moved northwestward. After skirting the northeastern tip of Luzon on 17 July, it moved across the Luzon Strait and intensified into a tropical storm, reaching its peak intensity with an estimated sustained wind of 65 km/h near its centre. Cimaron entered the northeastern part of the South China Sea in the early hours on 18 July. It turned northward in the morning and made landfall over the coast of Fujian that evening. Cimaron weakened into a tropical depression over Fujian in the early hours on 19 July and subsequently dissipated inland.

Jebi (1309) formed as a tropical depression over the central part of the South China Sea about 450 km east-southeast of Xisha on 31 July. Moving west-northwestwards, Jebi intensified into a tropical storm that afternoon. It took on a northwesterly track the next day across the seas near Xisha. Jebi intensified into a severe tropical storm in the morning on 2 August to the north-northeast of Xisha, reaching its peak intensity with estimated sustained winds of 105 km/h near its centre that afternoon. It made landfall over the northeastern tip of Hainan Island that evening, then turned to move west-northwestwards across the island that night. Jebi moved across Beibu Wan in the small hours on 3 August and made landfall over the coast of northern Vietnam that morning. It weakened into a tropical storm in the afternoon and dissipated over the northern part of Vietnam that night.

AUGUST

Mangkhut (1310) formed as a tropical depression over the central part of the South China Sea about 790 km southeast of Xisha on 5 August and moved to the west-northwest or northwest, intensifying into a tropical storm southwest of Xisha the next day. It reached its peak intensity with estimated sustained winds of 75 km/h and skirted the southwestern coast of Hainan on 7 August, making landfall over the coast of northern Vietnam that night. Mangkhut dissipated over the northern part of Laos the next day. According to press reports, at least three people were killed, 14 houses collapsed and over 700 houses damaged in Vietnam during the passage of Mangkhut.

Utor (1311) formed as a tropical depression over the western North Pacific about 1 350 km east of Manila on 9 August and moved westwards initially. It took on a west-northwesterly track and gradually became a typhoon the next day. Utor continued to strengthen on 11 August and became a super typhoon about 290 km east-northeast of Manila in the evening, reaching its peak intensity with estimated sustained winds of 195 km/h near its centre. It crossed Luzon and weakened into a severe typhoon in the small hours on 12 August, entering the South China Sea in the morning and turning to move northwestwards over the northern part of the South China Sea to the south of Hong Kong the next day. It weakened into a typhoon and made landfall near Yangjiang in the afternoon on 14 August, moving across the coast of western Guangdong in the evening and weakening into a severe tropical storm that night. Utor took on a northerly track across Guangxi and weakened gradually into a tropical depression the next day. It finally dissipated over the inland areas of Guangxi on 16 August.

Trami (1312) formed as a tropical depression over the sea areas about 550 km east-southeast of Gaoxiong, Taiwan on 17 August and moved east-southeastwards slowly in general. It gradually intensified into a severe tropical storm over the next couple of days. Trami turned to move northwestwards on 20 August. It intensified further into a typhoon the next day, reaching peak intensity with estimated sustained winds of 120 km/h near its centre, crossing the sea areas north of Taiwan at night. Trami made landfall over the coast of Fujian in the small hours of

22 August and gradually weakened into a tropical storm during the day, dissipating over Hunan the next day. Trami caused flooding in Taiwan during its passage, where three people were killed and 11 others injured. Trami also brought rainstorms to Fujian, Shantou and Hunan, where at least eight people were killed, six people missing and over 30 people injured. Moreover, more than 300 fishing boats sank in Fujian during the passage of Trami, with a direct economic loss of around 2.1 billion RMB reported.

Having formed over the central part of the North Pacific, Severe Tropical Storm Pewa (1313) crossed the International Date Line and entered the western North Pacific on a northwesterly track on 18 August. Pewa reached its peak intensity with estimated sustained winds of 110 km/h near its centre the next day. It weakened into a tropical storm to the east-southeast of Wake Island and took on a west-northwesterly track on 20 August. Pewa turned to track northwestwards on 22 August and became slow-moving the following day, and finally dissipated over the western North Pacific to the north of Wake Island on 24 August.

Also coming from the central part of the North Pacific, Tropical depression Unala (1314) crossed the International Date Line and entered the western North Pacific on 19 August, with estimated sustained winds of 55 km/h near its centre. Unala moved westwards and dissipated over the sea that night.

Kong-rey (1315) formed as a tropical depression over the western North Pacific about 610 km east-northeast of Manila on 26 August. Moving generally northwestwards, it intensified into a tropical storm that night. It turned northwards the next day, and intensified into a severe tropical storm while taking a northerly track across the seas east of Taiwan on 28 August. It reached peak intensity with estimated sustained winds of 105 km/h near its centre the next day, before soon weakening into a tropical storm in the evening. Kong-rey turned to move northeastwards over the East China Sea on 30 August and became an extratropical cyclone that night. In Taiwan, one fisherman was reported missing during the passage of Kong-rey.

Yutu (1316) formed as a tropical depression over the western North Pacific about 1 380 km north-northeast of Wake Island on 31 August and moved northeastwards slowly. It reached peak intensity with estimated sustained winds of 55 km/h near its centre that night. Yutu remained slow-moving in the following days and dissipated over the sea on 3 September.

SEPTEMBER

Toraji (1317) formed as a tropical depression over the sea areas about 240 km east-northeast of Taibei on 1 September and moved generally northeastwards. It intensified into a tropical storm west of Okinawa the next day. Toraji reached its peak intensity with estimated sustained winds of 85 km/h near its centre on 3 September. It made landfall over southern Kyushu, Japan on 4 September and gradually evolved into an extratropical cyclone. According to press reports, around 7 000 people in western Japan were advised to evacuate from their homes due to flooding caused by Toraji.

Man-yi (1318) formed as tropical depression over the western North Pacific about 960 km north of Guam on 12 September and moved west to west-northwestwards. It intensified into a tropical storm the next day. Moving along a north-northwesterly track on 14 September, it intensified further into a severe tropical storm. Man-yi turned to take a north-northeasterly track over the seas south of Japan, reaching peak intensity with estimated sustained winds of 105 km/h near its centre. Man-yi made landfall over southern Honshu, Japan on the morning of 16 September and weakened gradually, before evolving into an extratropical cyclone over the seas east of Japan

that evening. Man-yi brought heavy rain and flooding to widespread areas of Japan, where at least three people were killed, four were reported missing and over 100 people were injured. Electricity supply to over 17 000 households was disrupted.

Usagi (1319) formed as a tropical depression over the western North Pacific about 1 240 km east-northeast of Manila on 17 September. Moving generally westwards, it gradually intensified and became a typhoon the next day. Usagi took on a northwesterly track and intensified further into a super typhoon over the Pacific to the east of Luzon on 19 September, reaching peak intensity with estimated sustained winds of 205 km/h near its centre the next day. Moving west-northwestwards, Usagi crossed the Luzon Strait on 21 September and entered the South China Sea, weakening into a severe typhoon. It moved across the northeastern part of the South China Sea on 22 September, made landfall near Shanwei, Guangdong that evening and moved across the coastal areas of Guangdong during the night. Usagi dissipated over the inland region of Guangxi the following day.

A tropical depression formed over the central part of the South China Sea about 320 km east of Danang on 18 September and moved west to west-northwestwards across the seas south of Hainan Island. The estimated maximum sustained winds near its centre was about 55 km/h. The tropical depression dissipated over land after making landfall over the central part of Vietnam the following day.

Pabuk (1320) formed as a tropical depression over the western north Pacific about 700 km north-northeast of Guam on 21 September and moved generally west to west-northwestwards, and intensified into a tropical storm in the afternoon. It continued to intensify into a severe tropical storm on 22 September and became a typhoon near Iwo Jima two days later, reaching peak intensity with estimated sustained winds of 140 km/h near its centre. Pabuk turned to move northeastwards over the Pacific to the south of Japan on 25 September and became an extratropical cyclone to the east of Japan the following day.

Wutip (1321) formed as a tropical depression over the central part of the South China Sea about 620 km east-southeast of Xisha on 26 September and moved generally northwestwards. It intensified into a tropical storm the following day. Wutip moved slowly across the seas east of Xisha and intensified into a severe tropical storm on 28 September. It took a westerly track and passed to the south of Xisha on 29 September and intensified gradually into a severe typhoon, reaching peak intensity with estimated sustained winds of 155 km/h near its centre. Wutip weakened into a typhoon in the small hours of the following day. It made landfall over the coast of central Vietnam on 30 September and weakened into a severe tropical storm. Wutip dissipated near the border between Laos and Thailand on 1 October. Three fishing boats sank over the waters near Xisha during the passage of Wutip. Four fishermen were killed and 58 others were reported missing. In Vietnam, three people were killed, 35 people were injured and 95 000 houses were destroyed.

Sepat (1322) formed as a tropical depression over the western North Pacific about 710 km east-northeast of Iwo Jima on 30 September and moved west to west-northwestwards. It intensified into a tropical storm that afternoon and reached its peak intensity with estimated sustained winds of 75 km/h near its centre at night. Sepat turned to move north to north-northeastwards on the afternoon of 1 October, skirting the seas off southeastern Japan the following day. It evolved into an extratropical cyclone on 3 October.

Fitow (1323) formed as a tropical depression over the western North Pacific about 1 250 km east of Manila on 30 September and moved generally north-northwestwards. It intensified gradually into a typhoon over the next three days. Fitow turned to move west-northwestwards near Ryukyu Islands on 5 October and intensified into a severe typhoon,

reaching peak intensity with estimated sustained winds of 155 km/h near its centre. It crossed the seas north of Taiwan the following day and weakened into a typhoon. After making landfall over the coast of Fujian in the small hours on 7 October, Fitow weakened rapidly and dissipated inland that evening. According to press reports, five people were killed, four others were missing, around 2 300 houses collapsed and 180 000 hectares of farmland were inundated in Fujian during the passage of Fitow with direct economic loss exceeding 4.7 billion RMB.

OCTOBER

Danas (1324) formed as a tropical depression over the western North Pacific about 350 km north-northeast of Guam on 4 October. Moving west-northwestwards, Danas intensified gradually and became a typhoon on 6 October. It intensified further into a super typhoon east-southeast of Okinawa the following day, reaching its peak intensity with estimated sustained winds of 195 km/h near its centre and passing to the northeast of Okinawa on a northwesterly track. It turned gradually northeastwards across the seas west of Japan on 8 October and weakened gradually into a severe tropical storm. Danas became an extratropical cyclone over the Sea of Japan the next day. During the passage of Danas, flooding was reported in Jeju and parts of southern Korea and electricity supply was interrupted.

Nari (1325) formed as a tropical depression over the western North Pacific about 990 km east of Manila on 9 October and moved west to west-northwestwards. It gradually intensified and became a typhoon to the east of Luzon on 11 October, reaching peak intensity with estimated sustained winds of 145 km/h near its centre. Nari swept past Luzon that night and tracked across the central part of the South China Sea over the next three days, passing to the south of Xisha. It made landfall over the coast of central Vietnam on 15 October, weakening gradually into a tropical depression and dissipating over Laos that night. In the Philippines, 13 people were killed and more than two million people were left without electricity supply during the passage of Nari. In Vietnam, five people were killed and 49 people were injured.

Wipha (1326) formed as a tropical depression over the western North Pacific about 200 km west of Guam on 10 October. It gradually intensified into a severe tropical storm and took on a northwesterly track the following day. Wipha intensified into a severe typhoon to the south-southwest of Iwo Jima on 13 October, reaching peak intensity the following day with estimated sustained winds of 175 km/h near its centre. It turned northeastwards across the seas south of Japan on 15 October and weakened into a typhoon. After crossing the coastal waters of eastern Japan the next day, Wipha became an extratropical cyclone. Wipha brought flash floods and triggered landslides in eastern Japan, where at least 17 people were killed, 51 people were missing and 20 people were injured. Around 300 houses collapsed or were damaged, and over 30 000 households were left without electricity.

Francisco (1327) formed as a tropical depression over the western North Pacific about 230 km east of Guam on 16 October and moved west-southwestwards initially. Francisco intensified into a typhoon the following day and turned to move north-northwestwards. It intensified further into a super typhoon on 18 October, reaching peak intensity the following day with estimated sustained winds of 230 km/h near its centre. Francisco weakened into a severe typhoon on 21 October and further into a typhoon two days later. It turned to move northwards across the seas east of Okinawa on 24 October. Francisco weakened into a severe tropical storm on 25 October and moved northeastwards across the seas south of Japan. It evolved into an extratropical cyclone over the Pacific southeast of Japan the following day.

Lekima (1328) formed as a tropical depression over the western North Pacific about 1 190 km south-southwest of Wake Island on 20 October and moved generally north-northeastwards initially. Lekima gradually intensified over the Pacific and moved on a northwesterly track, becoming a typhoon in the morning on 22 October and a super typhoon about 1 200 km east-northeast of Guam that evening. It reached its peak intensity with estimated sustained winds of 220 km/h near its centre the following day. Passing to the east of Iwo Jima on 25 October, Lekima gradually took on a northeasterly track and weakened into a typhoon the next day before becoming an extratropical cyclone over the Pacific east of Japan.

Krosa (1329) formed as a tropical depression over the western North Pacific about 1 580 km east of Manila on 29 October. Moving generally west to west-northwestwards, it intensified gradually into a severe tropical storm the following day. Krosa intensified further into a typhoon on 31 October and crossed the northern tip of Luzon. Krosa entered the northern part of the South China Sea on 1 November. It became slow moving and intensified into a severe typhoon over the northern part of the South China Sea on 2 November, reaching its peak intensity with estimated sustained winds of 165 km/h near its centre. Krosa turned southwestwards on 3 November and weakened gradually into a tropical storm, dissipating over the central part of the South China Sea during the following night. According to press reports, three people were killed, two people were missing and more than 17 000 houses were damaged in the Philippines during the passage of Krosa.

NOVEMBER

Haiyan (1330) formed as a tropical depression over the western North Pacific about 1 600 km east-southeast of Guam on 3 November and moved west-northwestwards. Haiyan intensified gradually and became a typhoon about 780 km south-southwest of Guam two days later. It strengthened further into a super typhoon on 6 November, reaching its peak intensity with estimated sustained winds of 285 km/h near its centre on 8 November, with its eye clearly discernible on satellite images. Haiyan moved across the central Philippines and entered the South China Sea on 9 November. Turning northwestwards, it passed to the southwest of Xisha and weakened into a severe typhoon at night. It moved across Beibu Wan the following day and weakened into a typhoon. Haiyan made landfall over the coast of northern Vietnam on 11 November, weakened rapidly into a tropical depression and turned east-northeastwards. It dissipated over Guangxi the following day.

According to press reports, Haiyan caused widespread flooding in the central Philippines and brought hugh waves to coastal regions, resulting in landslides, collapsed houses, uprooted trees, power failure and disruption in sea and air traffic. Over 6 000 people were killed, around 1 800 people were reported missing, 28 000 people were injured and the direct economic loss exceeded 10.3 billion Pesos (around HK$1.9 billion) in the Philippines. In Hainan Island, Guangxi and Guangdong, seven people were killed, four people were reported missing, over 9 400 houses collapsed or were damaged, and over 2.95 million hectares of farmland were damaged, with direct economic loss exceeding 4.4 billion RMB. In addition, at least 13 people were killed and 81 others were injured in Vietnam during the passage of Haiyan. Although Hong Kong was not directly in its path, one person was reported missing at Cheung Sha in Lantau Island and later confirmed dead after swimming in turbulent waves and swells whipped up by the high winds under the combined influence of Haiyan and the northeast monsoon.

A tropical depression formed over the southern part of the South China Sea about 280 km east of Nansha on 5 November and moved west to west-northwestwards. The estimated maximum sustained winds near its centre was about 55 km/h. The tropical depression made landfall over the coast of southern Vietnam the following day and dissipated inland.

Podul (1331) formed as a tropical depression over the southern part of the South China Sea about 130 km north-northeast of Nansha on 14 November and moved west to west-northwestwards. The estimated maximum sustained winds near its centre was about 55 km/h. Podul dissipated inland after making landfall over the coast of southern Vietnam the following day. Podul brought heavy rain and severe flooding to the central part of Vietnam, where at least 34 people were killed and 11 others were reported missing.

DECEMBER

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

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

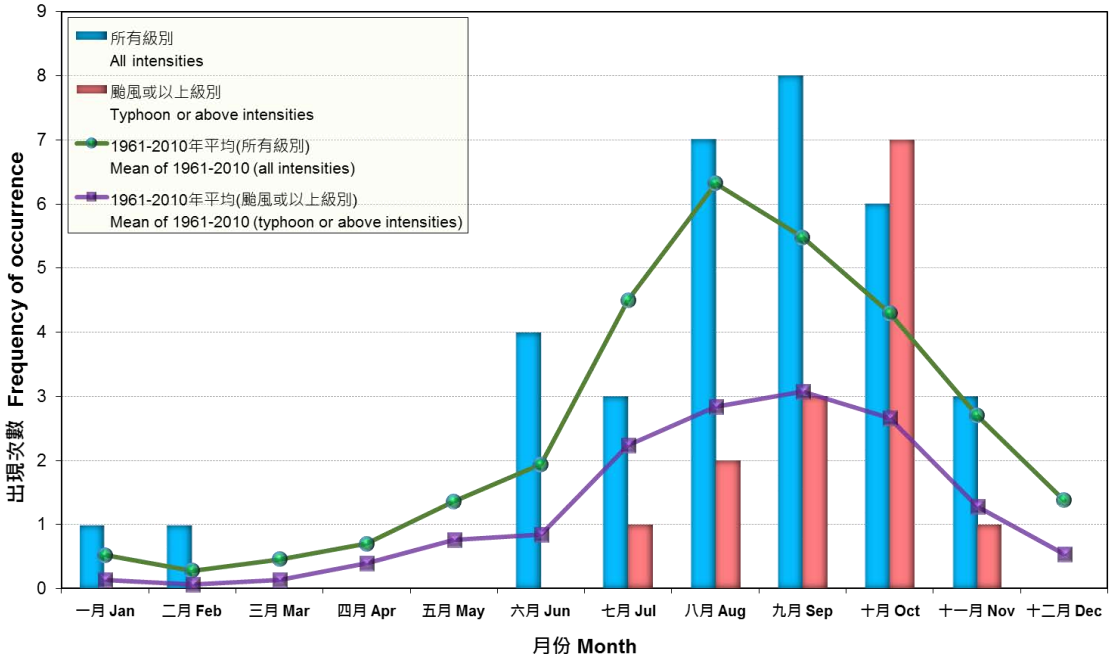


圖 2.1　二零一三年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈 (以熱帶氣旋在該月初次出現為準，假如一熱帶氣旋在九月形成並在十月首次增強為颱風或以上級別，它在「所有級別」及「颱風或以上級別」的統計數字將分別計算在九月及十月份內)。

Figure 2.1　Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2013 (based on the first occurrence of the tropical cyclone in the month; for example if a tropical cyclone forms in September and first intensifies into typhoon or above intensities in October, its related statistics for "all intensities" and "typhoon or above intensities" will be counted in September and October respectively).

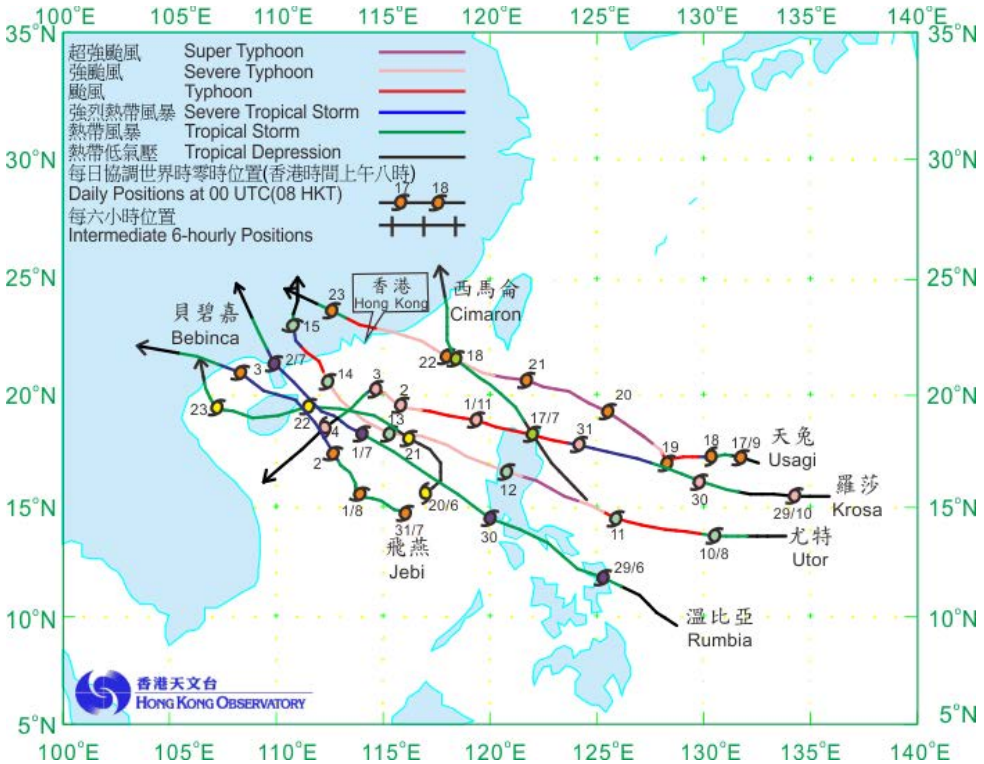


圖 2.2　二零一三年七個影響香港的熱帶氣旋的路徑圖。

Figure 2.2　Tracks of the seven tropical cyclones affecting Hong Kong in 2013.

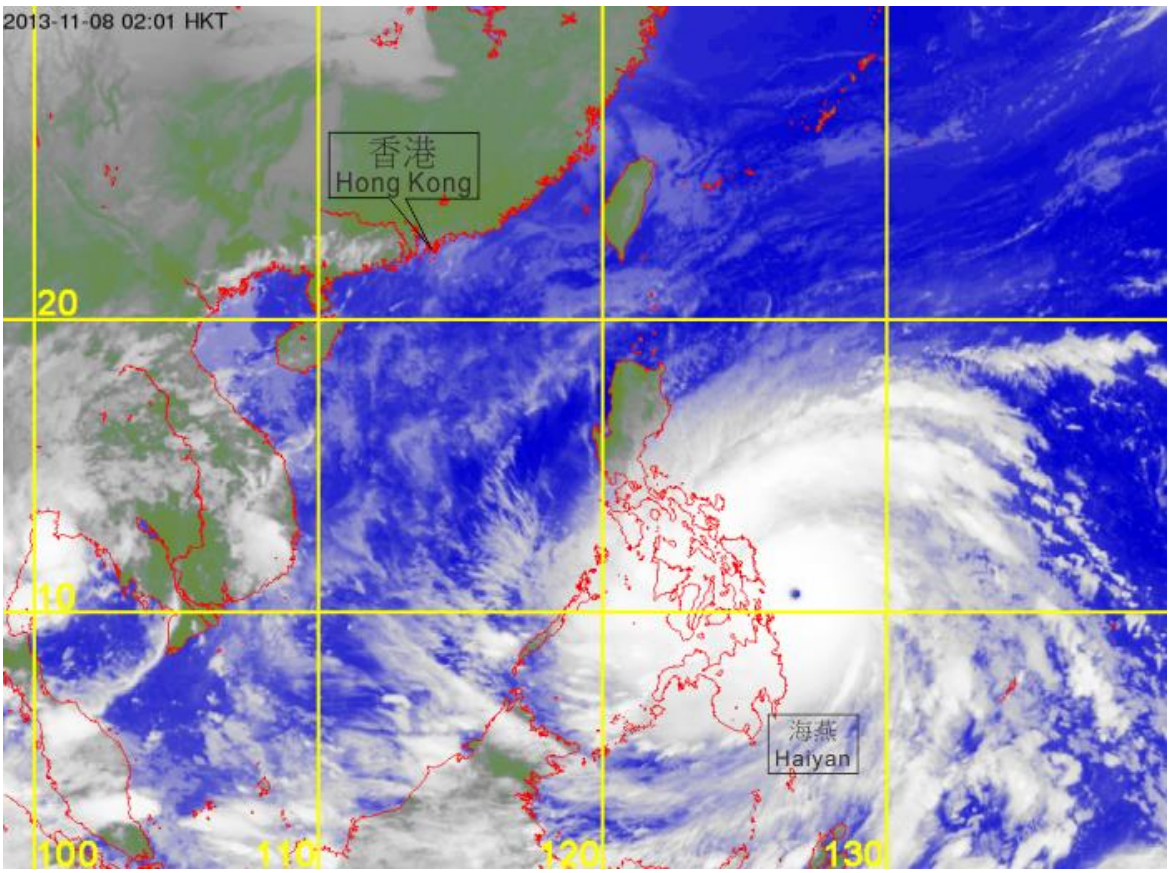


圖 2.3　超強颱風海燕(1330)在二零一三年十一月八日上午2時的紅外線衛星圖片。當時海燕位於馬尼拉之東南約780公里的北太平洋西部上，最高風速估計為每小時285公里，而最低中心氣壓為890百帕斯卡，是北太平洋西部及南海區域自一九七九年十月超強颱風泰培以來最強的熱帶氣旋。

Figure 2.3　Infra-red satellite imagery of Super Typhoon Haiyan (1330) at peak intensity at 2 a.m. on 8 November 2013. Haiyan was centred over the western North Pacific about 780 km southeast of Manila with an estimated maximum sustained wind of 285 km/h and a minimum sea-level pressure of 890 hPa at that time. It is the most intense tropical cyclone in the western North Pacific and the South China Sea since Super Typhoon Tip in October 1979.

〔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 (MTSAT-2) of Japan Meteorological Agency (JMA).]

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 Jan	二月 Feb	三月 Mar	四月 Apr	五月 May	六月 Jun	七月 Jul	八月 Aug	九月 Sep	十月 Oct	十一月 Nov	十二月 Dec	
1961					3	5	2	5	4	3	1	1	24
1962					3		4	5	4	1	3		20
1963						3	3	3	2			2	13
1964					1	1	5	3	6	3	6	1	26
1965	1				2	3	4	3	2		1		16
1966					2		5	2	3	2	2	1	17
1967			1	1		1	2	6	1	2	3		17
1968							2	4	2	1	3		12
1969							3	3	4	1			11
1970		1				2	2	3	4	5	3		20
1971				1	2	2	5	3	3	4			20
1972	1					3	2	4	2	1	1	1	15
1973							4	4	2	4	3		17
1974						3	2	4	2	4	4	2	21
1975	1					1		3	2	3	1	1	12
1976					1	1	1	4	1		1	1	10
1977						1	4	1	3		1		10
1978	1			1		2	2	4	5	4	1		20
1979				1	2	1	3	5	2	2	1	1	18
1980			1		3	1	5	2	3	1	1		17
1981						3	3	3	1	1	3	1	15
1982			2		1	1	3	3	3	1		2	16
1983						1	3	1	3	5	2		15
1984						2	2	4	2	2	2		14
1985						2	2	2	4	4	1		15
1986					1	1	1	4	1	3	3	2	16
1987						1	3	2	1	1	3	1	12
1988	1				1	3	1	1	2	5	2	1	17
1989					2	1	4	2	4	3	1		17
1990					1	4	2	3	3	3	2		18
1991				1	1	1	3	2	2	1	3		14
1992						2	3	2	2	2			11
1993						1	1	2	3	2	2	3	14
1994				1	1	2	6	5	2	2		1	20
1995						1	1	5	5	3	1	1	17
1996		1		1	2		3	3	2	1	2		15
1997					1		1	4	1	2	1		10
1998							1	3	4	3	3	1	15
1999				1		1	1	2	3	2	1	1	12
2000					2	1	3	5	3	3	2	1	20
2001					1	2	4	2	2	1	1	1	14
2002	1					1	3	2	3				10
2003				1	1	2	2	3	1	1	1		12
2004			1		1	3	2	2	2	1	2	1	15
2005			1				2	3	4	3	2		15
2006					1	1	3	3	4	1	2	1	16
2007							1	4	3	1	3		12
2008				1	2	1	2	3	5	1	2		17
2009					2	2	3	2	3	4	1		17
2010							3	4	2	2			11
2011					2	3	1	2	2	2			12
2012				1		3	2	3	1	2		2	14
2013						2	3	4	4	3	3		19
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
2012						2	1	2					5
2013						2	1	2	1		1		7
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　二零一三年影響香港的熱帶氣旋

3.1　熱帶風暴貝碧嘉(1305)：二零一三年六月二十日至二十四日

貝碧嘉是香港天文台在二零一三年首個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓貝碧嘉於六月二十日在東沙以南約560公里的南海中部上形成，初時向北至東北方向移動。貝碧嘉於六月二十一日採取西北途徑移動，時速約19公里，橫過南海北部，並在東沙之西南偏南處增強為熱帶風暴。當日黃昏，貝碧嘉達到其最高強度，中心附近最高持續風力為每小時85公里，並向西至西北偏西移動，時速約25公里，橫過香港以南的南海北部。貝碧嘉於翌日早上較後時間在海南島東部沿岸登陸，下午橫過海南島，晚上進入北部灣。它於六月二十三日逐漸轉向北慢慢移動，橫過北部灣，翌日在越南北部沿岸登陸後在內陸消散。根據報章報導，貝碧嘉吹襲海南島期間，一艘漁船沉沒，船上一人墜海獲救，另一艘漁船失去通訊聯繫，四名漁民失蹤。

香港天文台於六月二十一日上午7時40分發出一號戒備信號，當時貝碧嘉位於香港之東南偏南約520公里，並逐漸移近華南沿岸。當日早上本港吹和緩東北風，下午轉吹偏東風，風勢逐漸增強。天文台總部在下午5時40分錄得最低瞬時海平面氣壓1000.3百帕斯卡，當時貝碧嘉集結在香港之東南偏南約370公里。天文台在下午8時20分發出三號強風信號，當時貝碧嘉位於香港以南約350公里。晚上本港吹清勁至強風程度偏東風，高地間中吹烈風。貝碧嘉於午夜左右最接近香港，並在本港之西南偏南約340公里處掠過。六月二十二日凌晨本港轉吹清勁至強風程度東至東南風，高地間中吹烈風。隨着貝碧嘉移離本港，早上風勢逐漸減弱。天文台於上午9時10分改發一號戒備信號，隨著貝碧嘉在海南島登陸，天文台於上午11時15分取消所有熱帶氣旋警告信號。

貝碧嘉吹襲期間，本港接近海平面錄得的最高每小時平均風速分別為青洲及橫瀾島的54及52公里，而長洲更則錄得每小時77公里的最高陣風。最高潮位(海圖基準面以上)在尖鼻咀錄得，為3.08米，而最大風暴潮則在大埔滘錄得，為0.44米。

六月二十一日本港初時大致天晴及天氣酷熱，下午轉為多雲及有幾陣狂風驟雨。六月二十二日貝碧嘉的外圍雨帶繼續為香港帶來狂風驟雨，新界及大嶼山部分地區錄得超過50毫米的雨量。

貝碧嘉影響香港期間，本港並無嚴重破壞報告。

表3.1.1 - 3.1.4 分別是貝碧嘉影響香港期間各站錄得的最高風速、持續風力達到強風程度的時段、香港的日雨量及最高潮位資料。圖3.1.1 - 3.1.4 分別為貝碧嘉的路徑圖、本港的雨量分佈圖、貝碧嘉的衛星及相關雷達圖像。

Section 3 TROPICAL CYCLONES AFFECTING HONG KONG IN 2013

3.1 Tropical Storm Bebinca (1305): 20 - 24 June 2013

Bebinca was the first tropical cyclone that necessitated the issuance of tropical cyclone warning signal by the Hong Kong Observatory in 2013.

Bebinca formed as a tropical depression over the central part of the South China Sea about 560 km south of Dongsha on 20 June and moved north to northeastwards initially. On 21 June, Bebinca took on a northwesterly track at about 19 km/h across the northern part of the South China Sea and intensified into a tropical storm to the south-southwest of Donghsa. Bebinca reached its peak intensity with an estimated sustained wind of 85 km/h near its centre and moved west to west-northwestwards at about 25 km/h across the northern part of the South China Sea to the south of Hong Kong that evening. It made landfall over the eastern coast of Hainan Island in the late morning on 22 June and moved across the island during the afternoon, entering Beibu Wan in the evening. Bebinca gradually turned to move northwards slowly across Beibu Wan on 23 June. It dissipated inland after making landfall over the coast of northern Vietnam on 24 June. According to press reports, one fishing boat sank near Hainan Island during the passage of Bebinca and a person on board was rescued after fallen into the sea. Another fishing boat lost contact with shore and four fishermen were missing.

In Hong Kong, the Standby Signal No. 1 was issued at 7:40 a.m. on 21 June when Bebinca was about 520 km south-southeast of the territory and moving closer to the south China coast. Local winds were moderate northeasterly during the morning. The winds turned to the east and strengthened gradually during the afternoon. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1000.3 hPa was recorded at 5:40 p.m. when Bebinca was about 370 km to the south-southeast. The Strong Wind Signal No. 3 was issued at 8:20 p.m. when Bebinca was about 350 km south of Hong Kong. Local winds became fresh to strong easterlies that night, occasionally reaching gale force on high ground. Bebinca was closest to Hong Kong around midnight on 21 June when it was passing about 340 km to the south-southwest. Local winds turned to fresh to strong east to southeasterlies, occasionally reaching gale force on high ground on the early hours of 22 June. The winds gradually subsided as Bebinca moved away from Hong Kong during the morning. The Strong Wind Signal No. 3 was replaced by the Standby Signal No. 1 at 9:10 a.m. in the morning. All tropical cyclone warning signals were cancelled at 11:15 a.m. that day as Bebinca made landfall over Hainan.

During the passage of Bebinca, the maximum hourly mean winds recorded near sea level were 54 and 52 km/h at Green Island and Waglan Island respectively, while maximum gusts of 77 km/h were recorded at Cheung Chau. A maximum sea level (above chart datum) of 3.08 m was recorded at Tsim Bei Tsui, while the maximum storm surge of 0.44 m was recorded at Tai Po Kau.

The weather in Hong Kong was generally fine and very hot at first on 21 June, becoming cloudy with a few squally showers during the afternoon. The outer rainbands of Bebinca continued to bring squally showers to the territory on 22 June. Over 50 millimetres of rainfall were recorded in parts of the New Territories and Lantau Island.

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

Information on the maximum wind, period of strong force winds, daily rainfall and maximum sea level reached in Hong Kong during the passage of Bebinca is given in Tables 3.1.1 - 3.1.4 respectively. Figures 3.1.1 - 3.1.4 show respectively the track of Bebinca, the rainfall distribution for Hong Kong, a satellite imagery and a related radar imagery of Bebinca.

表 3.1.1　在貝碧嘉影響下，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 tropical cyclone warning signals for Bebinca were in force

站（參閱圖 1.1）Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速（公里/時）Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速（公里/時）Speed (km/h)	日期/月份 Date/Month	時間 Time
黃麻角（赤柱）	Bluff Head (Stanley)	東北偏東	ENE	63	21/6	18:58	東	E	34	21/6	23:00
		東北偏東	ENE	63	21/6	19:16					
中環碼頭	Central Pier	東北偏東	ENE	58	21/6	22:08	東	E	38	21/6	21:00
長洲	Cheung Chau	東南偏東	ESE	77	22/6	00:32	東南	SE	47	22/6	08:00
長洲泳灘	Cheung Chau Beach	東南偏東	ESE	72	22/6	04:53	東	E	47	21/6	19:00
青洲	Green Island	東北	NE	75	21/6	19:42	東北	NE	54	21/6	18:00
香港國際機場	Hong Kong International Airport	東南	SE	59	22/6	07:29	東南偏東	ESE	34	21/6	16:00
啟德	Kai Tak	東	E	59	21/6	19:16	東	E	30	22/6	00:00
京士柏	King's Park	東南	SE	54	22/6	01:31	東南偏東	ESE	23	22/6	02:00
流浮山	Lau Fau Shan	東北偏東	ENE	67	21/6	20:32	東	E	31	21/6	21:00
昂坪	Ngong Ping	東	E	99	22/6	03:57	東	E	72	22/6	04:00
北角	North Point	東	E	67	21/6	17:48	東	E	31	21/6	21:00
							東	E	31	21/6	23:00
坪洲	Peng Chau	東	E	59	21/6	20:17	東	E	40	21/6	20:00
平洲	Ping Chau	東	E	40	21/6	17:42	東	E	12	21/6	18:00
西貢	Sai Kung	東南偏南	SSE	70	22/6	05:25	東北偏東	ENE	38	21/6	19:00
沙洲	Sha Chau	東南偏南	SSE	63	22/6	05:17	東南	SE	36	22/6	06:00
沙螺灣	Sha Lo Wan	東	E	63	21/6	22:18	東	E	31	21/6	21:00
沙田	Sha Tin	東北偏東	ENE	58	22/6	05:34	東北偏北	NNE	19	21/6	21:00
石崗	Shek Kong	東北偏東	ENE	51	21/6	23:28	東	E	23	22/6	00:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	59	21/6	20:33	東	E	40	22/6	00:00
打鼓嶺	Ta Kwu Ling	東北偏東	ENE	47	21/6	18:48	東北偏東	ENE	16	21/6	19:00
							東北偏東	ENE	16	21/6	21:00
大美督	Tai Mei Tuk	東	E	68	22/6	05:30	東	E	45	21/6	23:00
大帽山	Tai Mo Shan	東	E	94	21/6	22:37	東	E	67	22/6	00:00
		東	E	94	21/6	23:29					
大埔滘	Tai Po Kau	東南	SE	65	22/6	05:39	東南偏東	ESE	36	21/6	23:00
塔門	Tap Mun	東	E	49	21/6	18:20	東南偏東	ESE	23	22/6	06:00
大老山	Tate's Cairn	東南偏東	ESE	87	21/6	18:04	東南	SE	56	22/6	00:00
將軍澳	Tseung Kwan O	東南偏東	ESE	47	21/6	20:20	東	E	14	21/6	21:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	54	22/6	00:18	東	E	20	22/6	03:00
屯門政府合署	Tuen Mun Government Offices	東南偏南	SSE	52	22/6	05:24	東南	SE	14	22/6	07:00
橫瀾島	Waglan Island	東	E	65	21/6	18:06	東	E	52	21/6	19:00
							東	E	52	21/6	20:00
濕地公園	Wetland Park	東南偏東	ESE	40	21/6	15:48	東	E	19	21/6	18:00
黃竹坑	Wong Chuk Hang	東南	SE	67	22/6	02:08	東	E	30	21/6	21:00

表 3.1.2　在貝碧嘉影響下，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 3.1.2　Periods during which sustained strong winds were reached at the eight reference anemometers in the tropical cyclone warning system when warning signals for Bebinca were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 Start time strong wind speed* was reached		最後達到強風*時間 End 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	16:21	22/6	08:32
香港國際機場	Hong Kong International Airport	22/6	05:19	22/6	07:35
西貢	Sai Kung	21/6	18:31	22/6	05:33

啟德、沙田、打鼓嶺、青衣及流浮山的持續風力未達到強風程度。
The sustained wind speed did not attain strong force at Kai Tak, Sha Tin, Ta Kwu Ling, Tsing Yi and Lau Fau Shan.

* 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 3.1.3　貝碧嘉影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.1.3　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Bebinca

站 (參閱圖 3.1.2) Station (See Fig. 3.1.2)			六月二十一日 21 Jun	六月二十二日 22 Jun	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			0.8	15.2	16.0
香港國際機場 Hong Kong International Airport (HKA)			1.4	25.9	27.3
長洲 Cheung Chau (CCH)			0.0	27.0	27.0
N05	粉嶺	Fanling	0.0	44.5	44.5
N13	糧船灣	High Island	0.5	44.0	44.5
K04	佐敦谷	Jordan Valley	2.5	24.0	26.5
N06	葵涌	Kwai Chung	[0.5]	[14.0]	[14.5]
H12	半山區	Mid Levels	2.5	21.0	23.5
N09	沙田	Sha Tin	1.0	52.0	53.0
H19	筲箕灣	Shau Kei Wan	3.5	15.0	18.5
SEK	石崗	Shek Kong	2.5	23.5	26.0
K06	蘇屋邨	So Uk Estate	1.5	15.0	16.5
R31	大美督	Tai Mei Tuk	0.0	35.5	35.5
R21	踏石角	Tap Shek Kok	8.0	20.0	28.0
N17	東涌	Tung Chung	1.0	38.5	39.5
R27	元朗	Yuen Long	0.0	16.5	16.5

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

淺水灣 (H21) - 沒有資料。 Repulse Bay (H21) - data not available

表 3.1.4　貝碧嘉影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.1.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Bebinca

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	2.57	22/6	07:07	0.33	21/6	22:04
石壁	Shek Pik	2.69	22/6	07:19	0.25	22/6	07:19
大廟灣	Tai Miu Wan	2.39	22/6	06:56	0.25	21/6	21:45
大埔滘	Tai Po Kau	2.45	22/6	08:45	0.44	21/6	23:20
尖鼻咀	Tsim Bei Tsui	3.08	22/6	08:01	0.38	22/6	06:56
橫瀾島	Waglan Island	2.53	22/6	06:44	0.28	22/6	03:09

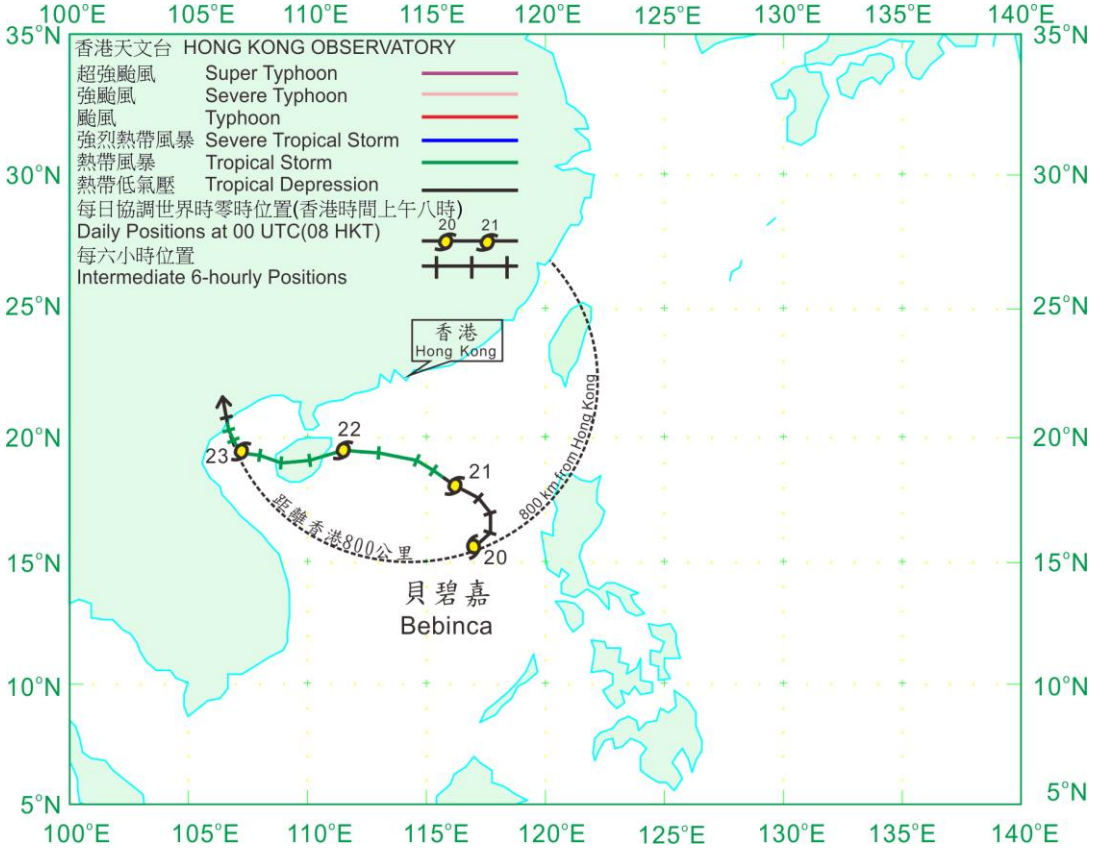


圖 3.1.1　　貝碧嘉 (1305) 在二零一三年六月二十日至二十四日的路徑圖。

Figure 3.1.1　　Track of Bebinca (1305) for 20 - 24 June 2013.

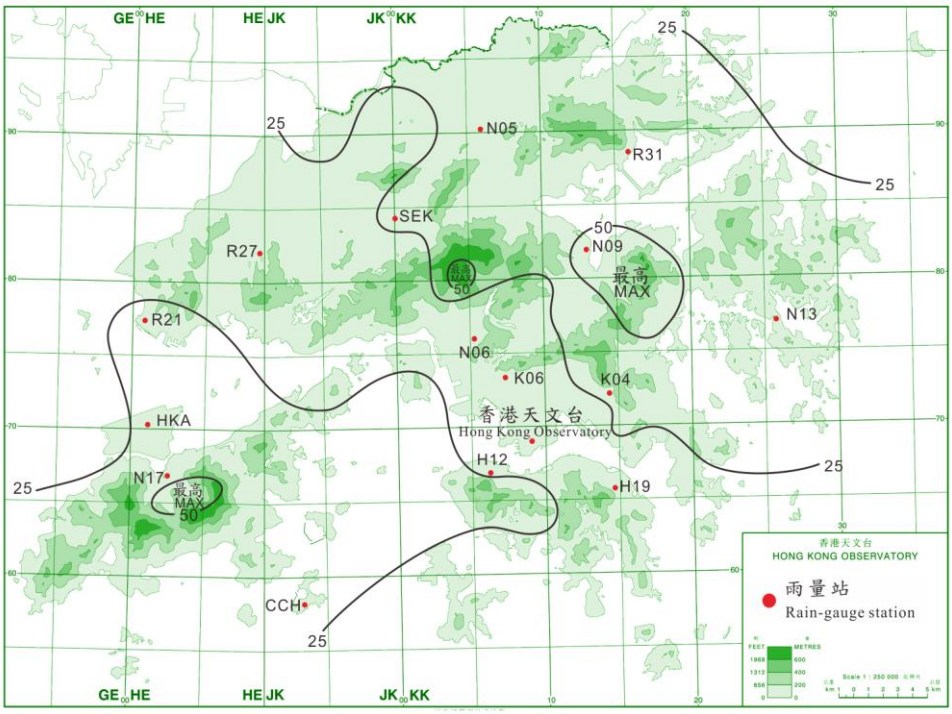


圖 3.1.2　　二零一三年六月二十一日至二十二日的雨量分佈(等雨量線單位為毫米)。

Figure 3.1.2　　Rainfall distribution for 21 - 22 June 2013 (isohyets are in millimetres).

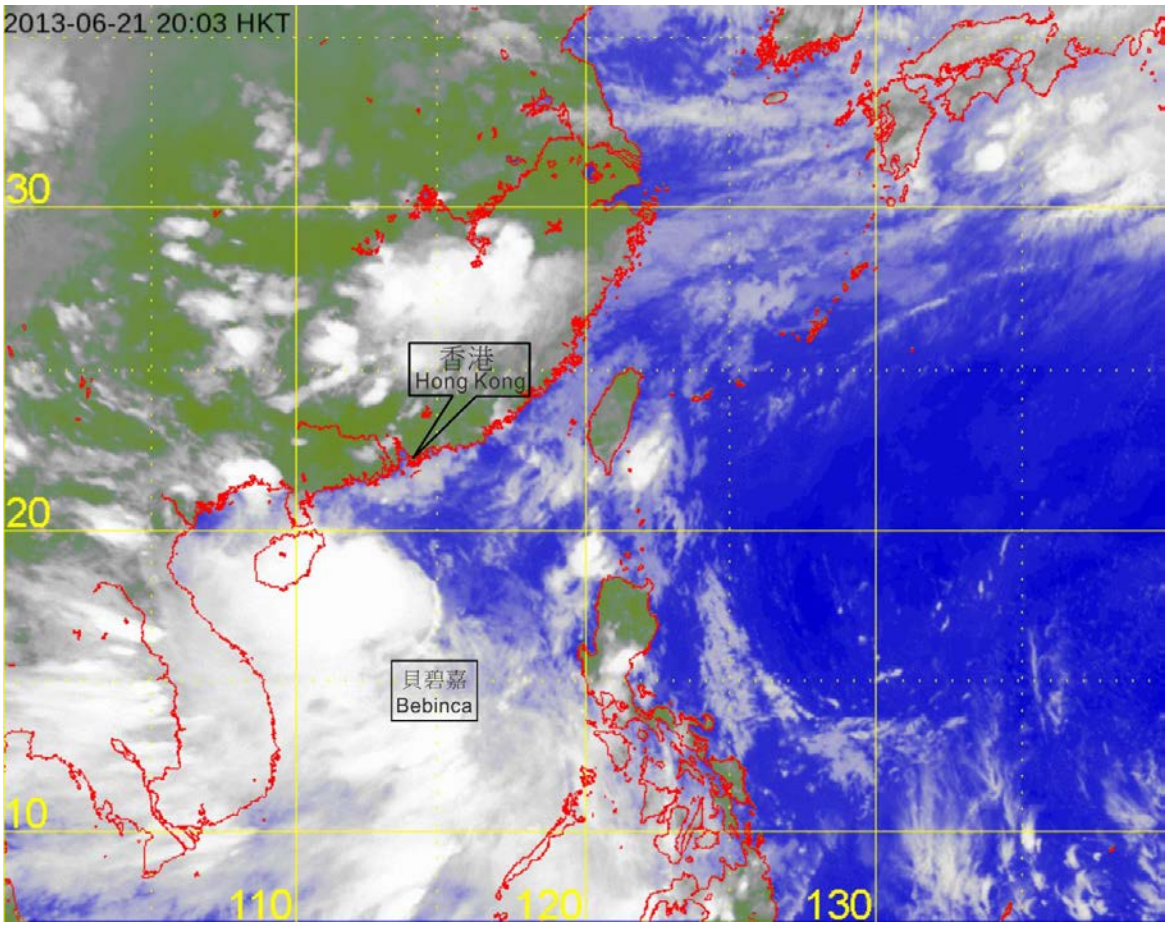


圖 3.1.3 熱帶風暴貝碧嘉在二零一三年六月二十一日下午 8 時的紅外線衛星圖片，當時貝碧嘉達到其最高強度，中心附近估計最高持續風速達到每小時 85 公里。

Figure 3.1.3 Infra-red satellite imagery at 8 p.m. on 21 June 2013 of Tropical Storm Bebinca at its peak intensity with estimated maximum sustained winds of 85 kilometres per hour near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

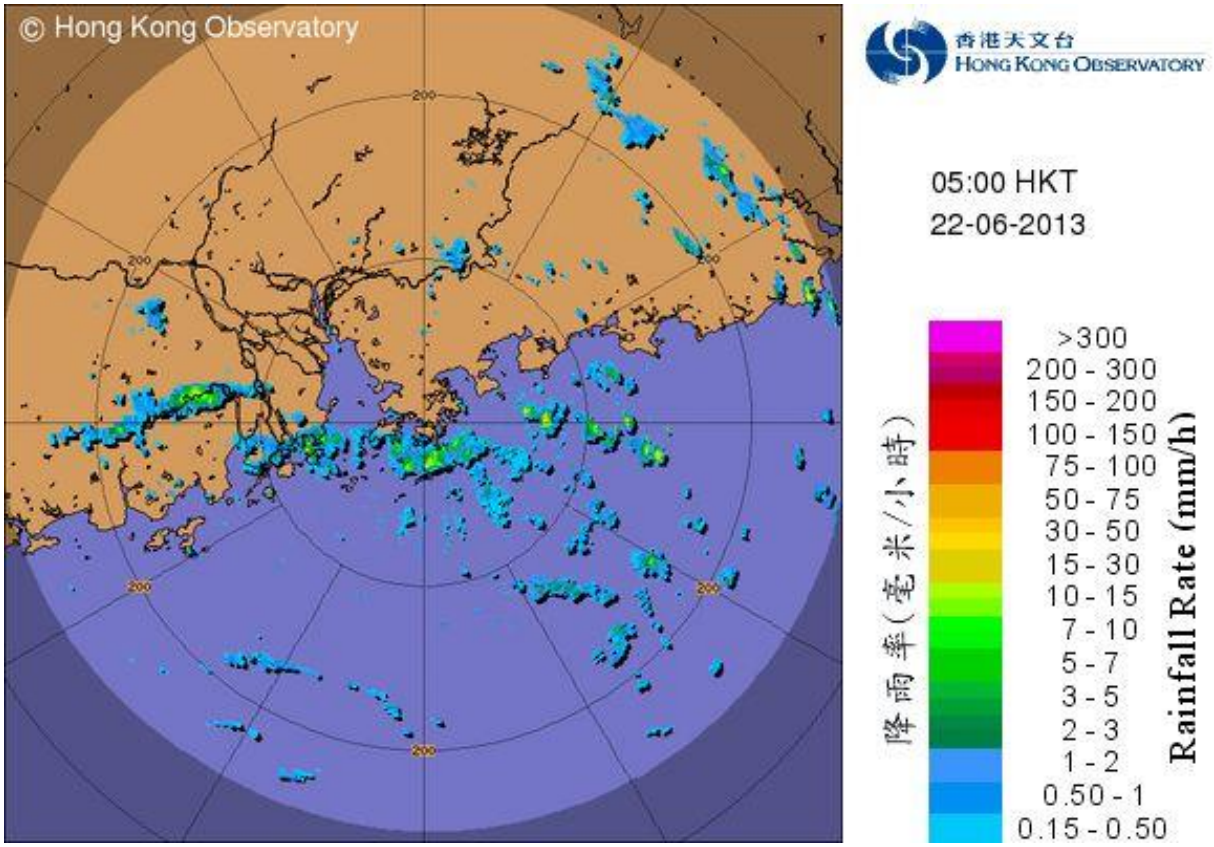


圖 3.1.4　二零一三年六月二十二日上午 5 時的雷達回波圖像，顯示熱帶風暴貝碧嘉的外圍雨帶正影響香港南部。當時貝碧嘉的中心集結在本港西南偏南約 370 公里。

Figure 3.1.4　Radar echoes captured at 5 a.m. on 22 June 2013, when the outer rainbands of Tropical Storm Bebinca were affecting the southern part of Hong Kong. The centre of Bebinca was located about 370 km to the south-southwest of Hong Kong at that time.

3.2 強烈熱帶風暴溫比亞 (1306)：二零一三年六月二十八日至七月二日

溫比亞是香港天文台在二零一三年第二個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓溫比亞於六月二十八日在馬尼拉東南偏東約990公里的北太平洋西部上形成，並向西北至西北偏西移動，翌日增強為熱帶風暴，橫過菲律賓中部。溫比亞於六月三十日進入南海中部，以時速約30公里橫過呂宋以西的海域。它於七月一日早上在香港以南的南海北部上進一步增強為強烈熱帶風暴，並達到其最高強度，中心附近最高持續風力為每小時105公里，晚上轉向西北移動，時速約23公里，橫過海南島以東海域。溫比亞於七月二日凌晨趨近雷州半島，上午五時，湛江錄得的海平面氣壓下降至980.4百帕斯卡。早上溫比亞在湛江附近登陸，橫過廣西，並減弱為熱帶風暴，晚上在內陸消散。根據報章報導，溫比亞吹襲期間，造成湛江140多萬人受災，直接經濟損失9.8億元人民幣。此外，廣西約有17萬人受災、超過90間農舍倒塌、約3,800公頃農田受影響、直接經濟損失超過1,970萬元人民幣。

香港天文台於六月三十日下午9時10分發出一號戒備信號，當時溫比亞位於香港之東南偏南約690公里。晚上本港吹和緩東風，高地間中吹強風。隨着溫比亞逐漸移近華南沿岸，七月一日早上本港風勢逐漸增強，天文台在下午1時15分發出三號強風信號，當時溫比亞位於香港之西南偏南390公里。下午本港轉吹清勁至強風程度東至東南風，高地風勢間中達烈風程度。天文台總部於下午2時43分錄得最低瞬時海平面氣壓1004.0百帕斯卡。溫比亞於下午三時左右最接近香港，並在本港之西南偏南約385公里處掠過。七月二日凌晨溫比亞逐漸遠離本港，本港風勢逐漸減弱。天文台在上午5時10分改發一號戒備信號，取代三號強風信號。溫比亞在湛江附近登陸後，天文台於上午9時40分取消所有熱帶氣旋警告信號。

溫比亞吹襲期間，本港接近海平面錄得的最高每小時平均風速為長洲的54公里，而西貢更錄得每小時103公里的最高陣風。最高潮位2.17米(海圖基準面以上) 和最大風暴潮0.45米(天文潮高度以上) 均在尖鼻咀錄得。

六月三十日本港陽光充沛及天氣酷熱。受到溫比亞的外圍雨帶影響，七月一日轉為多雲，有狂風驟雨及雷暴，當日本港大部分地區錄得超過20毫米的雨量。七月二日天氣轉為炎熱，部分時間有陽光和有幾陣驟雨。

溫比亞影響香港期間，本港有16宗塌樹報告。香港國際機場有三班航機轉飛其它地方，419班航班延誤。

表3.2.1 - 3.2.4 分別是溫比亞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程度的時段、香港的日雨量及最高潮位資料。圖3.2.1 - 3.2.4 分別為溫比亞的路徑圖、本港的雨量分佈圖、溫比亞的衛星及雷達圖像。

3.2 Severe Tropical Storm Rumbia (1306): 28 June - 2 July 2013

Rumbia was the second tropical cyclone that necessitated the issuance of a tropical cyclone warning signal by the Hong Kong Observatory in 2013.

Rumbia formed as a tropical depression over the western North Pacific about 990 km east-southeast of Manila on 28 June and moved northwest to west-northwestwards. Rumbia intensified into a tropical storm and moved across the central Philippines on 29 June. It entered the central part of the South China Sea and moved across the seas west of Luzon at about 30 km/h on 30 June. Rumbia intensified further into a severe tropical storm over the northern part of the South China Sea to the south of Hong Kong in the morning on 1 July, reaching its peak intensity with an estimated sustained wind of 105 km/h near its centre, turning northwestwards at about 23 km/h and crossing the seas east of Hainan Island that night. Rumbia approached the Leizhou Peninsula in the early hours of 2 July. At 5 a.m., the mean sea-level pressure at Zhanjiang fell to 980.4 hPa. Rumbia made landfall near Zhanjiang that morning and moved across Guangxi, weakening into a tropical storm before dissipating over the inland areas that night. According to press reports, over 1.4 million people were affected in Zhanjiang, with a direct economic loss of 980 million RMB. In Guangxi, some 0.17 million people were affected, over 90 huts collapsed, around 3,800 hectares of farmland affected and the direct economic loss exceeded 19.7 million RMB.

In Hong Kong, the Standby Signal No. 1 was issued at 9:10 p.m. on 30 June when Rumbia was about 690 km south-southeast of the territory. Local winds were moderate easterlies, occasionally strong on high ground that night. As Rumbia moved gradually closer to the south China coast, local winds strengthened gradually in the morning on 1 July. The Strong Wind Signal No. 3 was issued at 1:15 p.m. when Rumbia was about 390 km south-southwest of Hong Kong. Local winds became fresh to strong east to southeasterlies in the afternoon, occasionally reaching gale force on high ground. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1004.0 hPa was recorded at 2:43 p.m. Rumbia was closest to Hong Kong around 3 p.m. that day when it was about 385 km to the south-southwest. Winds in Hong Kong gradually subsided as Rumbia moved gradually away from the territory during the early hours on 2 July. The Strong Wind Signal No. 3 was replaced by the Standby Signal No. 1 at 5:10 a.m. All tropical cyclone warning signals were cancelled at 9:40 a.m. after Rumbia made landfall near Zhanjiang.

During the passage of Rumbia, the maximum hourly mean wind recorded near sea level was 54 km/h at Cheung Chau, while maximum gusts of 103 km/h were recorded at Sai Kung. A maximum sea level of 2.17 m (above chart datum) and a maximum storm surge of 0.45 m (above astronomical tide) were recorded at Tsim Bei Tsui.

The weather in Hong Kong was very hot with abundant sunshine on 30 June.

Under the influence of the outer rainbands of Rumbia, the weather became cloudy with squally showers and thunderstorms on 1 July. More than 20 millimetres of rainfall were recorded over most parts of the territory that day. The weather became hot with sunny periods and a few showers on 2 July.

During the passage of Rumbia, there were 16 reports of fallen trees in Hong Kong. At the Hong Kong International Airport, three aircraft were diverted and 419 flights were delayed.

Information on the maximum wind, period of strong and gale force winds, daily rainfall and maximum sea level reached in Hong Kong during the passage of Rumbia is given in Tables 3.2.1 - 3.2.4 respectively. Figures 3.2.1 - 3.2.4 show respectively the track of Rumbia, the rainfall distribution for Hong Kong, a satellite imagery and a radar imagery of Rumbia.

表 3.2.1　在溫比亞影響下，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 Rumbia 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	77	1/7	14:35	東南偏東	ESE	36	1/7	15:00
							東南	SE	36	1/7	21:00
中環碼頭	Central Pier	東	E	59	1/7	14:48	東	E	31	1/7	14:00
長洲	Cheung Chau	東南	SE	77	1/7	16:21	東南	SE	54	1/7	21:00
長洲泳灘	Cheung Chau Beach	東	E	70	1/7	11:13	東	E	43	1/7	12:00
		東	E	70	1/7	11:14					
青洲	Green Island	東南偏東	ESE	81	1/7	14:48	東北偏東	ENE	36	1/7	15:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	65	1/7	23:44	東南偏東	ESE	36	1/7	14:00
啟德	Kai Tak	東南偏南	SSE	62	1/7	14:47	東南偏東	ESE	31	1/7	23:00
京士柏	King's Park	南	S	56	1/7	14:51	東南偏東	ESE	22	1/7	11:00
流浮山	Lau Fau Shan	東南	SE	72	1/7	15:12	東南	SE	27	2/7	09:00
昂坪	Ngong Ping	東	E	112	1/7	18:38	東	E	67	1/7	21:00
北角	North Point	東南偏東	ESE	76	1/7	14:46	東	E	30	1/7	13:00
坪洲	Peng Chau	東南	SE	59	1/7	14:54	東	E	31	1/7	12:00
平洲	Ping Chau	東南	SE	47	1/7	17:57	東南偏南	SSE	9	1/7	17:00
西貢	Sai Kung	南	S	103	1/7	15:21	東南偏南	SSE	36	2/7	00:00
沙洲	Sha Chau	南	S	62	1/7	14:17	東南	SE	38	1/7	22:00
沙螺灣	Sha Lo Wan	東南偏東	ESE	67	1/7	21:31	東南偏東	ESE	31	1/7	22:00
沙田	Sha Tin	西南偏南	SSW	43	1/7	15:08	東	E	19	1/7	22:00
九龍天星碼頭	Star Ferry (Kowloon)	東南偏東	ESE	70	1/7	14:48	東	E	36	1/7	15:00
打鼓嶺	Ta Kwu Ling	東	E	51	1/7	14:04	東	E	16	1/7	15:00
大美督	Tai Mei Tuk	東	E	58	1/7	14:04	東	E	36	1/7	12:00
大帽山	Tai Mo Shan	東南偏東	ESE	99	1/7	17:12	東南偏東	ESE	63	1/7	16:00
大埔滘	Tai Po Kau	東南偏東	ESE	62	1/7	12:01	東南偏東	ESE	31	1/7	12:00
塔門	Tap Mun	東南	SE	62	1/7	15:43	東南	SE	31	1/7	23:00
大老山	Tate's Cairn	西南	SW	70	1/7	14:57	西南偏南	SSW	47	2/7	08:00
將軍澳	Tseung Kwan O	東	E	41	1/7	11:58	東南偏東	ESE	14	1/7	19:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	92	1/7	14:56	東南	SE	25	2/7	08:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	62	1/7	12:29	東南	SE	23	1/7	22:00
橫瀾島	Waglan Island	東南偏南	SSE	96	1/7	14:32	東南偏南	SSE	51	1/7	17:00
濕地公園	Wetland Park	東南	SE	68	1/7	15:11	東南	SE	20	2/7	09:00
黃竹坑	Wong Chuk Hang	東南偏東	ESE	59	1/7	14:42	東	E	23	1/7	14:00

石崗 - 沒有資料 Shek Kong - data not available

表 3.2.2　在溫比亞影響下，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 among the eight reference anemometers in the tropical cyclone warning system when warning signals for Rumbia were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 Start time strong wind speed* was reached		最後達到強風*時間 End 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	1/7	11:29	2/7	07:09
香港國際機場	Hong Kong International Airport	1/7	13:51	1/7	23:47
西貢	Sai Kung	1/7	15:26	1/7	15:29

啟德、沙田、打鼓嶺、青衣及流浮山的持續風力未達到強風程度。
The sustained wind speed did not attain strong force at Kai Tak, Sha Tin, Ta Kwu Ling, Tsing Yi and Lau Fau Shan.

* 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　溫比亞影響香港期間，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 Rumbia

站 (參閱圖 3.2.2) Station (See Fig. 3.2.2)			六月三十日 30 Jun	七月一日 1 Jul	七月二日 2 Jul	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			0.0	29.5	0.0	29.5
香港國際機場 Hong Kong International Airport (HKA)			微量 Trace	21.4	0.9	22.3
長洲 Cheung Chau (CCH)			0.0	13.5	0.0	13.5
N05	粉嶺	Fanling	0.0	41.5	0.0	41.5
N13	糧船灣	High Island	0.0	22.0	0.0	22.0
K04	佐敦谷	Jordan Valley	0.0	17.5	0.0	17.5
N06	葵涌	Kwai Chung	0.0	39.0	0.0	39.0
H12	半山區	Mid Levels	0.0	18.0	0.0	18.0
N09	沙田	Sha Tin	0.0	18.5	1.0	19.5
H19	筲箕灣	Shau Kei Wan	0.0	38.5	0.0	38.5
SEK	石崗	Shek Kong	0.0	27.0	0.0	27.0
K06	蘇屋邨	So Uk Estate	0.0	36.0	0.0	36.0
R31	大美督	Tai Mei Tuk	0.0	29.0	3.5	32.5
R21	踏石角	Tap Shek Kok	0.0	19.5	0.5	20.0
N17	東涌	Tung Chung	0.0	27.0	1.0	28.0
R27	元朗	Yuen Long	0.0	23.5	0.5	24.0

淺水灣 (H21) - 沒有資料。 Repulse Bay (H21) - data not available

表 3.2.4　溫比亞影響香港期間，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 Rumbia

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	1.90	2/7	05:34	0.27	1/7	16:26
石壁	Shek Pik	1.91	1/7	04:42	0.38	1/7	14:04
大廟灣	Tai Miu Wan	1.78	2/7	05:32	0.21	1/7	16:26
大埔滘	Tai Po Kau	1.92	2/7	06:08	0.33	1/7	19:54
尖鼻咀	Tsim Bei Tsui	2.17	2/7	05:23	0.45	1/7	15:56
橫瀾島	Waglan Island	1.88	2/7	05:23	0.19	1/7	16:20

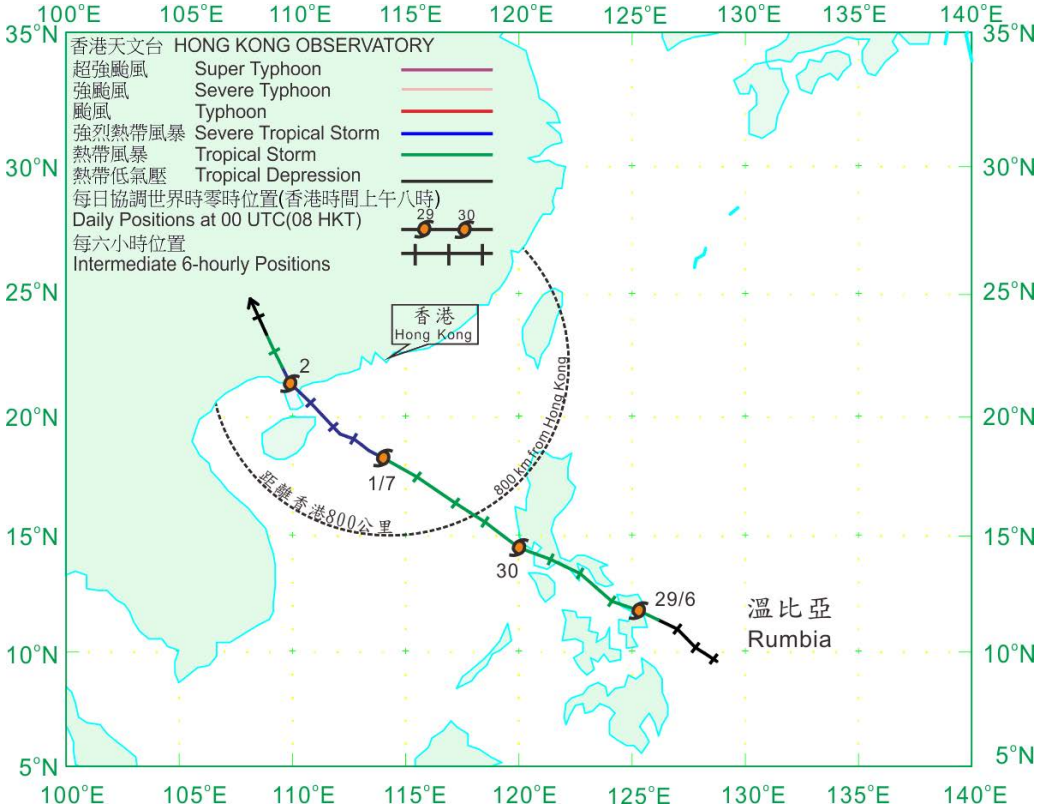


圖 3.2.1　　溫比亞 (1306) 在二零一三年六月二十八日至七月二日的路徑圖。

Figure 3.2.1　　Track of Rumbia (1306) for 28 June - 2 July 2013.

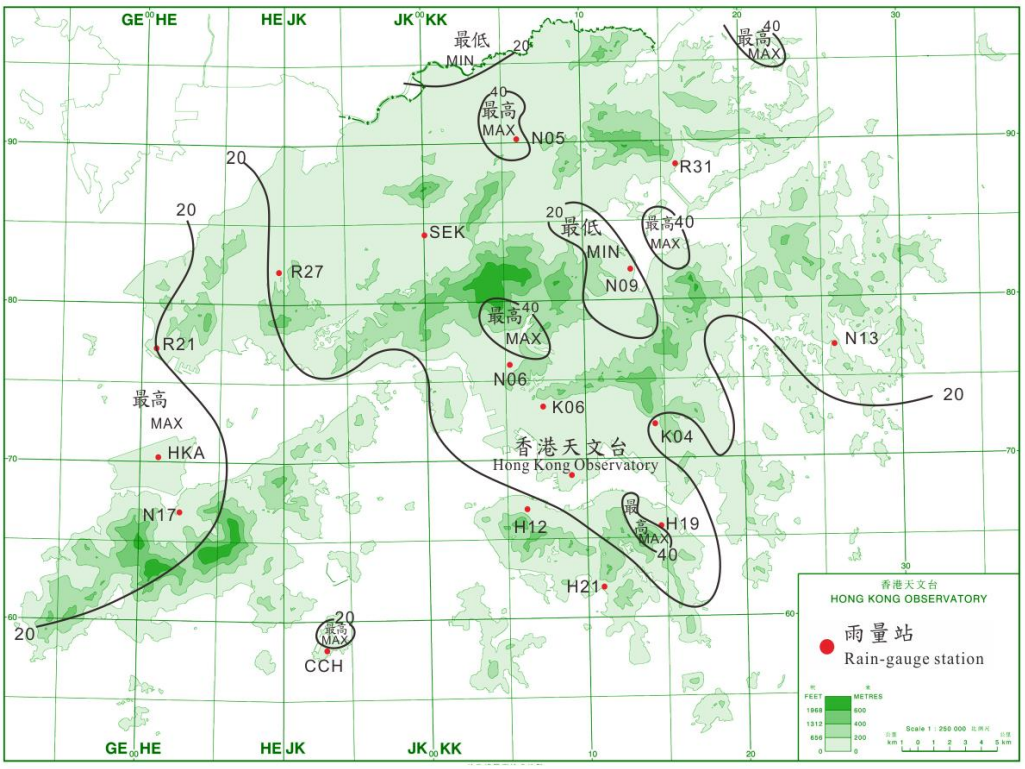


圖 3.2.2　　二零一三年六月三十日至七月二日的雨量分佈(等雨量線單位為毫米)。

Figure 3.2.2　　Rainfall distribution for 30 June - 2 July 2013 (isohyets are in millimetres).

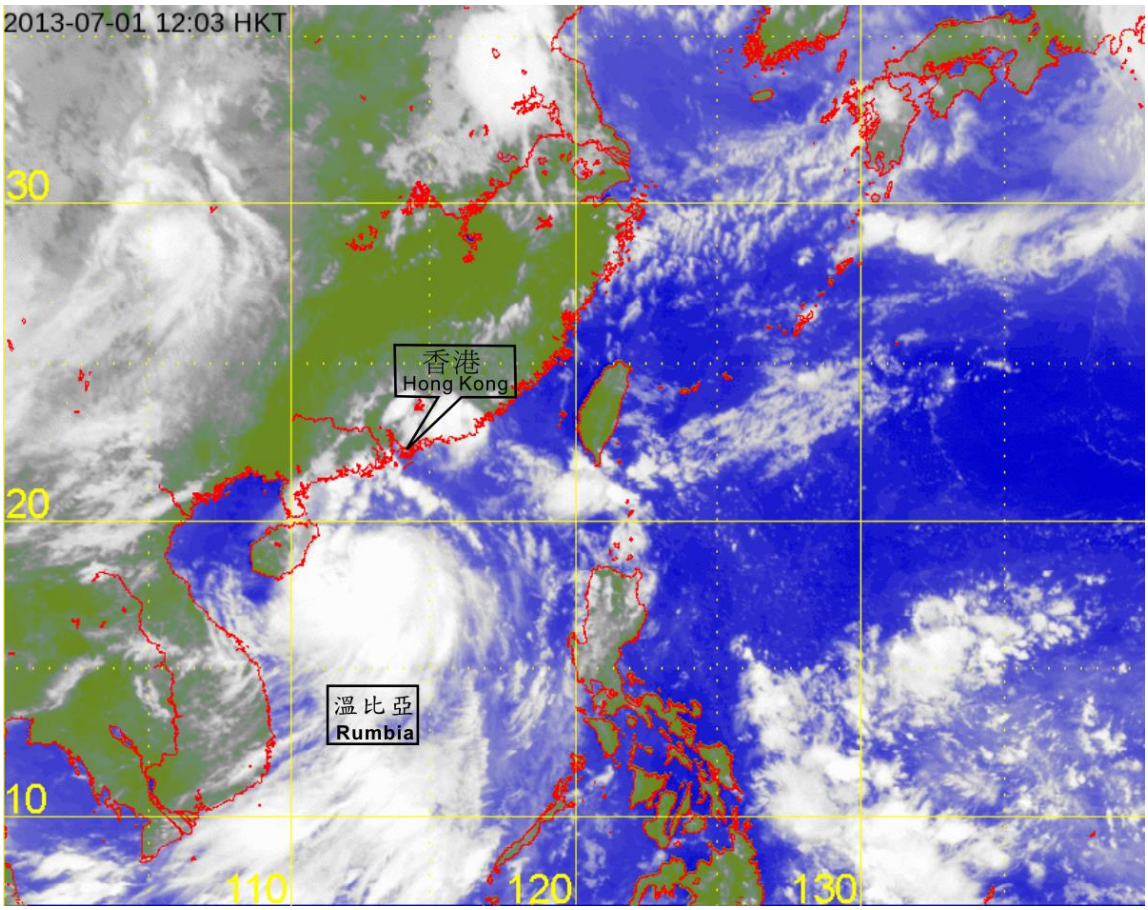


圖 3.2.3　二零一三年七月一日中午的紅外線衛星圖片，當時強烈熱帶風暴溫比亞達到其最高強度，中心附近估計最高持續風速達到每小時 105 公里。

Figure 3.2.3　Infra-red satellite imagery at noon on 1 July 2013 of Severe Tropical Storm Rumbia at its peak intensity with estimated maximum sustained winds of 105 km/h near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

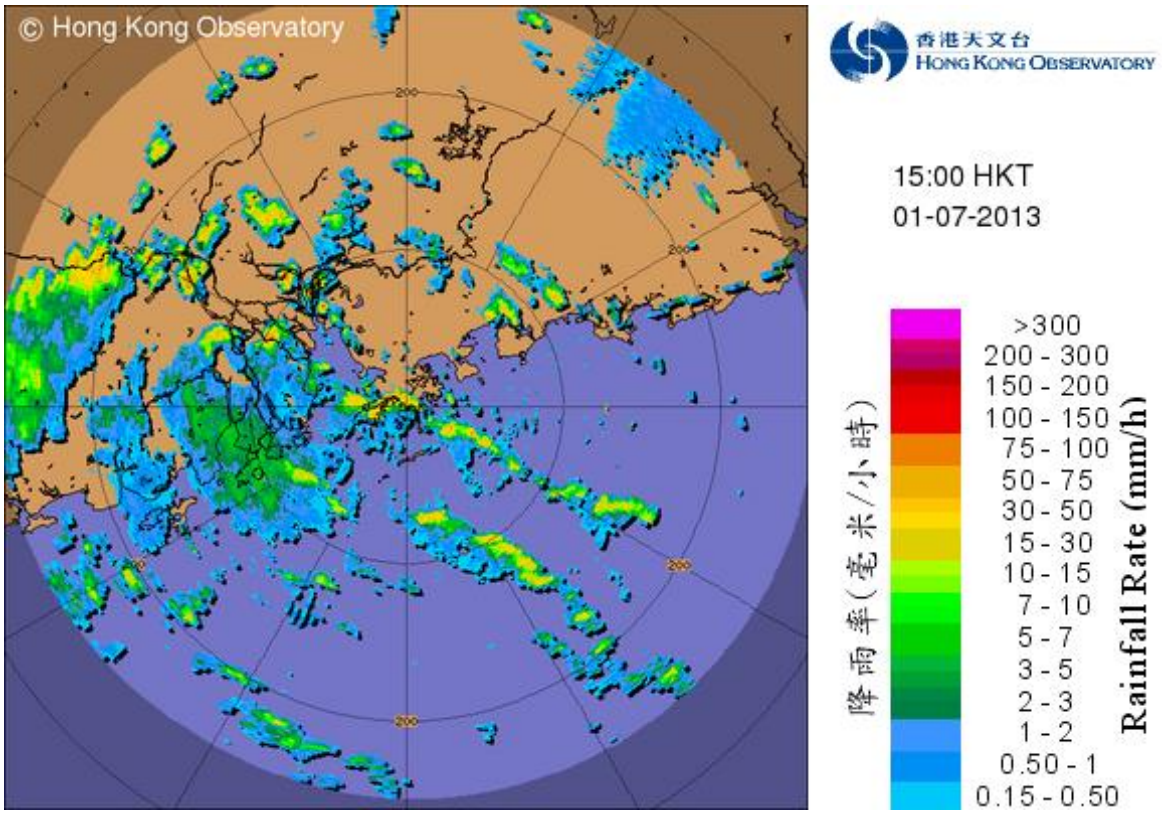


圖 3.2.4　二零一三年七月一日下午 3 時的雷達回波圖像，顯示強烈熱帶風暴溫比亞的外圍雨帶正影響香港。當時溫比亞的中心集結在本港西南偏南約 385 公里。

Figure 3.2.4　Radar echoes captured at 3 p.m. on 1 July 2013, when the outer rainbands of Severe Tropical Storm Rumbia were affecting Hong Kong. The centre of Rumbia was located about 385 km to the south-southwest of Hong Kong at that time.

3.3 熱帶風暴西馬侖(1308) ：二零一三年七月十六日至十九日

西馬侖是香港天文台在二零一三年第三個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓西馬侖於七月十六日在馬尼拉東北偏東約 390 公里的北太平洋西部海面上形成，並向西北移動，時速約 19 公里。它於七月十七日掠過呂宋東北端，橫過呂宋海峽，途中增強為熱帶風暴，並達到其最高強度，中心附近最高持續風力為每小時 65 公里。西馬侖的環流較小，氣象衛星圖片顯示，其中心附近雲團的直徑約為 300 公里左右。西馬侖於七月十八日凌晨進入南海東北部，早上轉向偏北方向移動，時速約 20 公里，傍晚在福建沿岸登陸。它於七月十九日凌晨在福建減弱為熱帶低氣壓，隨後在內陸消散。根據報章報導，西馬侖為福建帶來暴雨，造成一人死亡、另一人失蹤、約 2,840 公頃農作物受災、直接經濟損失超過七億元人民幣。

香港天文台於七月十七日下午 11 時 20 分發出一號戒備信號，當時西馬侖位於香港之東南偏東約 630 公里。當晚本港普遍吹和緩東至東北風。西馬侖於七月十八日中午前後最接近香港，在本港以東約 390 公里處掠過。隨着西馬侖轉向偏北方向移動，對香港的威脅減低，天文台於下午 3 時 40 分取消所有熱帶氣旋警告信號，當時西馬侖集結在香港之東北偏東約 410 公里，而天文台總部則在同時間錄得最低瞬時海平面氣壓 1003.8 百帕斯卡。

西馬侖掠過期間，本港接近海平面的最高每小時平均風速及最高陣風均在青洲錄得，分別為 36 及 54 公里。尖鼻咀錄得最高潮位 2.44 米(海圖基準面以上)，而大埔滘則錄得最大風暴潮 0.29 米(天文潮高度以上)。

西馬侖對香港的影響不大，期間並沒有任何嚴重破壞報告。受到一股活躍的海洋氣流影響，七月十七日本港大致多雲，有零散驟雨及幾陣雷暴。七月十八日仍有幾陣驟雨，但大部份地區只有一、兩毫米雨量。

表3.3.1- 3.3.3 分別是西馬侖影響香港期間各站錄得的最高風速、香港的日雨量及最高潮位資料。圖3.3.1 - 3.3.4 分別為西馬侖的路徑圖、本港的雨量分佈圖、西馬侖的衛星及雷達圖像。

3.3 Tropical Storm Cimaron (1308): 16 - 19 July 2013

Cimaron was the third tropical cyclone that necessitated the issuance of tropical cyclone warning signals by the Hong Kong Observatory in 2013.

Cimaron formed as a tropical depression over the western North Pacific about 390 km east-northeast of Manila on 16 July and moved northwestwards at about 19 km/h. After skirting the northeastern tip of Luzon on 17 July, it moved across the Luzon Strait and intensified into a tropical storm, reaching its peak intensity with an estimated sustained wind of 65 km/h near its centre. The circulation of Cimaron was relatively small. Meteorological satellite imageries showed that the diameter of the cloud mass near the centre was about 300 km. Cimaron entered the northeastern part of the South China Sea in the early hours on 18 July. It turned northwards at about 20 km/h in the morning and made landfall over the coast of Fujian that evening. Cimaron weakened into a tropical depression over Fujian in the early hours on 19 July and subsequently dissipated inland. According to press reports, Cimaron brought rainstorms to Fujian where one person was killed and another was reported missing. Around 2,840 hectares of agricultural products were affected and the direct economic loss exceeded 700 million RMB.

The Standby Signal No. 1 was issued by the Hong Kong Observatory at 11:20 p.m. on 17 July when Cimaron was about 630 km east-southeast of the territory. Local winds were generally moderate east to northeasterlies that night. Cimaron was closest to Hong Kong around noon on 18 July, passing about 390 km to the east. All tropical cyclone warning signals were cancelled at 3:40 p.m. that day as Cimaron took on a northerly track and its threat to the territory receded. At the time, the Hong Kong Observatory Headquarters recorded the lowest instantaneous mean sea-level pressure of 1003.8 hPa when Cimaron was located about 410 km east-northeast of Hong Kong.

During the passage of Cimaron, the maximum hourly mean wind of 36 km/h and the maximum gust of 54 km/h near sea level were both recorded at Green Island. A maximum sea level of 2.44 m (above chart datum) was recorded at Tsim Bei Tsui, while a maximum storm surge of 0.29 m (above astronomical tide) was recorded at Tai Po Kau.

The impact of Cimaron on Hong Kong was rather limited and no significant damage was reported. Under the influence of an active maritime airstream, local weather was mainly cloudy with scattered showers and a few thunderstorms on 17 July. There were also a few showers on 18 July, but only a couple of millimetres of rainfall were recorded in most parts of Hong Kong

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

表 3.3.1　在西馬侖影響下，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 Cimaron were in force

站（參閱圖 1.1）Station (See Fig. 1.1)		最高陣風 Maximum Gust					最高每小時平均風速 Maximum Hourly Mean Wind				
		風向 Direction		風速（公里/時）Speed (km/h)	日期/月份 Date/Month	時間 Time	風向 Direction		風速（公里/時）Speed (km/h)	日期/月份 Date/Month	時間 Time
黃麻角（赤柱）	Bluff Head (Stanley)	東	E	30	18/7	12:09	東	E	16	18/7	00:00
中環碼頭	Central Pier	東	E	34	18/7	14:19	東	E	20	18/7	15:00
長洲	Cheung Chau	東南	SE	40	18/7	13:08	東南	SE	23	18/7	14:00
長洲泳灘	Cheung Chau Beach	東	E	36	17/7	23:34	東	E	25	18/7	00:00
青洲	Green Island	東北	NE	54	18/7	12:28	東北	NE	36	18/7	13:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	31	18/7	14:34	東南偏東	ESE	22	18/7	00:00
啟德	Kai Tak	東南偏東	ESE	40	18/7	11:34	東南偏東	ESE	16	18/7	13:00
京士柏	King's Park	東南偏東	ESE	27	18/7	12:02	東南	SE	12	18/7	13:00
流浮山	Lau Fau Shan	東南偏東	ESE	27	18/7	13:29	東北偏東	ENE	14	18/7	00:00
							東	E	14	18/7	15:00
昂坪	Ngong Ping	東	E	68	18/7	00:45	東	E	49	18/7	00:00
北角	North Point	東	E	31	18/7	11:40	東	E	16	18/7	14:00
坪洲	Peng Chau	東南偏東	ESE	31	18/7	12:26	東南偏東	ESE	22	18/7	13:00
		東南偏東	ESE	31	18/7	12:32					
平洲	Ping Chau	東北偏東	ENE	13	18/7	11:15	西北偏北	NNW	4	18/7	10:00
西貢	Sai Kung	東	E	27	18/7	11:45	東	E	12	18/7	13:00
沙洲	Sha Chau	東南	SE	34	18/7	13:34	東南	SE	25	18/7	14:00
		東南	SE	34	18/7	13:37					
		東南偏南	SSE	34	18/7	13:41					
沙螺灣	Sha Lo Wan	東南偏東	ESE	30	18/7	13:45	東	E	14	18/7	00:00
沙田	Sha Tin	東北偏北	NNE	22	18/7	12:47	東北偏北	NNE	9	18/7	10:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	31	18/7	14:34	東	E	20	18/7	14:00
打鼓嶺	Ta Kwu Ling	東南	SE	23	18/7	14:37	東南偏東	ESE	9	18/7	15:00
大美督	Tai Mei Tuk	東北	NE	27	18/7	00:27	東南偏東	ESE	16	18/7	15:00
大帽山	Tai Mo Shan	東南偏東	ESE	70	17/7	23:22	東南偏東	ESE	58	18/7	00:00
大埔滘	Tai Po Kau	東南	SE	27	18/7	13:43	東南偏東	ESE	16	18/7	15:00
		東南	SE	27	18/7	13:55					
塔門	Tap Mun	東南	SE	22	18/7	13:13	東南	SE	13	18/7	14:00
大老山	Tate's Cairn	東南	SE	41	18/7	00:28	東南	SE	30	18/7	01:00
將軍澳	Tseung Kwan O	東北	NE	25	18/7	10:36	東北偏北	NNE	12	18/7	11:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東	E	27	18/7	11:52	東南偏東	ESE	13	18/7	14:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	31	18/7	13:25	東南偏南	SSE	14	18/7	15:00
橫瀾島	Waglan Island	東北偏東	ENE	30	18/7	02:11	東北偏東	ENE	20	18/7	03:00
		東北偏東	ENE	30	18/7	02:12					
濕地公園	Wetland Park	東南偏東	ESE	31	18/7	13:53	東南偏東	ESE	12	18/7	15:00
黃竹坑	Wong Chuk Hang	東北偏東	ENE	34	18/7	10:22	東	E	16	18/7	11:00

表 3.3.2　西馬侖影響香港期間，香港天文台總部及其他各站所錄得的日雨量
Table 3.3.2　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Cimaron

站 (參閱圖 3.3.2) Station (See Fig. 3.3.2)			七月十八日 18 Jul	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			0.5	0.5
香港國際機場 Hong Kong International Airport (HKA)			0.0	0.0
長洲 Cheung Chau (CCH)			1.0	1.0
N05	粉嶺	Fanling	0.5	0.5
N13	糧船灣	High Island	0.5	0.5
K04	佐敦谷	Jordan Valley	0.5	0.5
N06	葵涌	Kwai Chung	0.0	0.0
H12	半山區	Mid Levels	0.5	0.5
N09	沙田	Sha Tin	1.0	1.0
H19	筲箕灣	Shau Kei Wan	1.0	1.0
SEK	石崗	Shek Kong	0.5	0.5
K06	蘇屋邨	So Uk Estate	0.5	0.5
R31	大美督	Tai Mei Tuk	1.0	1.0
R21	踏石角	Tap Shek Kok	0.0	0.0
N17	東涌	Tung Chung	0.0	0.0
R27	元朗	Yuen Long	0.0	0.0

淺水灣 (H21) - 沒有資料。 Repulse Bay (H21) - data not available

表 3.3.3　西馬侖影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.3.3　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Cimaron

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	2.05	18/7	04:39	0.21	18/7	12:54
石壁	Shek Pik	2.22	18/7	04:10	0.19	18/7	04:10
大廟灣	Tai Miu Wan	1.87	18/7	04:49	0.11	18/7	14:13
大埔滘	Tai Po Kau	2.07	18/7	05:16	0.29	18/7	13:56
尖鼻咀	Tsim Bei Tsui	2.44	18/7	04:49	0.20	18/7	04:49
橫瀾島	Waglan Island	2.21	18/7	04:53	0.27	18/7	01:21

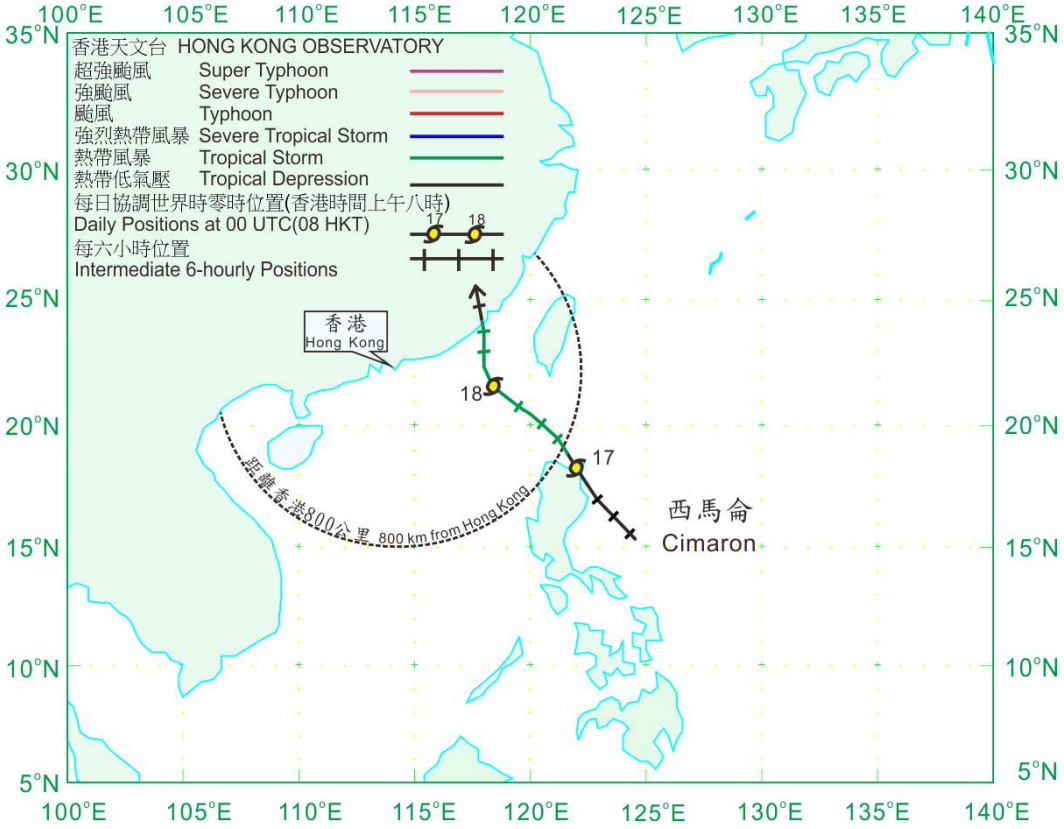


圖 3.3.1　　西馬侖 (1308) 在二零一三年七月十六日至十九日的路徑圖。
Figure 3.3.1　　Track of Cimaron (1308) on 16 - 19 July 2013.

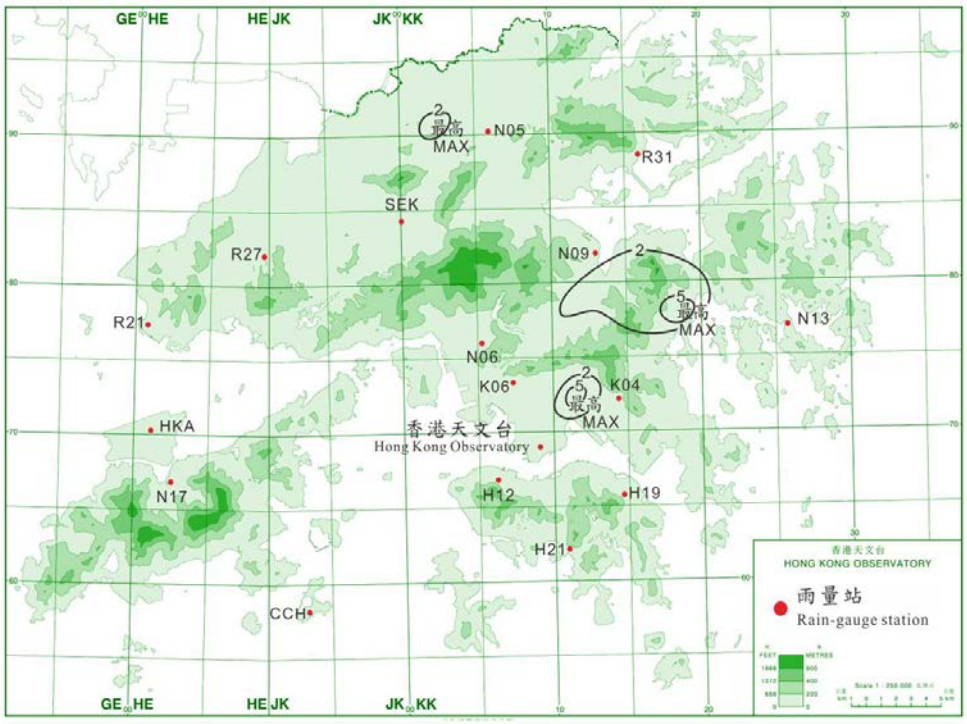


圖 3.3.2　　二零一三年七月十八日的雨量分佈(等雨量線單位為毫米)。
Figure 3.3.2　　Rainfall distribution for 18 July 2013 (isohyets are in millimetres).

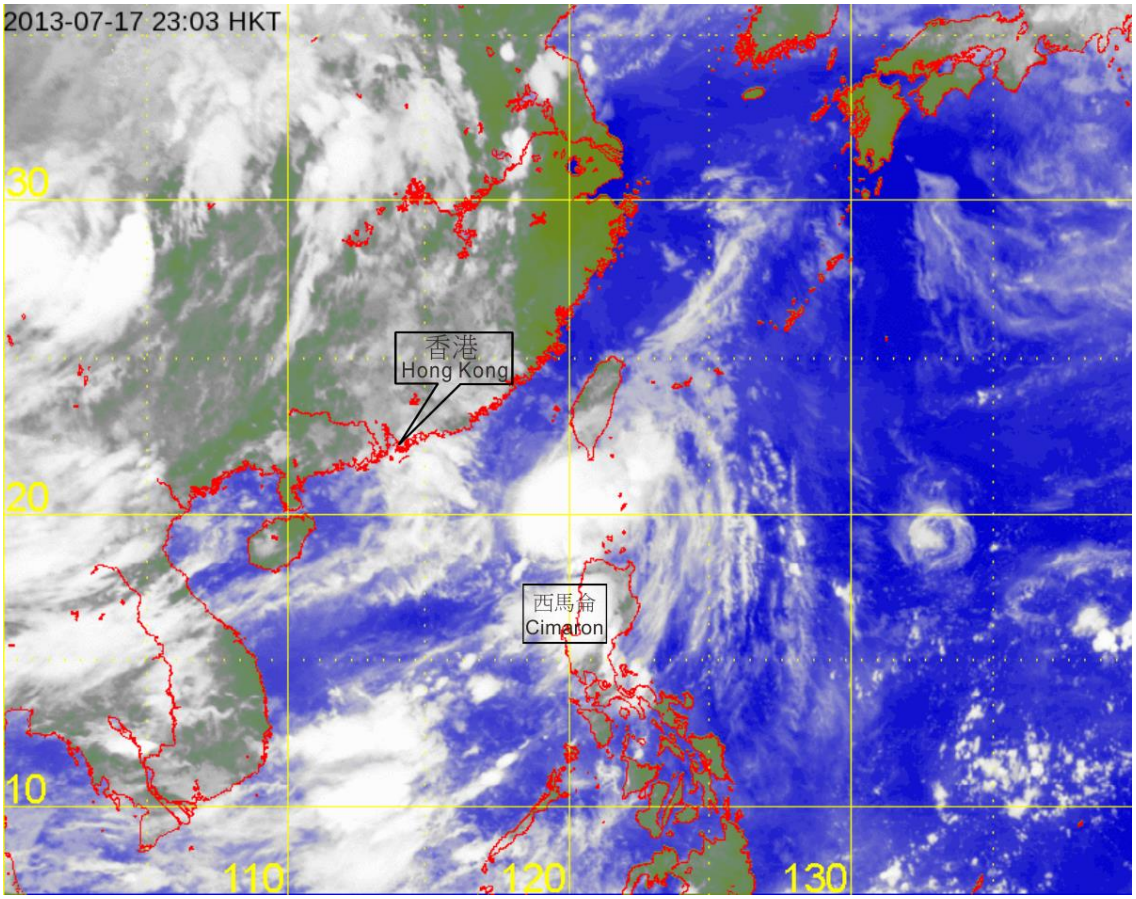


圖 3.3.3　二零一三年七月十七日下午十一時的紅外線衛星圖片，當時熱帶風暴西馬侖達到其最高強度，中心附近最高持續風速估計達到每小時 65 公里。

Figure 3.3.3　Infra-red satellite imagery at 11 p.m. on 17 July 2013, as Tropical Storm Cimaron reached its peak intensity with estimated maximum sustained winds of 65 kilometres per hour near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

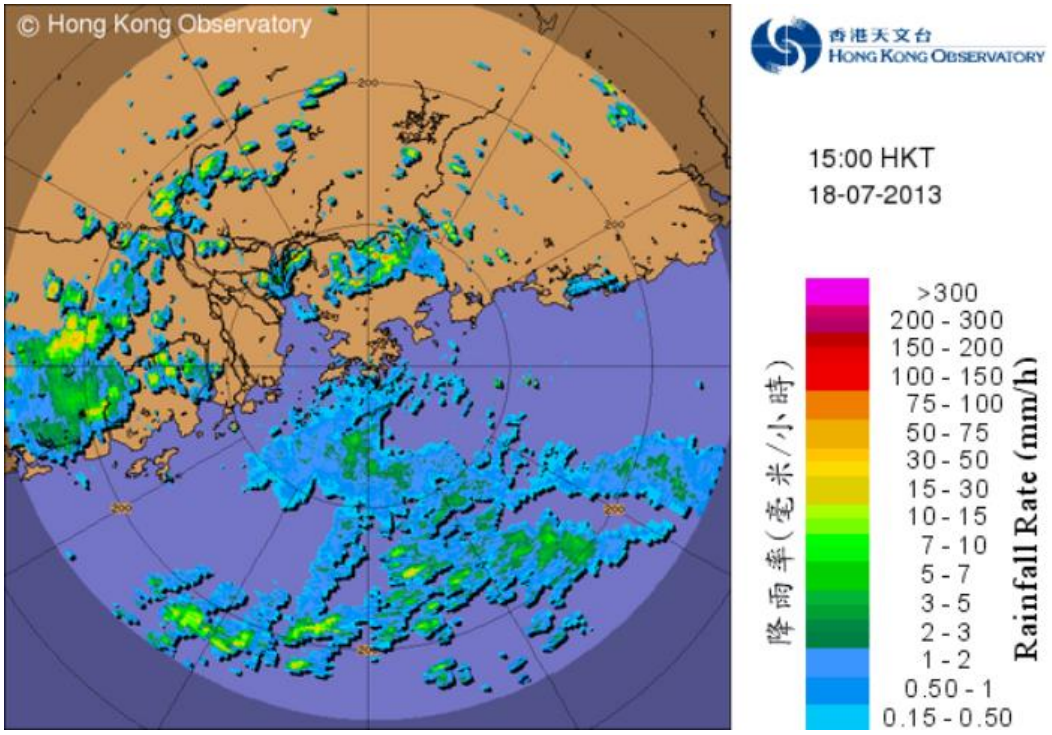


圖 3.3.4　二零一三年七月十八日下午 3 時的雷達回波圖像，顯示熱帶風暴西馬侖的外圍雨帶正影響南海北部。當時西馬侖集結在本港之東北偏東約 410 公里。

Figure 3.3.4　Radar echoes at 3 p.m. on 18 July 2013, when the outer rainbands of Tropical Storm Cimaron were affecting the northern part of the South China Sea. At the time, Cimaron was located about 410 km east-northeast of Hong Kong.

3.4 強烈熱帶風暴飛燕 (1309)：二零一三年七月三十一日至八月三日

飛燕是香港天文台在二零一三年第四個需要發出熱帶氣旋警告信號的熱帶氣旋。

熱帶低氣壓飛燕於七月三十一日在西沙之東南偏東約450公里的南海中部上空形成，並向西北偏西移動，當日下午增強為熱帶風暴，翌日採取西北途徑移動，時速約11公里，橫過西沙附近海域。飛燕於八月二日早上在西沙之東北偏北約70公里處增強為強烈熱帶風暴，當日下午達到其最高強度，中心附近最高持續風力為每小時105公里。同時，飛燕的移動速度增加至每小時約28公里，傍晚在海南島東北端文昌市附近登陸，晚上轉向西北偏西移動，橫過海南島。下午十一時，海口的海平面氣壓下降至987.4百帕斯卡。飛燕於八月三日凌晨橫過北部灣，早上在越南北部沿岸登陸，下午減弱為熱帶風暴，晚間在越南北部消散。根據報章報導，飛燕對海南島交通造成嚴重影響。飛燕吹襲越南期間，導致七人死亡，並吹倒不少電信塔和電線。

香港天文台於八月一日上午9時40分發出一號戒備信號，當時飛燕位於香港以南約740公里。受到飛燕及中國東南沿岸的高壓脊共同影響下，本港吹和緩至清勁東風，高地間中吹強風，日間風勢增強。天文台在下午4時10分發出三號強風信號，當時飛燕位於香港以南約660公里。飛燕於八月二日繼續移近華南沿岸。天文台總部於八月二日上午3時08分錄得最低瞬時海平面氣壓1002.0百帕斯卡，當時飛燕位於香港之西南偏南約600公里。當日本港吹清勁至強風程度東至東南風，高地間中吹烈風。飛燕於下午七時左右最接近香港，在本港之西南約430公里處掠過。隨著飛燕橫過海南島及遠離，本地風勢減弱，天文台於下午10時15分取消所有熱帶氣旋警告信號。

飛燕吹襲期間，本港接近海平面錄得的最高每小時平均風速為橫瀾島的51公里，而長洲更錄得每小時87公里的最高陣風。尖鼻咀錄得最高潮位2.41米(海圖基準面以上) ，而大埔滘則錄得最大風暴潮0.40米(天文潮高度以上)。

八月一日早上本港短暫時間有陽光。受到與飛燕相關的外圍雨帶影響，本港下午轉為多雲，有零散狂風驟雨及雷暴。翌日本港繼續多雲，有零散狂風大驟雨及雷暴。兩天內港島西部及新界部分地區共錄得超過100毫米雨量。

飛燕影響香港期間，香港國際機場有三班航機轉飛其它地方。尖沙咀及土瓜灣先後有玻璃窗疑被風吹至飛脫，在前者事件中有一輛私家車的車頂被損毀。

表3.4.1- 3.4.4 分別是飛燕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程度的時段、香港的日雨量及最高潮位資料。圖3.4.1 - 3.4.4 分別為飛燕的路徑圖、本港的雨量分佈圖、飛燕的衛星圖像及最接近香港時的雷達圖像。

3.4 Severe Tropical Storm Jebi (1309): 31 July - 3 August 2013

Jebi was the fourth tropical cyclone necessitating the issuance of tropical cyclone warning signals by the Hong Kong Observatory in 2013.

Jebi formed as a tropical depression over the central part of the South China Sea about 450 km east-southeast of Xisha on 31 July. Moving west-northwestwards, Jebi intensified into a tropical storm that afternoon. It took on a northwesterly track at a speed of about 11 km/h the next day across the seas near Xisha. Jebi intensified into a severe tropical storm in the morning on 2 August about 70 km to the north-northeast of Xisha, reaching its peak intensity with estimated sustained winds of 105 km/h near its centre that afternoon. It also speeded up to about 28 km/h, making landfall near Wenchang over the northeastern tip of Hainan Island that evening and turning west-northwestwards across the island that night. At 11 p.m., the mean sea-level pressure at Haikou fell to 987.4 hPa. Jebi moved across Beibu Wan in the early hours on 3 August and made landfall over the coast of northern Vietnam that morning. It weakened into a tropical storm in the afternoon and subsequently dissipated over the northern part of Vietnam during the night. According to press reports, Jebi severely disrupted the traffic in Hainan Island. In Vietnam, seven people were killed, and many telecommunication towers and power lines were blown down during the passage of Jebi.

The Standby Signal No. 1 was issued by the Hong Kong Observatory at 9:40 a.m. on 1 August when Jebi was about 740 km south of the territory. Under the combined effect of Jebi and the ridge of high pressure over the coast of southeastern China, local winds were moderate to fresh easterlies, occasionally strong on high ground and strengthening during the day. The Strong Wind Signal No. 3 was issued at 4:10 p.m. when Jebi was about 660 km south of Hong Kong. Jebi continued to move closer to the south China coast on 2 August. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1002.0 hPa was recorded at 3:08 a.m., when Jebi was about 600 km to the south-southwest. Local winds were fresh to strong east to southeasterlies that day, occasionally reaching gale force on high ground. Jebi was closest to Hong Kong around 7 p.m. as it passed by about 430 km to the southwest. All tropical cyclone warning signals were cancelled at 10:15 p.m. as Jebi moved across Hainan Island away from Hong Kong and local winds subsided.

During the passage of Jebi, the maximum hourly mean wind recorded near sea level was 51 km/h at Waglan Island, while maximum gusts of 87 km/h were recorded at Cheung Chau. A maximum sea level of 2.41 m (above chart datum) was recorded at Tsim Bei Tsui, while a maximum storm surge of 0.40 m (above astronomical tide) was recorded at Tai Po Kau.

There were sunny intervals in Hong Kong during the morning of 1 August. Under the influence of the outer rainbands associated with Jebi, the weather became cloudy with scattered squally showers and thunderstorms that afternoon. The weather

remained cloudy with scattered heavy showers and thunderstorms the next day. More than 100 millimetres of rainfall were recorded over the western part of Hong Kong Island and parts of the New Territories during these two days.

During the passage of Jebi, three aircraft were diverted at the Hong Kong International Airport. There were reports of glass panels suspected to be blown off by the winds in Tsim Sha Tsui and To Kwa Wan. The roof of a motor vehicle was damaged in the former incident.

Information on the maximum wind, period of strong and gale force winds, daily rainfall and maximum sea level reached in Hong Kong during the passage of Jebi is given in Tables 3.4.1 - 3.4.4 respectively. Figures 3.4.1 - 3.4.4 show respectively the track of Jebi, the rainfall distribution for Hong Kong, a satellite imagery of Jebi and radar imagery of Jebi near its closest approach to Hong Kong.

表 3.4.1　在飛燕影響下，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 Jebi 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	63	1/8	17:22	東南偏東	ESE	34	1/8	18:00
中環碼頭	Central Pier	東	E	63	1/8	15:03	東	E	34	1/8	12:00
長洲	Cheung Chau	東南	SE	87	1/8	17:36	東南偏東	ESE	45	1/8	18:00
長洲泳灘	Cheung Chau Beach	東	E	81	1/8	15:13	東	E	45	1/8	16:00
青洲	Green Island	東南偏南	SSE	85	2/8	20:28	東北	NE	45	1/8	11:00
香港國際機場	Hong Kong International Airport	東南偏東	ESE	75	1/8	15:27	東	E	38	1/8	16:00
啟德	Kai Tak	東	E	65	1/8	14:53	東	E	27	1/8	15:00
							東	E	27	2/8	15:00
京士柏	King's Park	南	S	63	2/8	20:39	東南偏東	ESE	19	1/8	11:00
							東南偏東	ESE	19	1/8	15:00
流浮山	Lau Fau Shan	東北偏東	ENE	56	2/8	10:42	東	E	30	1/8	12:00
		東南偏東	ESE	56	2/8	20:56	東	E	30	1/8	16:00
昂坪	Ngong Ping	東北偏東	ENE	99	1/8	19:44	東	E	76	1/8	20:00
		東	E	99	1/8	20:11					
		東	E	99	2/8	00:00					
北角	North Point	東	E	63	1/8	14:54	東	E	27	1/8	23:00
坪洲	Peng Chau	東南偏東	ESE	81	1/8	15:12	東	E	40	1/8	16:00
平洲	Ping Chau	東南偏東	ESE	31	1/8	14:51	東	E	9	1/8	14:00
							東	E	9	1/8	15:00
西貢	Sai Kung	東南偏東	ESE	70	2/8	10:06	東北偏東	ENE	34	1/8	15:00
沙洲	Sha Chau	東南偏東	ESE	65	1/8	15:31	東南偏東	ESE	36	2/8	21:00
沙螺灣	Sha Lo Wan	東南	SE	65	1/8	18:00	東	E	31	1/8	16:00
沙田	Sha Tin	東南偏東	ESE	52	1/8	14:56	東	E	16	1/8	12:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	72	1/8	14:58	東	E	34	1/8	13:00
打鼓嶺	Ta Kwu Ling	東	E	51	1/8	15:11	東	E	16	1/8	15:00
大美督	Tai Mei Tuk	東南偏東	ESE	81	1/8	14:54	東	E	40	2/8	11:00
大帽山	Tai Mo Shan	東	E	101	2/8	10:27	東	E	68	1/8	22:00
大埔滘	Tai Po Kau	東	E	70	1/8	15:02	東	E	31	1/8	13:00
							東	E	31	1/8	15:00
塔門	Tap Mun	東南	SE	70	2/8	21:07	東南	SE	27	2/8	22:00
大老山	Tate's Cairn	東南	SE	83	2/8	10:08	東南	SE	45	2/8	10:00
將軍澳	Tseung Kwan O	東南	SE	54	2/8	10:03	東北偏東	ENE	13	1/8	12:00
							東北偏東	ENE	13	1/8	15:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	65	2/8	20:35	東	E	23	2/8	21:00
屯門政府合署	Tuen Mun Government Offices	東南	SE	56	2/8	20:48	東南偏東	ESE	20	2/8	21:00
橫瀾島	Waglan Island	南	S	77	2/8	20:25	東北偏東	ENE	51	2/8	08:00
濕地公園	Wetland Park	東北偏東	ENE	41	1/8	15:06	東	E	19	1/8	12:00
黃竹坑	Wong Chuk Hang	西北偏西	WNW	56	2/8	20:21	東	E	23	1/8	11:00

石崗 - 沒有資料 Shek Kong - data available

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

Table 3.4.2　Periods during which sustained strong winds were reached among the eight reference anemometers in the tropical cyclone warning system when warning signals for Jebi were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 Start time strong wind speed* was reached		最後達到強風*時間 End 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	1/8	10:59	2/8	21:05
香港國際機場	Hong Kong International Airport	1/8	12:46	1/8	15:40
西貢	Sai Kung	1/8	14:52	1/8	14:56
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	2/8	20:38	2/8	20:44

啟德、流浮山、沙田及打鼓嶺的持續風力未達到強風程度。

The sustained wind speed did not attain strong force at Kai Tak, Lau Fau Shan, Sha Tin and Ta Kwu Ling.

* 十分鐘平均風速達每小時 41-62 公里

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

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

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

表 3.4.3　飛燕影響香港期間，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 Jebi

站 (參閱圖 3.4.2) Station (See Fig. 3.4.2)			八月一日 1 Aug	八月二日 2 Aug	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			4.5	72.4	76.9
香港國際機場 Hong Kong International Airport (HKA)			1.6	9.6	11.2
長洲 Cheung Chau (CCH)			2.5	17.0	19.5
N05	粉嶺	Fanling	1.5	52.5	54.0
N13	糧船灣	High Island	4.0	53.0	57.0
K04	佐敦谷	Jordan Valley	6.0	42.0	48.0
N06	葵涌	Kwai Chung	8.0	95.0	103.0
H12	半山區	Mid Levels	5.5	92.5	98.0
N09	沙田	Sha Tin	8.0	48.5	56.5
H19	筲箕灣	Shau Kei Wan	8.0	81.0	89.0
SEK	石崗	Shek Kong	4.5	73.5	78.0
K06	蘇屋邨	So Uk Estate	6.0	80.0	86.0
R31	大美督	Tai Mei Tuk	2.5	37.0	39.5
R21	踏石角	Tap Shek Kok	0.0	33.5	33.5
N17	東涌	Tung Chung	1.0	12.0	13.0
R27	元朗	Yuen Long	0.5	33.5	34.0

淺水灣 (H21) - 沒有資料　Repulse Bay (H21) - data not available

表 3.4.4　飛燕影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮
Table 3.4.4　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Jebi

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	2.20	2/8	06:02	0.31	2/8	14:57
石壁	Shek Pik	2.39	2/8	06:28	0.32	2/8	03:53
大廟灣	Tai Miu Wan	1.99	2/8	05:55	0.15	2/8	20:29
大埔滘	Tai Po Kau	2.22	2/8	07:21	0.40	2/8	10:45
尖鼻咀	Tsim Bei Tsui	2.41	2/8	05:39	0.33	2/8	16:51
橫瀾島	Waglan Island	2.33	2/8	06:11	0.33	2/8	02:16

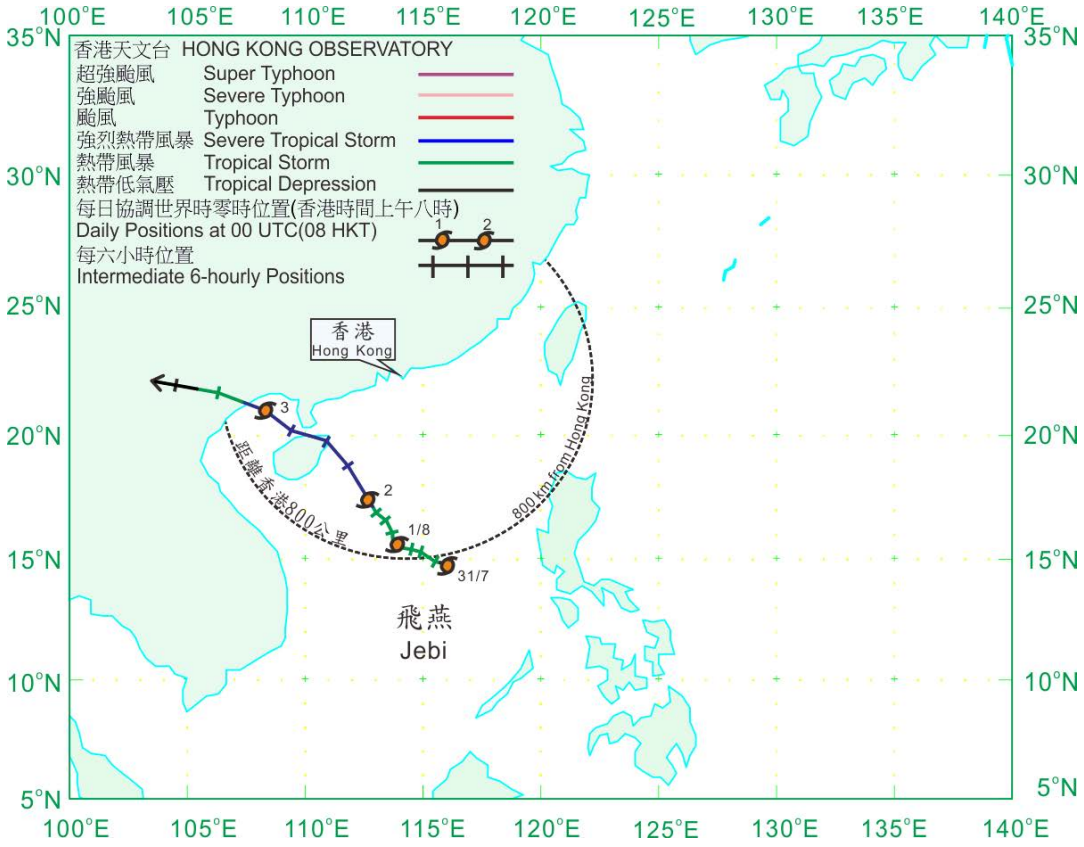


圖 3.4.1 飛燕 (1309) 在二零一三年七月三十一日至八月三日的路徑圖。
Figure 3.4.1 Track of Jebi (1309) on 31 July - 3 August 2013.

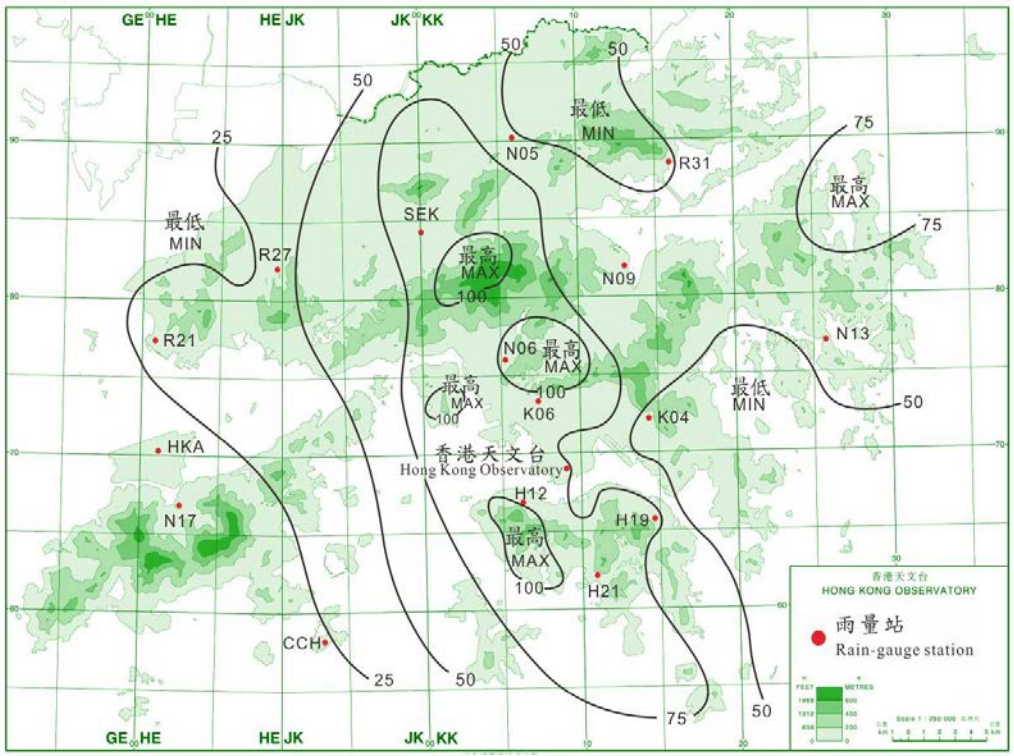


圖 3.4.2 二零一三年八月一日至二日的雨量分佈(等雨量線單位為毫米)。
Figure 3.4.2 Rainfall distribution for 1 - 2 August 2013 (isohyets are in millimetres).

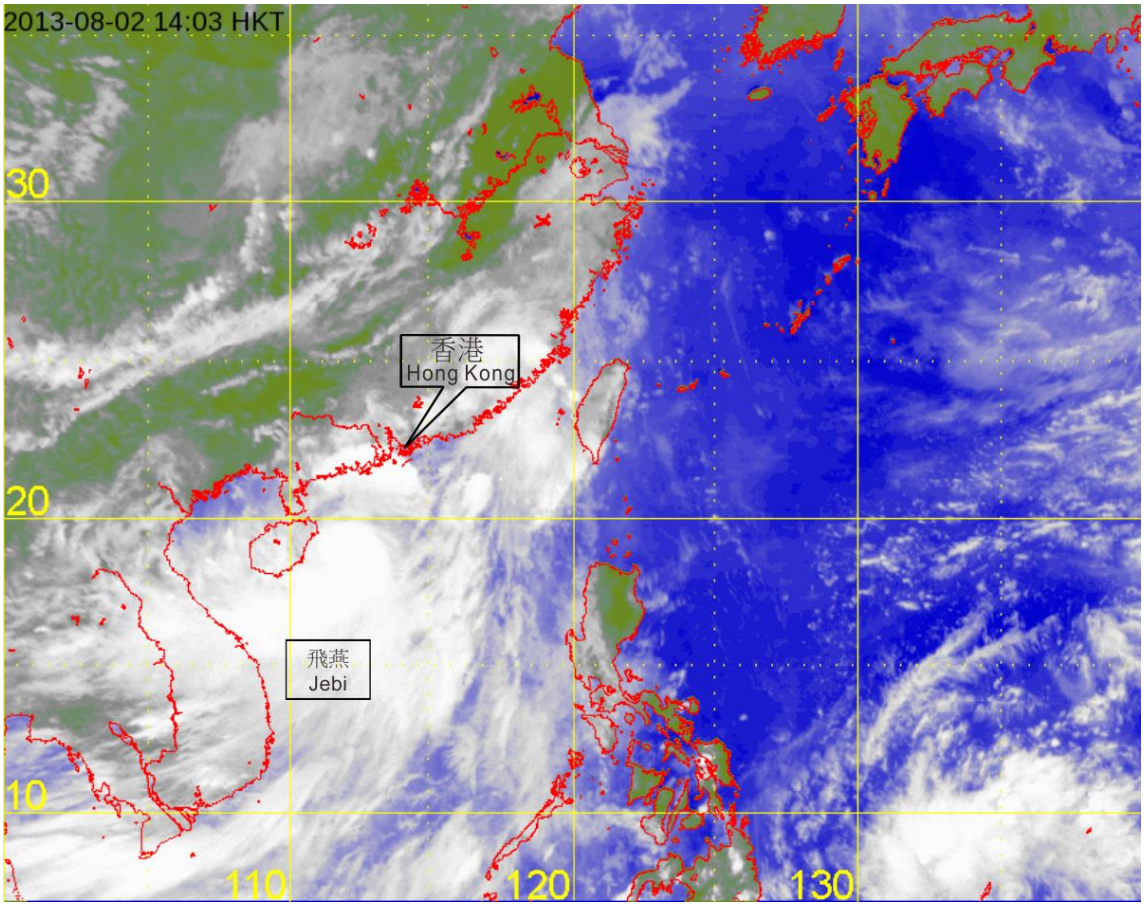


圖 3.4.3　二零一三年八月二日下午 2 時的紅外線衛星圖片，當時強烈熱帶風暴飛燕達到其最高強度，中心附近估計最高持續風速達到每小時 105 公里。

Figure 3.4.3　Infra-red satellite imagery at 2 p.m. on 2 August 2013 as Severe Tropical Storm Jebi reached its peak intensity with estimated maximum sustained winds of 105 km/h near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

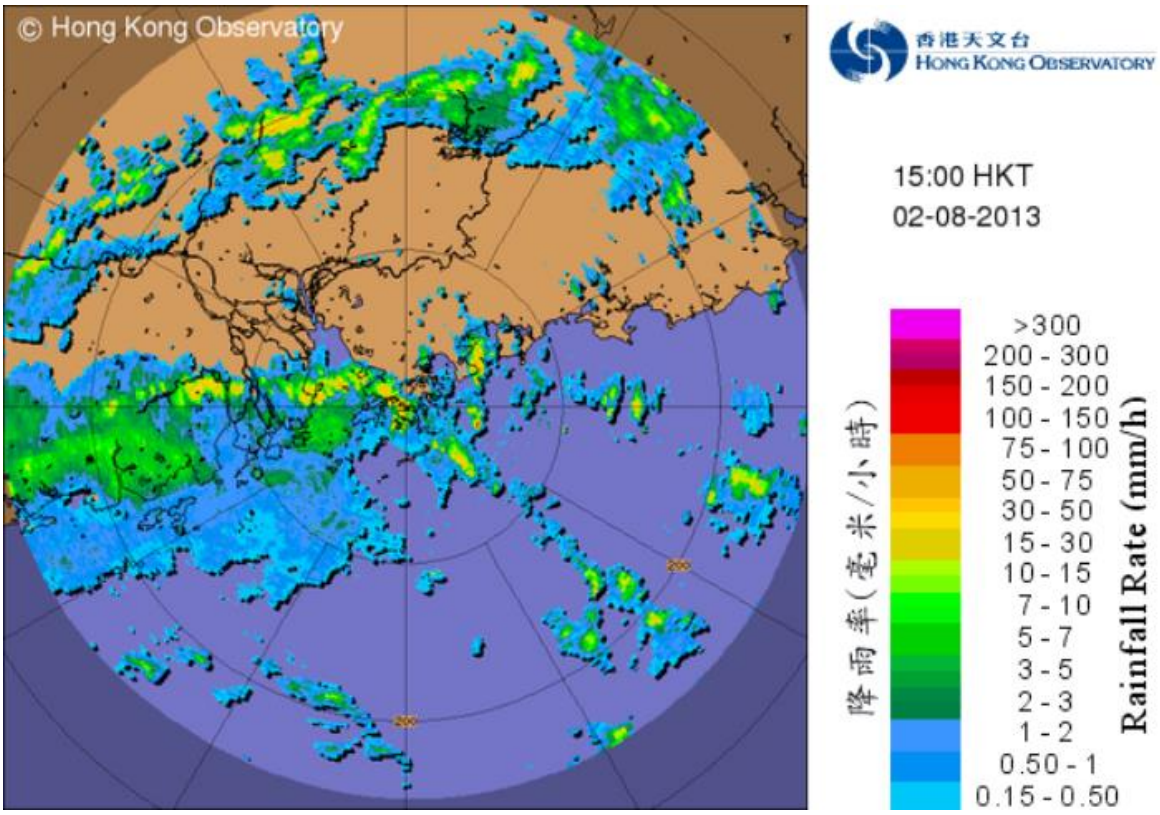


圖 3.4.4　二零一三年八月二日下午 3 時的雷達回波圖像，顯示強烈熱帶風暴飛燕的外圍雨帶正影響香港。

Figure 3.4.4　Image of radar echoes at 3 p.m. on 2 August 2013, showing the outer rainbands of Severe Tropical Storm Jebi over Hong Kong.

3.5 超強颱風尤特 (1311)： 二零一三年八月九日至十六日

尤特是香港天文台在二零一三年第五個需要發出熱帶氣旋警告信號的熱帶氣旋，也是今年首個需要發出八號烈風或暴風信號的熱帶氣旋。

熱帶低氣壓尤特於八月九日在馬尼拉以東約1 350公里的北太平洋西部上形成，初時向西移動，翌日凌晨增強為熱帶風暴，日間採取西北偏西的途徑移動及繼續增強成為颱風。尤特於八月十一日早上發展成為強颱風，傍晚在呂宋以東海域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力為每小時195公里。它於八月十二日凌晨橫過呂宋及減弱為強颱風，上午進入南海，翌日在香港以南的南海北部上轉向西北移動。尤特於八月十四日下午移近廣東西部沿岸，並減弱為颱風。下午二時，陽江的海平面氣壓下降至972.9百帕斯卡。尤特隨後在陽江附近登陸，傍晚橫過廣東西部沿岸，晚上再減弱為強烈熱帶風暴。八月十五日尤特移動速度減慢，並轉向偏北方向移動，橫過廣西，早上減弱為熱帶風暴，下午再減弱為熱帶低氣壓，翌日在廣西消散。

根據報章報導，尤特在菲律賓造成最少兩人死亡、46名漁民失蹤，並引發多宗山泥傾瀉，超過600間房屋受損，逾一千戶停電。尤特亦在廣東茂名和陽江造成三人死亡，五人失蹤，直接經濟損失超過18億人民幣。此外、廣西據報也有兩人死亡。

香港天文台於八月十二日下午4時05分發出一號戒備信號，當時尤特位於香港之東南約710公里。隨着尤特穩定移近廣東西部沿岸，翌日本港風勢逐漸增強。天文台在上午4時40分發出三號強風信號，當時尤特位於香港之東南偏南約490公里。下午本港轉吹強風程度東至東北風，離岸及高地間中吹烈風。隨着尤特繼續移近香港，天文台在八月十四日上午1時40分發出八號東南烈風或暴風信號，當時尤特位於香港之西南偏南約310公里。早上本港轉吹強風至烈風程度東至東南風，高地間中吹暴風。尤特於下午一時左右最接近香港，並在本港之西南偏西約240公里處掠過。由於尤特開始減弱，天文台在下午1時40分改發三號強風信號。本港風勢逐漸減弱，但西南部海域及高地仍達烈風程度。隨着尤特進一步遠離及減弱，天文台在八月十五日上午1時40分改發一號戒備信號。由於尤特移動緩慢及其雨帶繼續影響珠江口，早上本港南部及西部海域仍吹強風。隨著本港風勢進一步減弱，天文台於下午4時40分取消所有熱帶氣旋警告信號。

尤特吹襲期間，橫瀾島錄得的最高每小時平均風速為75公里，而長洲更錄得每小時104公里的最高陣風。最高潮位(海圖基準面以上) 2.76米在尖鼻咀錄得，而最大風暴潮0.63米則在大埔滘錄得。各站錄得的最低瞬時海平面氣壓如下：

站	最低瞬時海平面氣壓 (百帕斯卡)	日期/月份	時間
香港天文台總部	996.8	14/8	上午 3 時 37 分
長洲	995.8	14/8	上午 4 時 42 分
香港國際機場	996.2	14/8	上午 5 時 05 分
京士柏	996.8	14/8	上午 3 時 34 分
流浮山	997.0	14/8	上午 3 時 56 分
坪洲	995.6	14/8	上午 4 時 54 分
橫瀾島	996.3	14/8	上午 3 時 30 分

八月十二日本港天晴及天氣酷熱，天文台錄得最高氣溫34.9度，是今年以來的最 高紀錄。受到尤特的雨帶影響，隨後兩天本港轉為密雲，有狂風大驟雨及幾陣雷暴。尤特的雨帶於八月十五日繼續為本港帶來驟雨。這四天期間，部分地區錄得超過100毫米的雨量。

尤特影響香港期間有九人受傷。三人在大埔對開海面潛水時遇溺，兩人獲救，一人失蹤。另有415宗塌樹、六宗輕微水浸及多宗棚架或招牌倒塌報告。柴灣一幢商業大廈，有一塊幕牆玻璃墮下，擊中兩輛私家車。九龍城及土瓜灣有衛星天線被吹倒，一支街燈及三輛電單車遭受損毀。香港國際機場有148班航班取消、663班航班延誤、32班航機轉飛其它地方。一艘正在駛往廣東的貨輪在香港西南約80公里的海域上沉沒，船上所有21名船員獲救。

表3.5.1- 3.5.4 分別是尤特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程度的時段、香港的日雨量及最高潮位資料。圖3.5.1及3.5.2 分別為尤特的路徑圖和本港的雨量分佈圖。圖3.5.3顯示香港各站錄得的風向和風速。圖3.5.4顯示長洲錄得的風速及海平面氣壓圖。圖3.5.5及3.5.6 分別為尤特的衛星圖像及尤特外圍雨帶的雷達圖像。

3.5 Super Typhoon Utor (1311): 9 - 16 August 2013

Utor was the fifth tropical cyclone necessitating the issuance of tropical cyclone warning signals by the Hong Kong Observatory in 2013. It was also the first necessitating the issuance of No. 8 Gale or Storm Signal in the year.

Utor formed as a tropical depression over the western North Pacific about 1 350 km east of Manila on 9 August and moved westwards. Utor intensified into a tropical storm in the small hours on the next day. It continued to intensify and became a typhoon while moving along a west-northwesterly track during the day. Utor developed into a severe typhoon in the morning on 11 August and strengthened further into a super typhoon over the sea areas east of Luzon that evening, reaching its peak intensity with estimated sustained winds of 195 km/h near its centre. It crossed Luzon in the small hours on 12 August and weakened into a severe typhoon before entering the South China Sea in the morning. Utor gradually took on a northwesterly track the next day over the northern part of the South China Sea to the south of Hong Kong. It approached the coast of western Guangdong and weakened into a typhoon in the afternoon on 14 August. At 2 p.m., the mean sea-level pressure at Yangjiang fell to 972.9 hPa. Utor then made landfall near Yangjiang and moved across the coast of western Guangdong that evening, weakening into a severe tropical storm at night. It slowed down and turned northwards across Guangxi on 15 August. Utor weakened into a tropical storm in the morning and a tropical depression that afternoon. It finally dissipated over Guangxi the next day.

According to press reports, at least two people were killed and 46 fishermen were missing in the Philippines. Utor also caused a number of landslides. Over 600 houses were damaged and electricity supply to more than 1,000 households interrupted. Three people were killed and five went missing at Maoming and Yangjiang in Guangdong during the passage of Utor, with direct economic losses exceeding 1 800 million RMB. In addition, two people were also killed in Guangxi according to reports.

The Hong Kong Observatory issued the Standby Signal No. 1 at 4:05 p.m. on 12 August when Utor was about 710 km southeast of the territory. As Utor edged steadily towards the coast of western Guangdong, local winds strengthened gradually the next day. The Strong Wind Signal No. 3 was issued at 4:40 a.m. when Utor was about 490 km south-southeast of Hong Kong. Local winds became strong east to northeasterlies in the afternoon, occasionally reaching gale force offshore and on high ground. As Utor continued to move closer to Hong Kong, the No. 8 SE Gale or Storm Signal was issued at 1:40 a.m. on 14 August when Utor was about 310 km to the south-southwest. Local winds became strong to gale force east to southeasterlies during the morning, occasionally reaching storm force on high ground. Utor was closest to Hong Kong around 1 p.m. that day as it passed by about 240 km to the west-southwest. The Strong Wind Signal No.3 was issued at 1:40 p.m. as Utor started to weaken. While gale force winds continued to affect the waters and high ground over the southwestern part of Hong Kong, local winds gradually subsided. As Utor

moved further away and weakened, the Standby Signal No.1 was issued at 1:40 a.m. on 15 August. Local winds remained strong over the offshore waters to the south and west of Hong Kong during the morning as Utor moved slowly and its rainbands continued to affect the Pearl River Estuary. All tropical cyclone warning signals were cancelled at 4:40 p.m. as local winds further subsided.

During the passage of Utor, a maximum hourly mean wind of 75 km/h was recorded at Waglan Island, while maximum gusts of 104 km/h were recorded at Cheung Chau. A maximum sea level (above chart datum) of 2.76 m was recorded at Tsim Bei Tsui, while a maximum storm surge of 0.63 m was recorded at Tai Po Kau. The lowest instantaneous mean sea-level pressures recorded at some selected stations are as follows:-

Station	Lowest instantaneous mean sea-level pressure (hPa)	Date/ Month	Time
Hong Kong Observatory Headquarters	996.8	14/8	3:37 a.m.
Cheung Chau	995.8	14/8	4:42 a.m.
Hong Kong International Airport	996.2	14/8	5:05 a.m.
King's Park	996.8	14/8	3:34 a.m.
Lau Fau Shan	997.0	14/8	3:56 a.m.
Peng Chau	995.6	14/8	4:54 a.m.
Waglan Island	996.3	14/8	3:30 a.m.

The weather in Hong Kong was fine and very hot on 12 August, with a maximum temperature of 34.9 degrees at the Hong Kong Observatory, the highest so far this year. Under the influence of the rainbands of Utor, the weather became cloudy to overcast with heavy squally showers and a few thunderstorms in the next couple of days. The rainbands of Utor continued to bring showers to Hong Kong on 15 August. More than 100 millimetres of rainfall were recorded over parts of the territory during these four days.

In Hong Kong, nine people were injured during the passage of Utor. Two people were rescued and one went missing when diving in the sea areas off Tai Po. There were 415 reports of fallen trees, six reports of minor flooding, as well as a number of reports of collapsed scaffolding or signboards. A glass panel fell from a commercial building in Chai Wan, hitting two private vehicles. Satellite antennas were toppled by winds in Kowloon City and To Kwa Wan, damaging a street lamp and three motorcycles. At the Hong Kong International Airport, 148 flights were cancelled, 663 flights delayed and 32 flights were diverted due to adverse weather. A Guangdong-bound cargo vessel sank in the waters about 80 kilometres southwest of Hong Kong. All 21 crew members were rescued.

Information on the maximum wind, period of strong and gale force winds, daily rainfall and maximum sea level reached in Hong Kong during the passage of Utor is given in Tables 3.5.1 - 3.5.4 respectively. Figures 3.5.1 and 3.5.2 show

respectively the track of Utor and the rainfall distribution for Hong Kong. Figure 3.5.3 shows the winds recorded at various stations in Hong Kong. Charts in figures 3.5.4 show the time traces of wind speed and mean sea-level pressure recorded at Cheung Chau. Figures 3.5.5 and 3.5.6 show respectively a satellite imagery of Utor and the radar imagery of the outer rainbands of Utor.

表 3.5.1　在尤特影響下，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 Utor 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	14/8	11:16	東南偏東	ESE	54	14/8	06:00
中環碼頭	Central Pier	東南偏東	ESE	83	14/8	11:24	東	E	45	13/8	19:00
長洲	Cheung Chau	東南偏東	ESE	104	14/8	06:46	東南偏東	ESE	72	14/8	06:00
長洲泳灘	Cheung Chau Beach	東	E	96	14/8	05:02	東	E	67	14/8	06:00
青洲	Green Island	東北	NE	94	14/8	02:32	東北	NE	59	13/8	19:00
							南	S	59	15/8	04:00
香港國際機場	Hong Kong International Airport	南	S	90	15/8	07:25	南	S	51	15/8	08:00
啟德	Kai Tak	東北	NE	79	13/8	15:10	東南偏東	ESE	43	14/8	14:00
京士柏	King's Park	東北偏東	ENE	76	13/8	15:17	東南偏東	ESE	31	14/8	06:00
流浮山	Lau Fau Shan	東南	SE	65	14/8	11:24	東南偏南	SSE	38	15/8	03:00
		東南偏南	SSE	65	15/8	01:57					
昂坪	Ngong Ping	東	E	142	14/8	11:14	東	E	101	14/8	05:00
北角	North Point	東	E	75	14/8	00:41	東	E	40	14/8	01:00
坪洲	Peng Chau	東南偏東	ESE	83	14/8	04:54	東	E	51	14/8	03:00
平洲	Ping Chau	東南	SE	45	14/8	22:30	東	E	13	14/8	01:00
							東南	SE	13	15/8	01:00
西貢	Sai Kung	東南偏南	SSE	77	14/8	15:36	東南偏南	SSE	43	14/8	14:00
沙洲	Sha Chau	東南	SE	88	14/8	07:28	南	S	58	15/8	03:00
沙螺灣	Sha Lo Wan	東南偏東	ESE	88	14/8	05:37	東	E	38	14/8	05:00
沙田	Sha Tin	東北偏東	ENE	70	14/8	00:09	東南	SE	25	14/8	18:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	90	14/8	05:37	東	E	49	14/8	01:00
打鼓嶺	Ta Kwu Ling	東	E	83	14/8	05:40	東	E	25	14/8	06:00
大美督	Tai Mei Tuk	東	E	101	14/8	05:31	東	E	58	14/8	02:00
大帽山	Tai Mo Shan	東南偏東	ESE	130	14/8	02:47	東南	SE	87	14/8	13:00
大埔滘	Tai Po Kau	東南	SE	76	14/8	14:32	東	E	43	14/8	01:00
塔門	Tap Mun	東南	SE	83	14/8	05:24	東南	SE	41	14/8	10:00
大老山	Tate's Cairn	東南	SE	112	14/8	02:16	東南	SE	72	14/8	03:00
將軍澳	Tseung Kwan O	東南	SE	63	14/8	14:29	東南偏東	ESE	20	14/8	10:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	68	15/8	03:40	東南	SE	38	15/8	04:00
屯門政府合署	Tuen Mun Government Offices	東南偏東	ESE	72	14/8	09:46	東南偏南	SSE	31	15/8	03:00
橫瀾島	Waglan Island	東南	SE	96	14/8	05:52	東北偏東	ENE	75	13/8	17:00
濕地公園	Wetland Park	東南	SE	54	14/8	15:34	東南	SE	23	14/8	14:00
黃竹坑	Wong Chuk Hang	東南	SE	85	14/8	11:20	東	E	31	13/8	22:00

石崗 - 沒有資料　Shek Kong - data not available

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

Table 3.5.2　Periods during which sustained strong and gale force winds were reached among the eight reference anemometers in the tropical cyclone warning system when warning signals for Utor were in force

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 Start time strong wind speed* was reached		最後達到強風*時間 End time strong wind speed* was reached		最初達到烈風#時間 Start time gale force wind speed# was reached		最後達到烈風#時間 End 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	13/8	09:31	15/8	15:08	13/8	22:46	14/8	16:07
香港國際機場	Hong Kong International Airport	13/8	20:40	15/8	13:14	14/8	06:00	14/8	06:00
啟德	Kai Tak	14/8	05:36	14/8	18:46	-			
流浮山	Lau Fau Shan	15/8	02:20	15/8	02:50	-			
西貢	Sai Kung	13/8	15:05	15/8	00:38	-			
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	15/8	03:40	15/8	03:46	-			

沙田及打鼓嶺的持續風力未達到強風程度。
The sustained wind speed did not attain strong force at Sha Tin and Ta Kwu Ling.

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

* 十分鐘平均風速達每小時 41-62 公里
* 10-minute mean wind speed of 41- 62 km/h

十分鐘平均風速達每小時 63-87 公里
10-minute mean wind speed of 63- 87 km/h

註:　本表列出持續風力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 winds or gale 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　　尤特影響香港期間，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 Utor

站 (參閱圖 3.5.2) Station (See Fig. 3.5.2)			八月十二日 12 Aug	八月十三日 13 Aug	八月十四日 14 Aug	八月十五日 15 Aug	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			微量 Trace	48.4	59.4	0.7	108.5
香港國際機場 Hong Kong International Airport (HKA)			0.0	17.2	27.5	5.8	50.5
長洲 Cheung Chau (CCH)			0.0	30.5	8.0	2.0	40.5
N05	粉嶺	Fanling	0.0	35.0	[52.5]	8.5	96.0
N13	糧船灣	High Island	0.0	30.5	[45.0]	6.0	81.5
H23	香港仔	Aberdeen	0.0	50.0	[25.0]	1.5	76.5
K04	佐敦谷	Jordan Valley	0.0	47.5	[47.5]	5.5	100.5
N06	葵涌	Kwai Chung	0.0	37.5	[51.5]	8.0	97.0
H12	半山區	Mid Levels	0.0	53.0	[34.0]	1.5	88.5
N09	沙田	Sha Tin	0.0	46.0	[94.5]	11.5	152.0
H19	筲箕灣	Shau Kei Wan	0.0	59.0	[29.5]	1.5	90.0
SEK	石崗	Shek Kong	0.0	47.5	73.0	10.0	130.5
K06	蘇屋邨	So Uk Estate	0.0	41.5	[54.0]	2.5	98.0
R31	大美督	Tai Mei Tuk	0.0	44.5	71.5	7.0	123.0
R21	踏石角	Tap Shek Kok	0.0	19.5	32.0	3.0	54.5
N17	東涌	Tung Chung	0.0	24.0	[38.5]	12.0	74.5
R27	元朗	Yuen Long	0.0	29.5	50.5	9.0	89.0

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

表 3.5.4　　尤特影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.5.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Utor

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	2.35	14/8	02:13	0.45	14/8	05:05
石壁	Shek Pik	2.51	14/8	02:16	0.56	14/8	06:57
大廟灣	Tai Miu Wan	2.21	14/8	02:14	0.36	14/8	04:52
大埔滘	Tai Po Kau	2.40	14/8	03:18	0.63	14/8	05:33
尖鼻咀	Tsim Bei Tsui	2.76	14/8	02:07	0.52	14/8	06:54
橫瀾島	Waglan Island	2.35	14/8	02:35	0.36	14/8	02:35

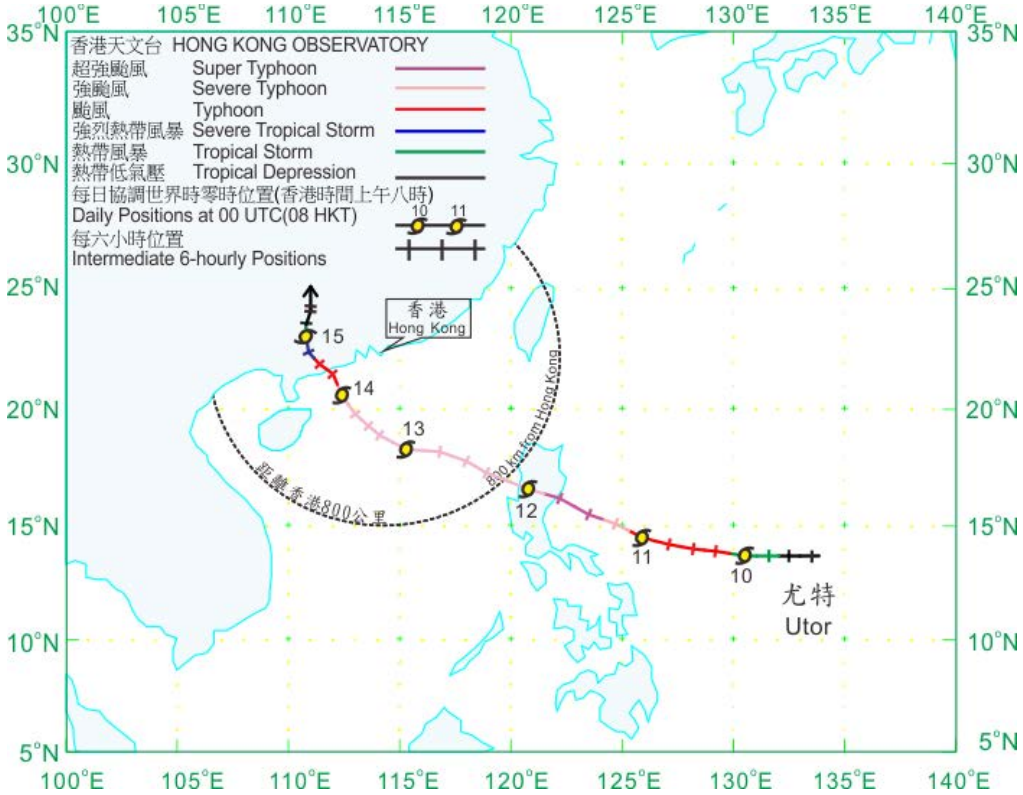


圖 3.5.1a 尤特 (1311) 二零一三年八月九日至十六日的路徑圖。

Figure 3.5.1a Track of Utor (1311) for 9 -16 August 2013.

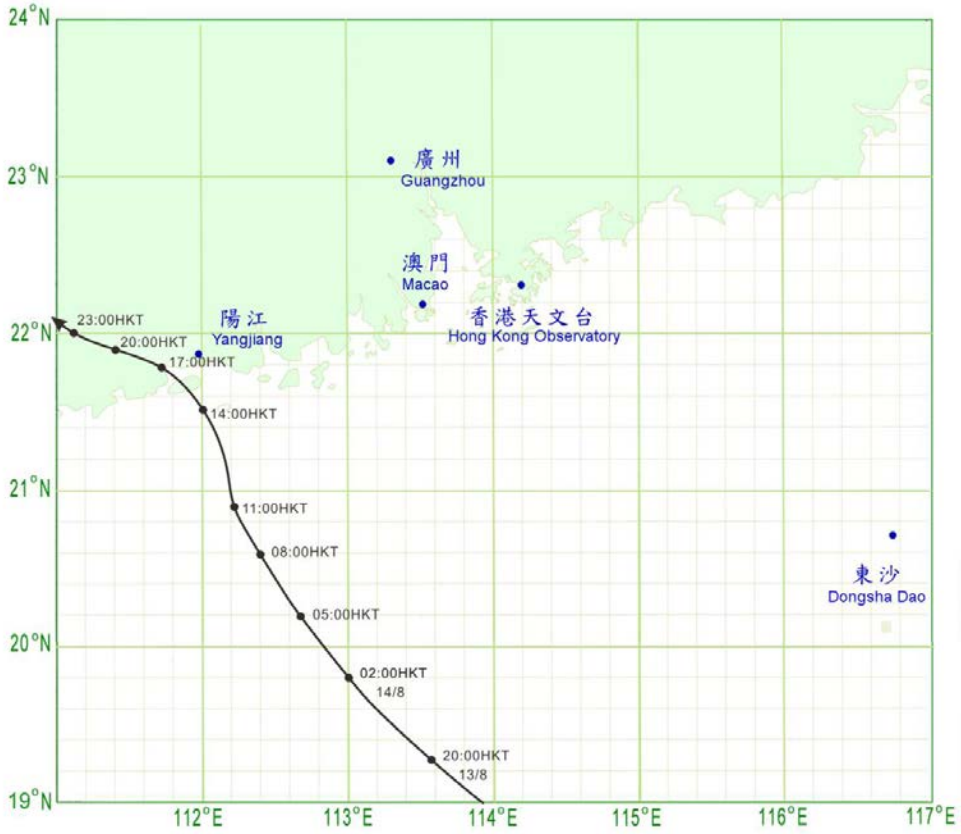


圖 3.5.1b 尤特 (1311) 接近香港時的路徑圖。

Figure 3.5.1b Track of Utor (1311) near Hong Kong.

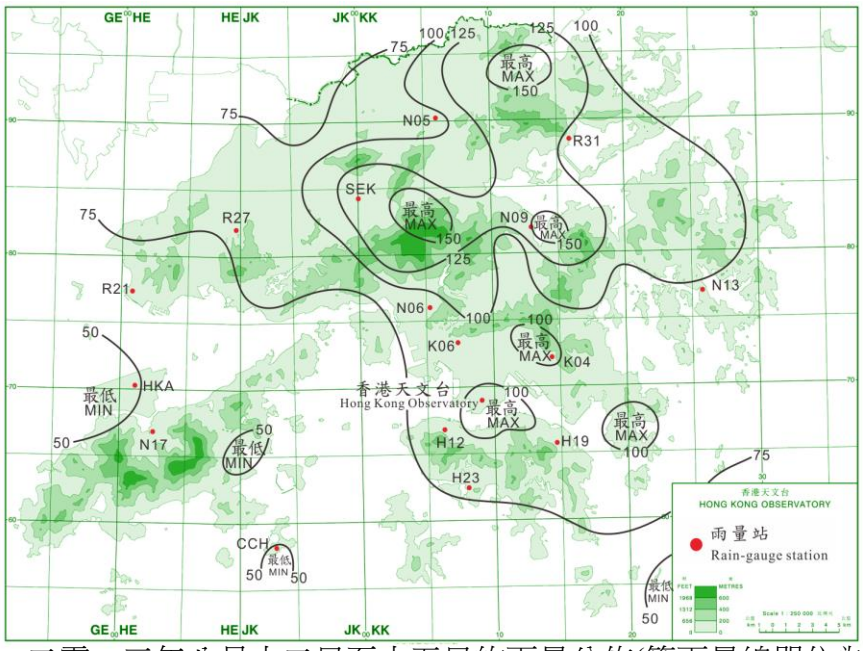
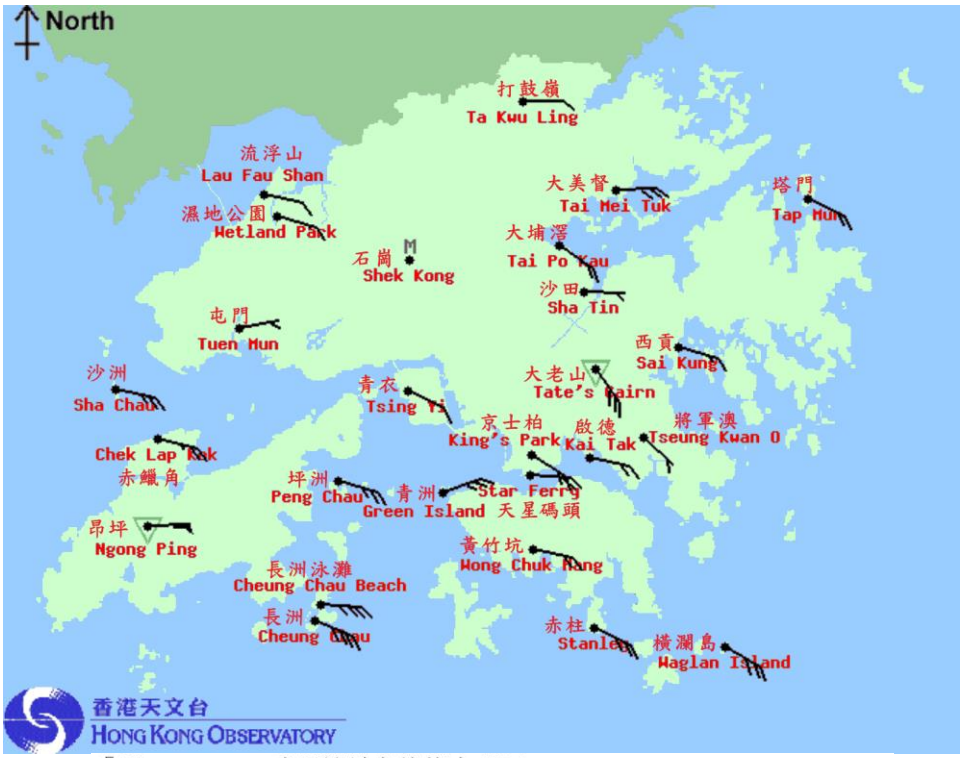


圖 3.5.2 二零一三年八月十二日至十五日的雨量分佈(等雨量線單位為毫米)。

Figure 3.5.2 Rainfall distribution for 12 - 15 August 2013 (isohyets are in millimetres).



「M」 ：表示該站在維修中 Maintenance

「 」 ：表示東風，風速每小時 18 公里 Easterly wind of 18 km/h

「 」 ：表示東風，風速每小時 90 公里 Easterly wind of 90 km/h

「V」 ：表示該站位於離平均海平面 500 米以上的地方
Station higher than 500 metres above mean sea level

圖 3.5.3 二零一三年八月十四日上午 5 時香港各站錄得的風向和風速。

Figure 3.5.3 Winds recorded at various stations in Hong Kong at 5:00 a.m. on 14 August 2013.

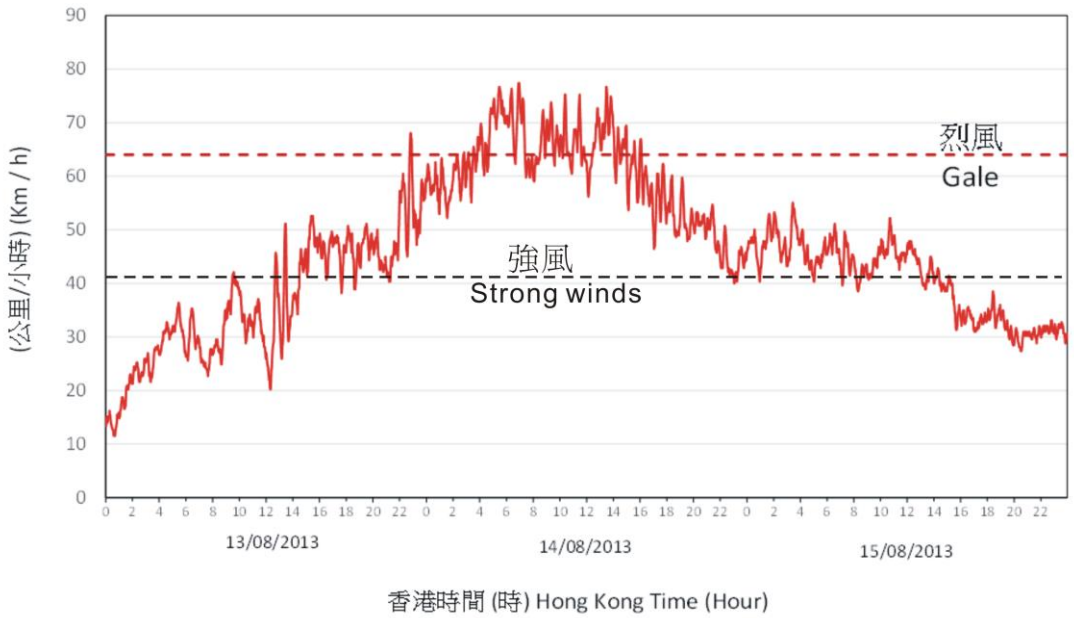


圖 3.5.4a　二零一三年八月十三日至十五日長洲自動氣象站錄得的十分鐘平均風速。
Figure 3.5.4a　Trace of 10-minute mean wind speed recorded at Cheung Chau automatic weather station on 13 - 15 August 2013.

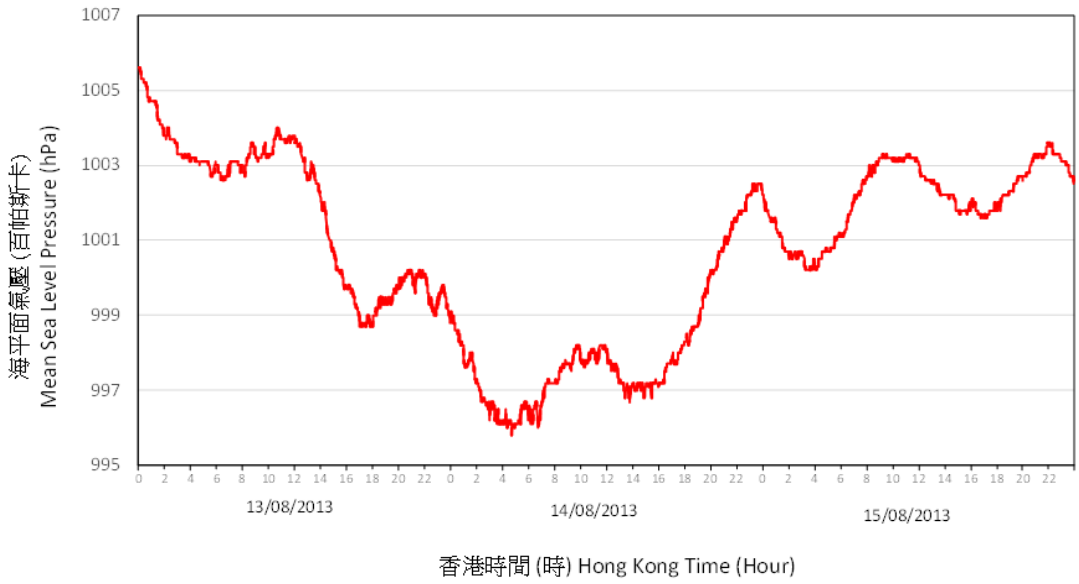


圖 3.5.4b　二零一三年八月十三日至十五日長洲自動氣象站錄得的海平面氣壓。
Figure 3.5.4b　Trace of mean sea-level pressure recorded at Cheung Chau automatic weather station on 13 - 15 August 2013.

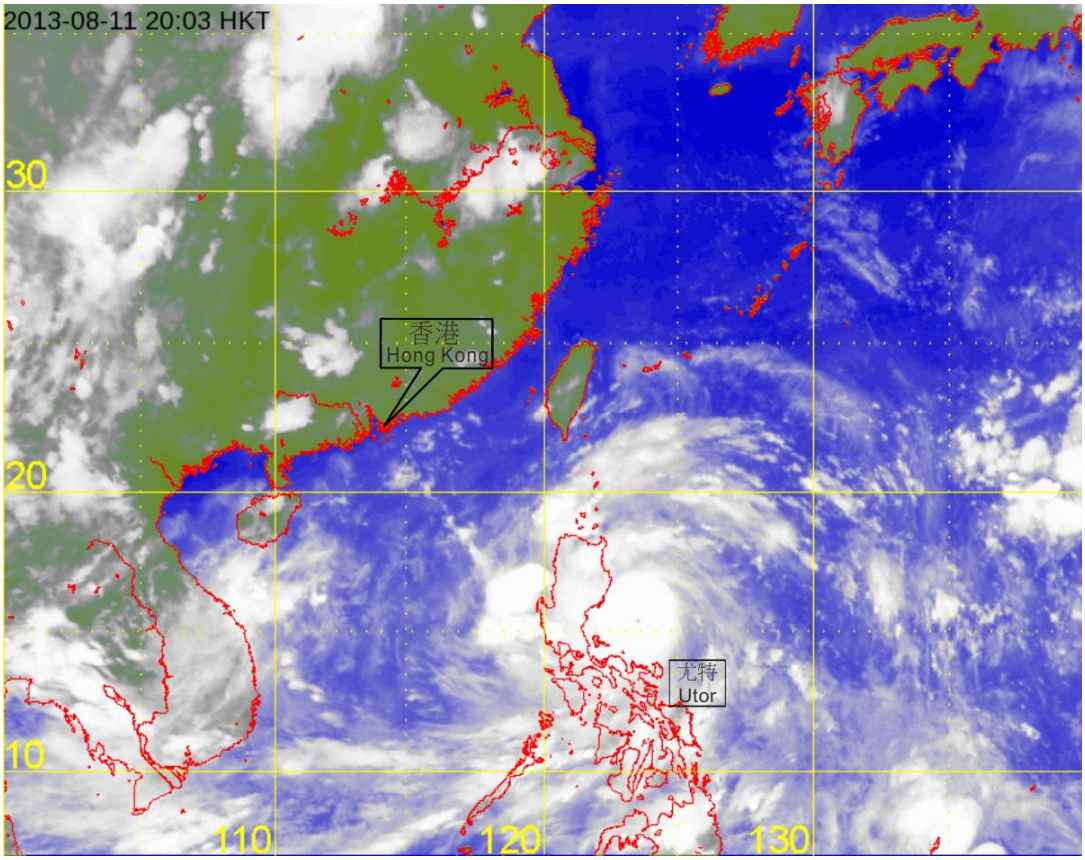


圖 3.5.5　超強颱風尤特在二零一三年八月十一日下午 8 時的紅外線衛星圖片，當時尤特達到其最高強度，中心附近最高持續風速估計為每小時 195 公里。

Figure 3.5.5　Infra-red satellite imagery at 8 p.m. on 11 August 2013 as Super Typhoon Utor reached its peak intensity with estimated maximum sustained winds of 195 kilometres per hour near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

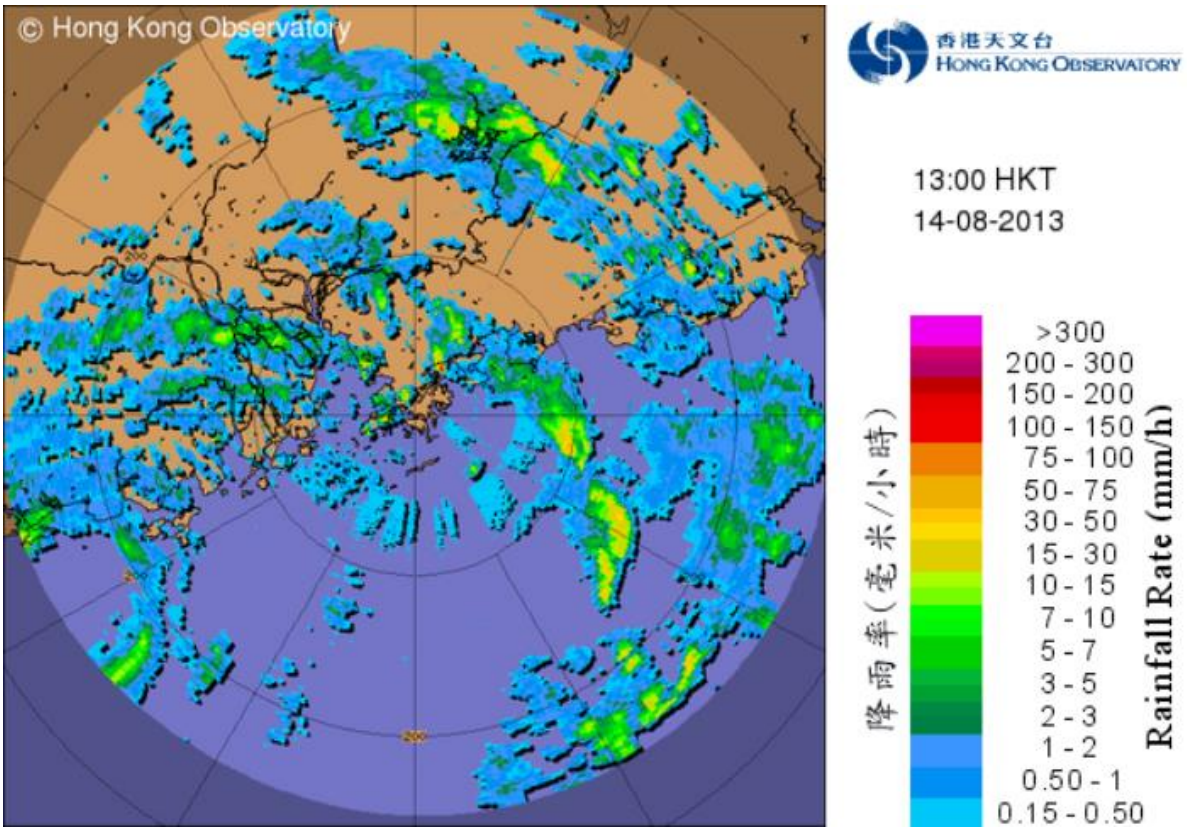


圖 3.5.6　二零一三年八月十四日下午一時的雷達回波圖像，強颱風尤特最接近本港的一刻，風眼集結在本港之西南偏西約 240 公里。

Figure 3.5.6　Image of radar echoes at 1 p.m. on 14 August 2013, when Severe Typhoon Utor was closest to Hong Kong, with its eye about 240 km west-southwest of Hong Kong.

3.6 超強颱風天兔 (1319)： 二零一三年九月十七日至二十三日

天兔是香港天文台在二零一三年第六個需要發出熱帶氣旋警告信號的熱帶氣旋，也是今年第二個需要發出八號烈風或暴風信號的熱帶氣旋。天兔也是二零一三年影響香港最強的熱帶氣旋。

熱帶低氣壓天兔於九月十七日在馬尼拉東北偏東約1 240公里的北太平洋西部上空形成，並大致向西移動，下午增強為熱帶風暴，翌日發展成為颱風。天兔於九月十九日採取西北途徑移動，並在呂宋以東的太平洋上逐漸增強為超強颱風，翌日達到其最高強度，中心附近最高持續風力為每小時205公里。天兔於九月二十一日向西北偏西方向移動，時速約17公里，橫過呂宋海峽。上午五時，呂宋海峽上巴旦島錄得的持續風速為每小時137公里，而海平面氣壓則在三小時後下降至939.6百帕斯卡。天兔於傍晚進入南海，並減弱為強颱風，於九月二十二日橫過南海東北部，時速約20公里，傍晚在香港東北偏東約160公里汕尾附近登陸，晚上橫過廣東沿岸地區。天兔於翌日早上迅速減弱為熱帶低氣壓，下午在廣西內陸消散。

根據報章報導，天兔吹襲廣東期間，造成29人死亡、一人失蹤、超過922萬人受災、直接經濟損失超過177億元人民幣。其中汕頭有海水倒灌，多處嚴重水浸，市內更有大樹倒塌。汕尾交通、通訊、供電和供水中斷，其中停電面積超過百分之六十五。廣東省東部有超過152 000公頃農作物受災、14 794間房屋倒塌，另32 879間房屋嚴重受損。澳門內港則發生輕微海水倒灌。

香港天文台於九月二十一日上午10時40分發出一號戒備信號，當時天兔位於香港之東南偏東約760公里。當日本港吹和緩至清勁北至西北風，高地間中吹強風。隨著天兔穩定地移向廣東沿岸，天文台在晚上11時40分發出三號強風信號，當時天兔位於香港之東南偏東約530公里。九月二十二日早上高地風勢間中達烈風程度，而本港大部分地區則受到地形屏蔽。下午本港風勢增強，離岸吹強烈西北風，高地風勢達烈風程度。天文台在下午6時40分發出八號西北烈風或暴風信號，當時天兔位於香港之東北偏東約160公里。晚上維多利亞港及本港離岸海域吹烈風程度西至西北風，高地風勢間中達暴風至颶風程度。天兔於午夜左右最接近香港，並在香港天文台以北約80公里處掠過。九月二十三日凌晨本港轉吹西南風，天文台在凌晨12時25分改發八號西南烈風或暴風信號。黎明前香港南部海域及高地繼續吹烈風，隨後逐漸減弱。天文台在上午9時20分改發三號強風信號。隨著天兔在內陸顯著減弱及本港風勢進一步緩和，天文台於上午10時25分取消所有熱帶氣旋警告信號。

天兔吹襲期間，橫瀾島錄得的最高每小時平均風速為87公里，而長洲更錄得每小時128公里的最高陣風。最高潮位3.38米(海圖基準面以上)在尖鼻咀錄得，而最大風暴潮0.99米則在大埔滘錄得。各站錄得的最低瞬時海平面氣壓如下：—

站	最低瞬時海平面氣壓(百帕斯卡)	日期/月份	時間
香港天文台總部	985.7	22/9	下午 10 時 06 分
長洲	985.6	22/9	下午 9 時 19 分
香港國際機場	987.5	22/9	下午 10 時 54 分
京士柏	985.1	22/9	下午10時16分
流浮山	984.8	22/9	下午11時22分
坪洲	985.0	22/9	下午10時07分
沙田	984.2	22/9	下午10時16分
打鼓嶺	983.3	22/9	下午11時07分
橫瀾島	983.9	22/9	下午 8 時 16 分

九月二十一日本港天氣酷熱及乾燥，大部分地區氣溫上升至34度以上。翌日本港多雲及有狂風驟雨，晚上雨勢頗大。九月二十三日早上本港有狂風大驟雨。隨著天兔在內陸顯著減弱及遠離本港，日間雨勢減弱。這三天期間，本港大部分地區錄得超過100毫米的雨量，新界及大嶼山部分地區的雨量更超過150毫米。

天兔吹襲香港期間有17人受傷，另有900棵樹木倒塌及多宗高空墜物意外。屯門有一棵大樹塌下，一輛客貨車及兩部私家車受損。大埔有一住所屋頂的衛星天線和水喉疑被吹起的雜物擊中損毀，鄰近的三輛私家車亦受損。屯門及大角咀分別有大廈外牆維修工作台及外牆批盪墜下，前者導致七輛貨車損毀。天兔引致的風暴潮令本港部分低窪地區出現一些輕微水浸，包括流浮山、屯門、大埔及深水埗。一輛私家車在流浮山被洪水圍困，車上兩人需要消防員救出。屯門的水浸亦令到交通一度受阻。香港國際機場有215班航班取消和472班航班延誤。另外有四班前往澳門的航班需要轉飛其它地方。

表3.6.1- 3.6.4 分別是天兔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程度的時段、香港的日雨量及最高潮位資料。圖3.6.1 - 3.6.2分別為天兔的路徑圖及本港的雨量分佈圖。圖3.6.3顯示香港各站錄得的風向和風速。圖3.6.4顯示橫瀾島錄得的風速及海平面氣壓圖。圖3.6.5及3.6.6 分別為天兔的衛星圖像及雷達圖像。

3.6 Super Typhoon Usagi (1319): 17 - 23 September 2013

Usagi was the sixth tropical cyclone necessitating the issuance of tropical cyclone warning signals by the Hong Kong Observatory in 2013. It is also the second tropical cyclone necessitating the issuance of No. 8 Gale or Storm Signal in the year. Usagi was the most intense tropical cyclone affecting Hong Kong in 2013.

Usagi formed as a tropical depression over the western North Pacific about 1 240 km east-northeast of Manila on 17 September. Moving generally westwards, it intensified into a tropical storm that afternoon and further strengthened into a typhoon the next day. It took on a northwesterly track and intensified further into a super typhoon over the Pacific to the east of Luzon on 19 September, reaching its peak intensity with estimated sustained winds of 205 km/h near its centre the next day. Usagi moved west-northwestwards at about 17 km/h across the Luzon Strait on 21 September. At 5 a.m. sustained wind of 137 km/h was reported at the island station of Batan over the Luzon Strait, with the mean sea-level pressure falling to 939.6 hPa three hours later. Usagi entered the South China Sea and weakened into a severe typhoon during the evening. It moved across the northeastern part of the South China Sea at about 20 km/h on 22 September, made landfall near Shanwei about 160 km east-northeast of Hong Kong that evening, and moved across the coastal areas of Guangdong during the night. Usagi weakened rapidly into a tropical depression the next morning and dissipated over the inland areas of Guangxi in the afternoon.

According to press reports, 29 people were killed, one person was reported missing and over 9.22 million people were affected in Guangdong during the passage of Usagi. The direct economic loss exceeded 17.7 billion RMB. Backflow of seawater occurred in Shantou with serious flooding in many places, and large trees were toppled in the city. In Shanwei, there were interruptions to traffic, telecommunication links, electricity and water supply, with over 65 percent of the area without electricity. Over 152 000 hectares of vegetation were damaged, 14 794 houses collapsed and another 32 879 houses were severely damaged in eastern Guangdong. In Macao, there was minor backflow of seawater inside the harbour.

The Hong Kong Observatory issued the Standby Signal No. 1 at 10:40 a.m. on 21 September when Usagi was about 760 km east-southeast of the territory. Local winds were moderate to fresh north to northwesterlies, occasionally strong on high ground that day. As Usagi edged steadily towards the coast of Guangdong, the Strong Wind Signal No. 3 was issued at 11:40 p.m. when Usagi was about 530 km to the east-southeast. Winds occasionally reached gale force on high ground in the morning on 22 September, but most of the territory remained relatively sheltered. Winds strengthened during the afternoon and became strong northwesterlies offshore, reaching gale force on high ground. The No. 8 NW Gale or Storm Signal was issued at 6:40 p.m. when Usagi was about 160 km to the east-northeast of Hong Kong. West to northwesterly gales affected the Victoria Harbour and the offshore waters of Hong Kong that night, reaching storm to hurricane force on high ground at times. Usagi was closest to Hong Kong around midnight, passing about 80 km to the north of the Hong

Kong Observatory. Winds turned to southwesterly in the small hours on 23 September and the No. 8 SW Gale or Storm Signal was issued at 12:25 a.m. Gale force winds persisted over the waters to the south of Hong Kong and on high ground before dawn. The gales gradually subsided in the morning and the Strong Wind Signal No. 3 was issued at 9:20 a.m. All signals were cancelled at 10:25 a.m. as Usagi weakened significantly inland and local winds subsided further.

During the passage of Usagi, a maximum hourly mean wind of 87 km/h was recorded at Waglan Island, while a maximum gust of 128 km/h was recorded at Cheung Chau. A maximum sea level of 3.38 m (above chart datum) was recorded at Tsim Bei Tsui, while a maximum storm surge of 0.99 m was recorded at Tai Po Kau. The lowest instantaneous mean sea-level pressures recorded at some selected stations are as follows:-

Station	Lowest instantaneous mean sea-level pressure (hPa)	Date/ Month	Time
Hong Kong Observatory Headquarters	985.7	22/9	10:06 p.m.
Cheung Chau	985.6	22/9	9:19 p.m.
Hong Kong International Airport	987.5	22/9	10:54 p.m.
King's Park	985.1	22/9	10:16 p.m.
Lau Fau Shan	984.8	22/9	11:22 p.m.
Peng Chau	985.0	22/9	10:07 p.m.
Sha Tin	984.2	22/9	10:16 p.m.
Ta Kwu Ling	983.3	22/9	11:07 p.m.
Waglan Island	983.9	22/9	8:16 p.m.

The weather in Hong Kong on 21 September was very hot and dry with the maximum temperature exceeding 34 degrees over most parts of the territory. The weather turned cloudy the next day with squally showers, becoming heavy at night. Heavy squally showers continued to affect Hong Kong in the morning on 23 September. Rain eased off during the day as Usagi weakened significantly inland and moved away from the territory. More than 100 millimetres of rainfall were recorded over most parts of the territory during the three-day period, with rainfall in parts of the New Territories and Lantau Island exceeding 150 millimetres.

In Hong Kong, 17 people were injured during the passage of Usagi, 900 trees were blown down and many incidents of fallen objects were reported. A van and two private vehicles were damaged by a fallen tree in Tuen Mun. In Tai Po, a satellite receiver dish and water pipe on the rooftop of a building were damaged by loose objects. Three vehicles nearby were also damaged during the incident. A maintenance workbench outside a building and wall plaster outside another building fell off in Tuen Mun and Tai Kok Tsui respectively, damaging seven lorries in the former incident. Storm surge induced by Usagi caused minor flooding in some low lying areas in Hong Kong, including Lau Fau Shan, Tuen Mun, Tai Po and Sham Shui Po. A private vehicle was trapped by flood waters in Lau Fau Shan, and two people inside the

vehicle had to be rescued by firemen. Flood waters in Tuen Mun interrupted traffic for a period of time. At the Hong Kong International Airport, 215 flights were cancelled and 472 flights were delayed. Four flights bound for Macao were diverted to other places due to the passage of Usagi.

Information on the maximum wind, period of strong and gale force winds, daily rainfall and maximum sea level reached in Hong Kong during the passage of Usagi is given in Tables 3.6.1 - 3.6.4 respectively. Figures 3.6.1 - 3.6.2 show respectively the track of Usagi and the rainfall distribution for Hong Kong. Figure 3.6.3 shows the winds recorded at various stations in Hong Kong. Charts in figures 3.6.4 shows the time traces of wind speed and mean sea-level pressure recroded at Waglan Island. Figures 3.6.5 and 3.6.6 show respectively the satellite imageries and the radar imagery of Usagi.

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

Table 3.6.1　Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Usagi 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
中環碼頭	Central Pier	西	W	94	22/9	22:33	西	W	51	22/9	22:00
長洲	Cheung Chau	西北偏西	WNW	128	22/9	21:34	西北偏西	WNW	83	22/9	22:00
長洲泳灘	Cheung Chau Beach	西	W	112	22/9	21:34	西	W	62	22/9	22:00
青洲	Green Island	西北	NW	103	22/9	22:07	西南偏西	WSW	72	23/9	02:00
香港國際機場	Hong Kong International Airport	西南偏南	SSW	87	23/9	01:14	西	W	65	22/9	23:00
啟德	Kai Tak	西南偏西	WSW	83	22/9	23:11	西	W	47	22/9	21:00
京士柏	King's Park	西北偏西	WNW	88	22/9	23:25	西北偏西	WNW	34	22/9	23:00
流浮山	Lau Fau Shan	西北偏西	WNW	110	22/9	21:14	西北偏西	WNW	65	22/9	21:00
昂坪	Ngong Ping	西	W	133	23/9	00:03	西南偏西	WSW	83	23/9	02:00
北角	North Point	西南偏西	WSW	99	22/9	22:21	西	W	63	22/9	23:00
坪洲	Peng Chau	西北偏西	WNW	101	22/9	21:02	西北	NW	59	22/9	20:00
平洲	Ping Chau	西	W	94	22/9	22:12	西	W	51	22/9	23:00
西貢	Sai Kung	西北偏西	WNW	88	22/9	18:58	西北	NW	34	22/9	21:00
沙洲	Sha Chau	西南偏南	SSW	90	23/9	02:51	西南偏南	SSW	56	23/9	03:00
沙螺灣	Sha Lo Wan	西南	SW	96	23/9	01:07	西南偏西	WSW	41	23/9	00:00
沙田	Sha Tin	西南	SW	68	23/9	00:13	西南	SW	31	23/9	01:00
石崗	Shek Kong	西南	SW	62	22/9	23:29	西南偏西	WSW	25	23/9	00:00
九龍天星碼頭	Star Ferry (Kowloon)	西	W	101	23/9	01:48	西	W	72	22/9	23:00
打鼓嶺	Ta Kwu Ling	西南偏西	WSW	68	22/9	23:23	西南偏西	WSW	31	23/9	00:00
大美督	Tai Mei Tuk	西南偏西	WSW	121	22/9	20:09	西	W	62	22/9	23:00
大帽山	Tai Mo Shan	西	W	155	22/9	22:43	西	W	118	22/9	23:00
大埔滘	Tai Po Kau	西北偏西	WNW	103	22/9	22:21	西	W	52	22/9	23:00
塔門	Tap Mun	西	W	115	22/9	21:06	西	W	68	22/9	22:00
大老山	Tate's Cairn	西北偏北	NNW	140	22/9	20:13	西北	NW	79	22/9	21:00
將軍澳	Tseung Kwan O	西北	NW	58	22/9	18:43	西	W	19	22/9	21:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	-	-	90	22/9	21:37	-	-	49	22/9	22:00
屯門政府合署	Tuen Mun Government Offices	西北	NW	112	22/9	22:05	西北偏西	WNW	40	22/9	23:00
橫瀾島	Waglan Island	西南偏西	WSW	110	22/9	23:50	西南偏西	WSW	87	23/9	00:00
濕地公園	Wetland Park	西北偏西	WNW	65	22/9	22:23	西北	NW	25	22/9	19:00
黃竹坑	Wong Chuk Hang	西北偏西	WNW	99	22/9	21:11	西北偏西	WNW	34	22/9	22:00

黃麻角(赤柱)　- 沒有資料 Bluff Head (Stanley) - data not available

表 3.6.2　在天兔影響下，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 3.6.2　Periods during which sustained strong and gale force winds were reached among the eight reference anemometers in the tropical cyclone warning system when warning signals for Usagi were in force.

站 (參閱圖 1.1) Station (See Fig. 1.1)		最初達到強風*時間 Start time strong wind speed* was reached		最後達到強風*時間 End time strong wind speed* was reached		最初達到烈風#時間 Start time gale force wind speed# was reached		最後達到烈風#時間 End 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	22/9	13:57	23/9	05:33	22/9	18:17	22/9	23:47
香港國際機場	Hong Kong International Airport	22/9	15:47	23/9	05:48	22/9	20:26	23/9	01:34
啟德	Kai Tak	22/9	17:08	22/9	23:20	-			
流浮山	Lau Fau Shan	22/9	17:02	23/9	04:15	22/9	19:31	23/9	01:11
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	22/9	20:03	23/9	00:39	-			

西貢、沙田及打鼓嶺的持續風力未達到強風程度。
The sustained wind speed did not attain strong force at Sai Kung, Sha Tin and Ta Kwu Ling.

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

* 十分鐘平均風速達每小時 41-62 公里
* 10-minute mean wind speed of 41- 62 km/h

十分鐘平均風速達每小時 63-87 公里
10-minute mean wind speed of 63- 87 km/h

註:　本表列出持續風力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 winds or gale winds were recorded. Note that the winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.6.3　天兔影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.6.3　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Usagi

站 (參閱圖 3.6.2) Station (See Fig. 3.6.2)			九月二十一日 21 Sep	九月二十二日 22 Sep	九月二十三日 23 Sep	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			0.0	30.6	56.9	87.5
香港國際機場 Hong Kong International Airport (HKA)			0.0	17.6	88.5	106.1
長洲 Cheung Chau (CCH)			0.0	23.5	57.0	80.5
H23	香港仔	Aberdeen	0.0	12.0	50.0	62.0
N05	粉嶺	Fanling	0.0	38.5	88.5	127.0
N13	糧船灣	High Island	0.0	60.5	29.0	89.5
K04	佐敦谷	Jordan Valley	0.0	49.5	66.5	116.0
N06	葵涌	Kwai Chung	0.0	66.0	108.0	174.0
H12	半山區	Mid Levels	0.0	31.0	52.0	83.0
N09	沙田	Sha Tin	0.0	56.5	94.0	150.5
H19	筲箕灣	Shau Kei Wan	0.0	32.5	60.0	92.5
SEK	石崗	Shek Kong	0.0	45.5	56.0	101.5
K06	蘇屋邨	So Uk Estate	0.0	53.0	71.5	124.5
R31	大美督	Tai Mei Tuk	0.0	59.5	57.5	117.0
R21	踏石角	Tap Shek Kok	0.0	21.5	52.5	74.0
N17	東涌	Tung Chung	0.0	29.5	124.0	153.5
R27	元朗	Yuen Long	0.0	39.0	72.0	111.0

表 3.6.4　天兔影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.6.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Usagi

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	2.81	22/9	22:58	0.62	22/9	22:58
石壁	Shek Pik	2.78	22/9	23:24	0.53	22/9	11:53
大廟灣	Tai Miu Wan	2.69	22/9	22:55	0.59	22/9	22:55
大埔滘	Tai Po Kau	3.16	22/9	23:32	0.99	22/9	23:32
尖鼻咀	Tsim Bei Tsui	3.38	23/9	00:28	0.97	23/9	00:45
橫瀾島	Waglan Island	2.91	22/9	22:56	0.65	22/9	22:56

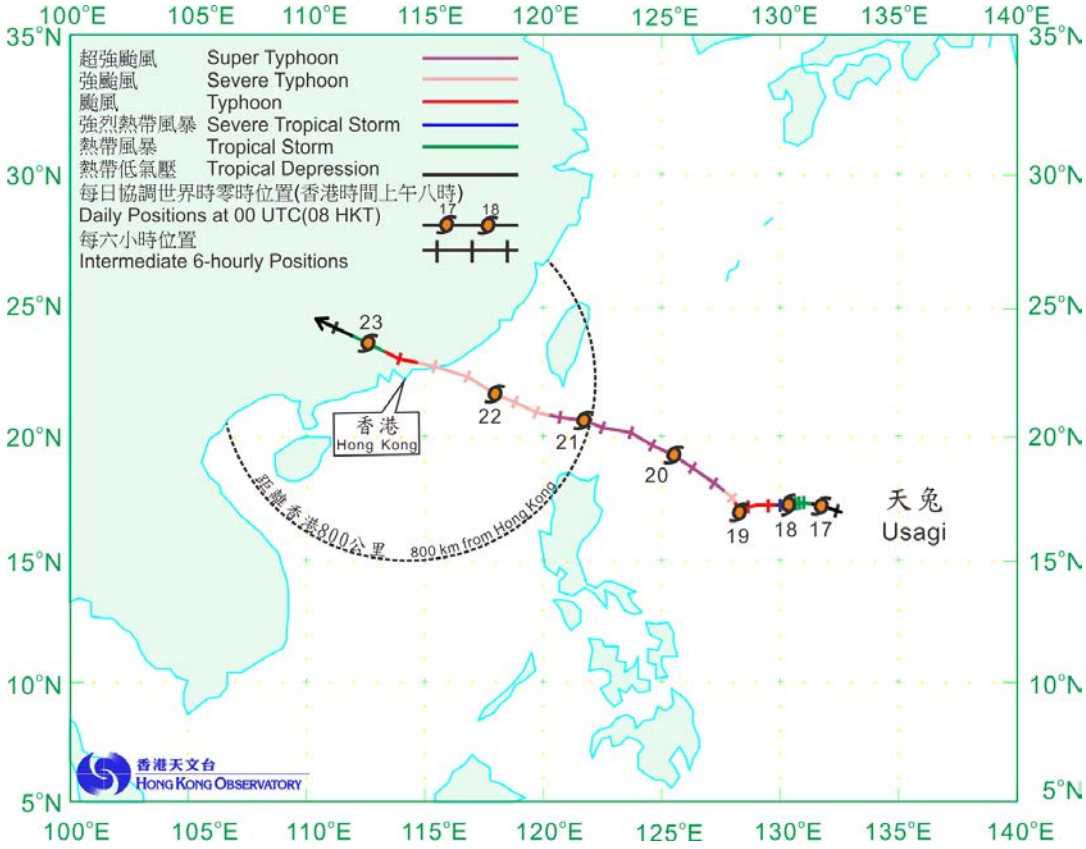


圖 3.6.1a 天兔 (1319) 二零一三年九月十七日至二十三日的路徑圖。
Figure 3.6.1a Track of Usagi (1319) for 17 - 23 September 2013.

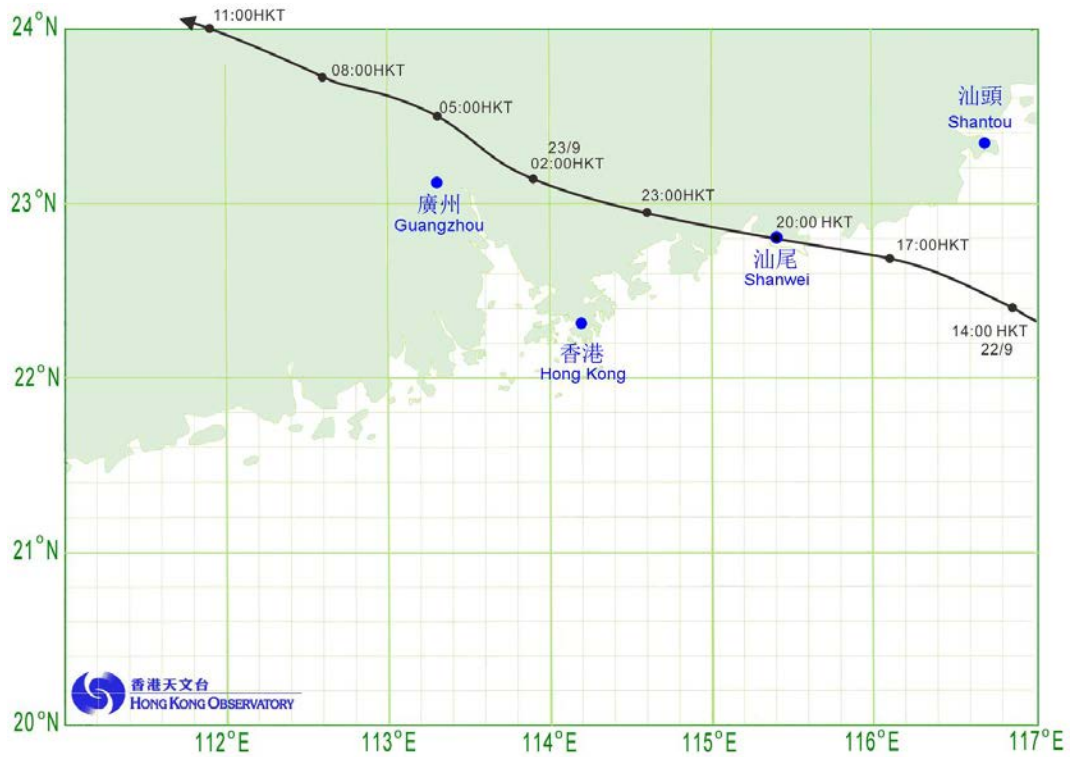


圖 3.6.1b 天兔 (1319) 接近香港時的路徑圖。
Figure 3.6.1b Track of Usagi (1319) near Hong Kong.

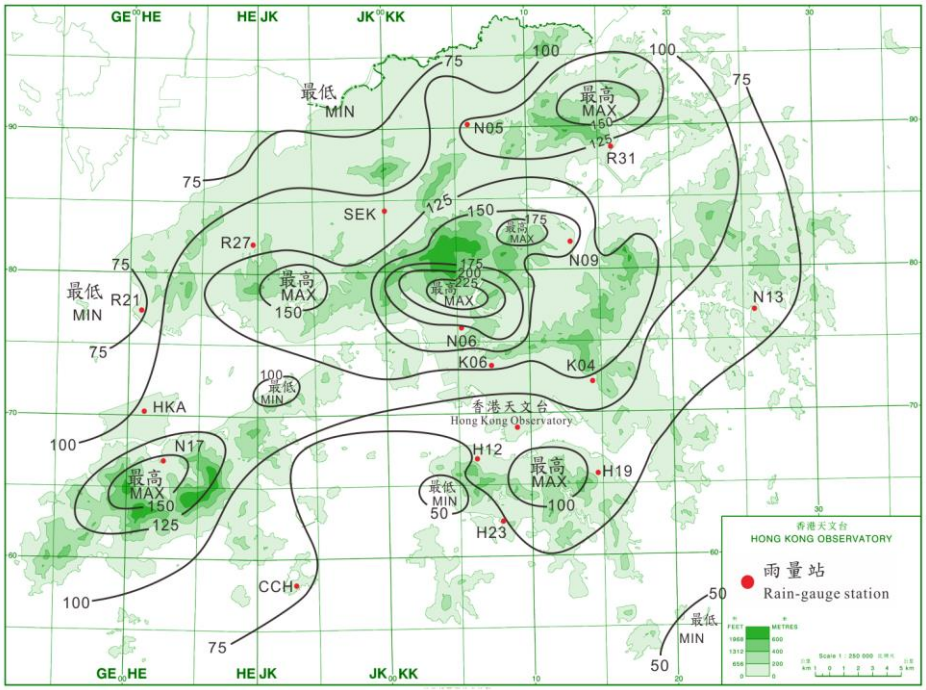


圖 3.6.2　二零一三年九月二十一日至二十三日的雨量分佈(等雨量線單位為毫米)。

Figure 3.6.2　Rainfall distribution for 21 - 23 September 2013 (isohyets are in millimetres).

「M」　：表示該站在維修中 Maintenance

「 」　：表示東風，風速每小時 18 公里 Easterly wind of 18 km/h

「 」　：表示東風，風速每小時 90 公里 Easterly wind of 90 km/h

「V」　：表示該站位於離平均海平面 500 米以上的地方
Station higher than 500 metres above mean sea level

圖 3.6.3　二零一三年九月二十二日下午9時香港各站錄得的風向和風速。

Figure 3.6.3　Winds recorded at various stations in Hong Kong at 9:00 p.m. on 22 September 2013.

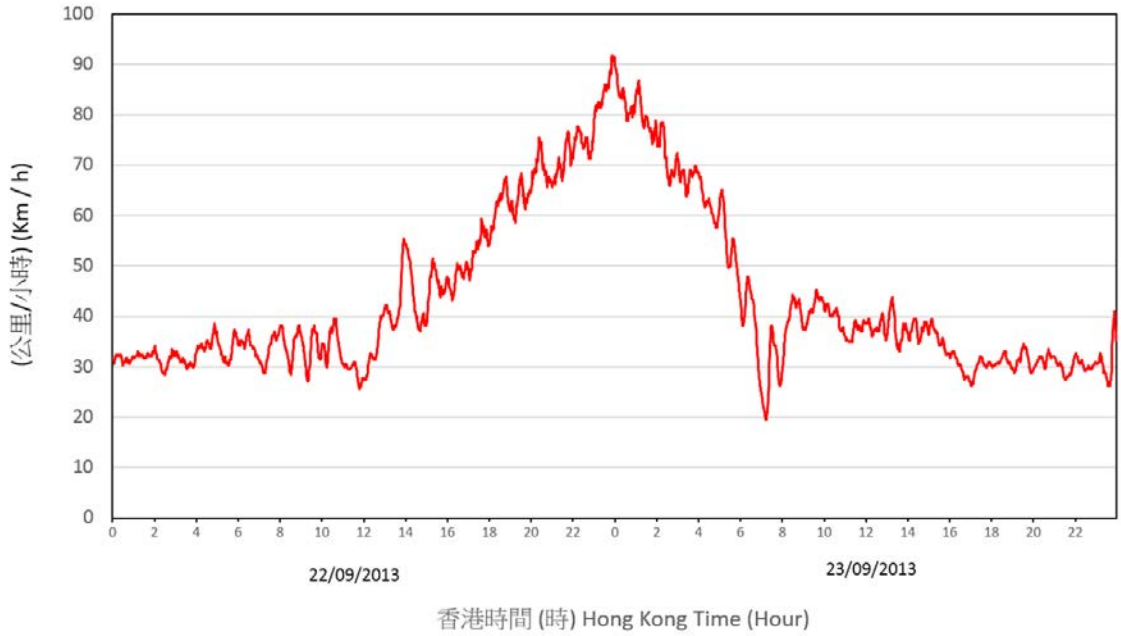


圖 3.6.4a　二零一三年九月二十二日至二十三日橫瀾島自動氣象站錄得的十分鐘平均風速。

Figure 3.6.4a　Trace of 10-minute mean wind speed recorded at Waglan Island automatic weather station on 22 - 23 September 2013.

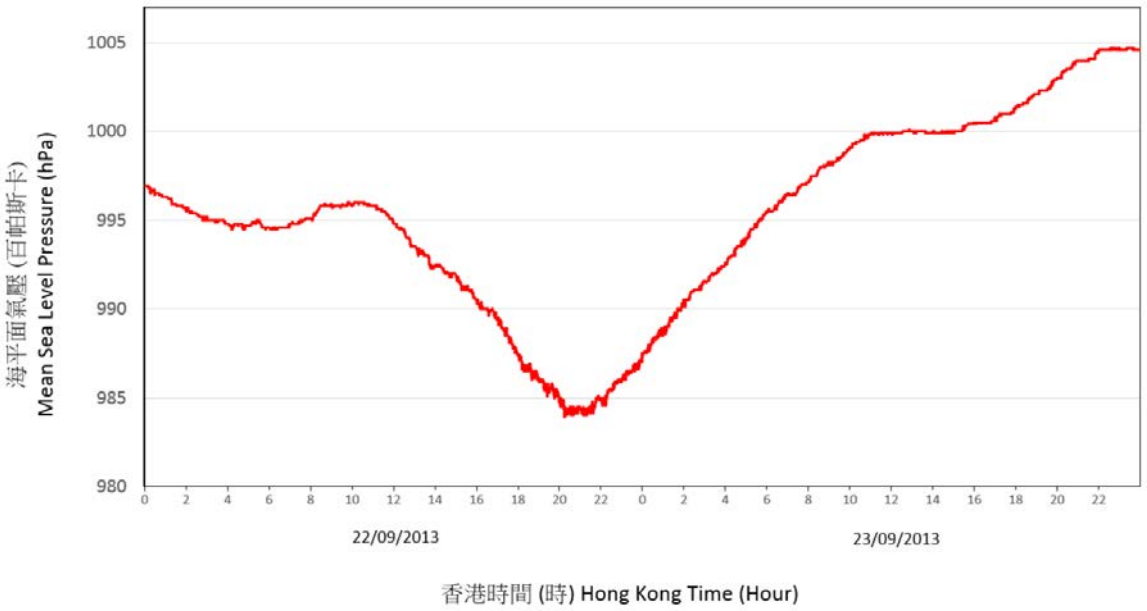


圖 3.6.4b　二零一三年九月二十二日至二十三日橫瀾島自動氣象站錄得的海平面氣壓。

Figure 3.6.4b　Trace of mean sea-level pressure recorded at Waglan Island automatic weather station on 22 - 23 September 2013.

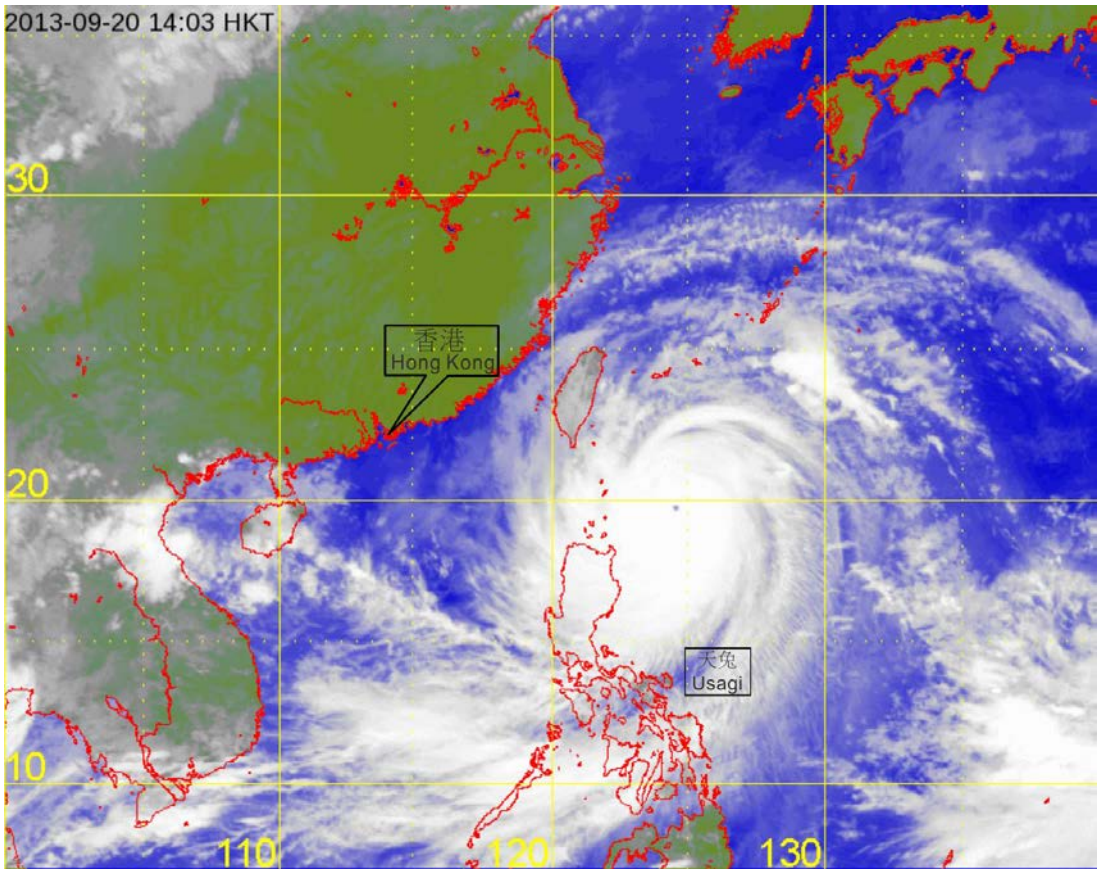


圖 3.6.5a　二零一三年九月二十日下午 2 時的紅外線衛星圖片，當時天兔達到超強颱風強度，中心附近最高持續風速估計為每小時 205 公里。

Figure 3.6.5a　Infra-red satellite imagery at 2 p.m. on 20 September 2013, as Usagi reached super typhoon intensity with estimated maximum sustained winds of 205 kilometres per hour near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

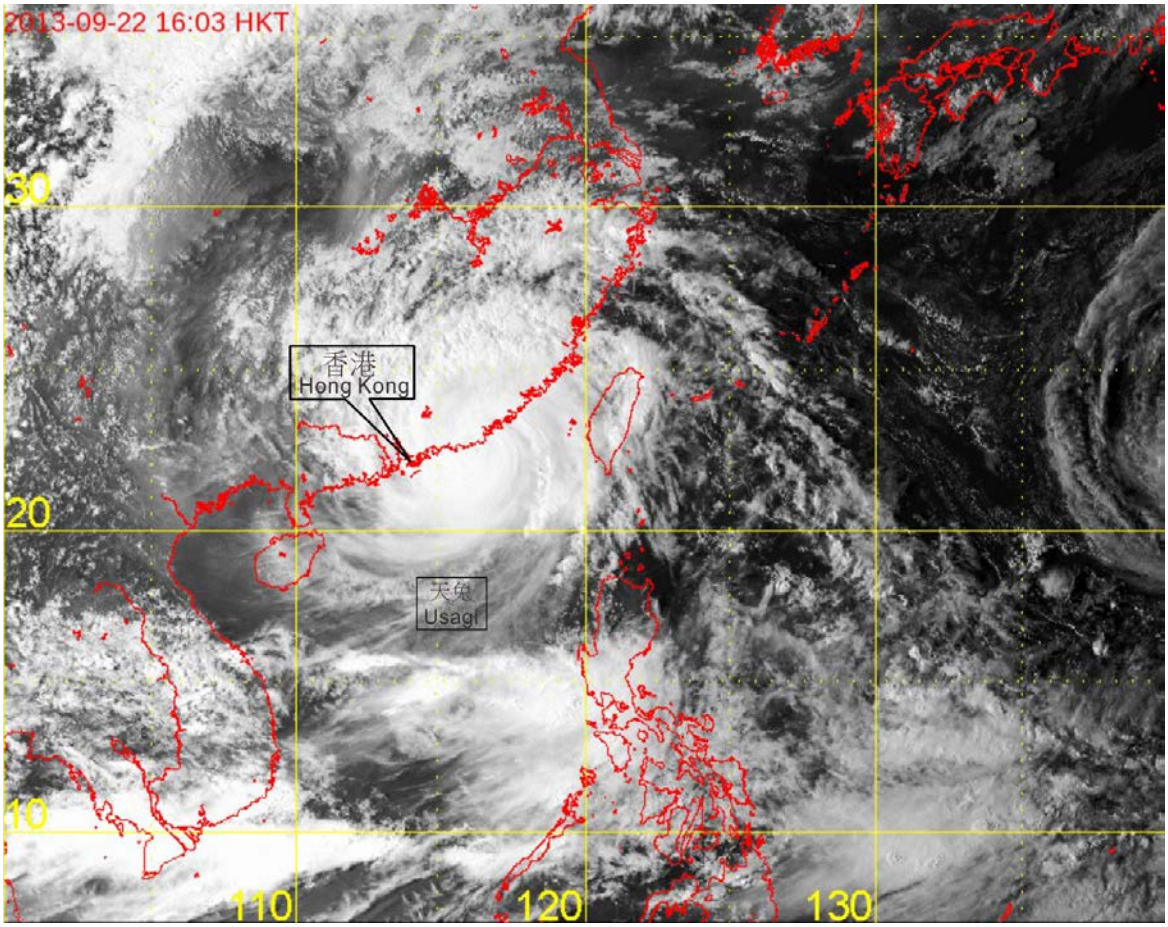


圖 3.6.5b　二零一三年九月二十二日下午 4 時的可見光衛星圖片，當時天兔已減弱為強颱風，其中心正移近香港以東的廣東沿岸地區。

Figure 3.6.5b　Visible satellite imagery at 4 p.m. on 22 September 2013 when Usagi had weakened into a severe typhoon and was approaching the coastal areas of Guangdong to the east of Hong Kong.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

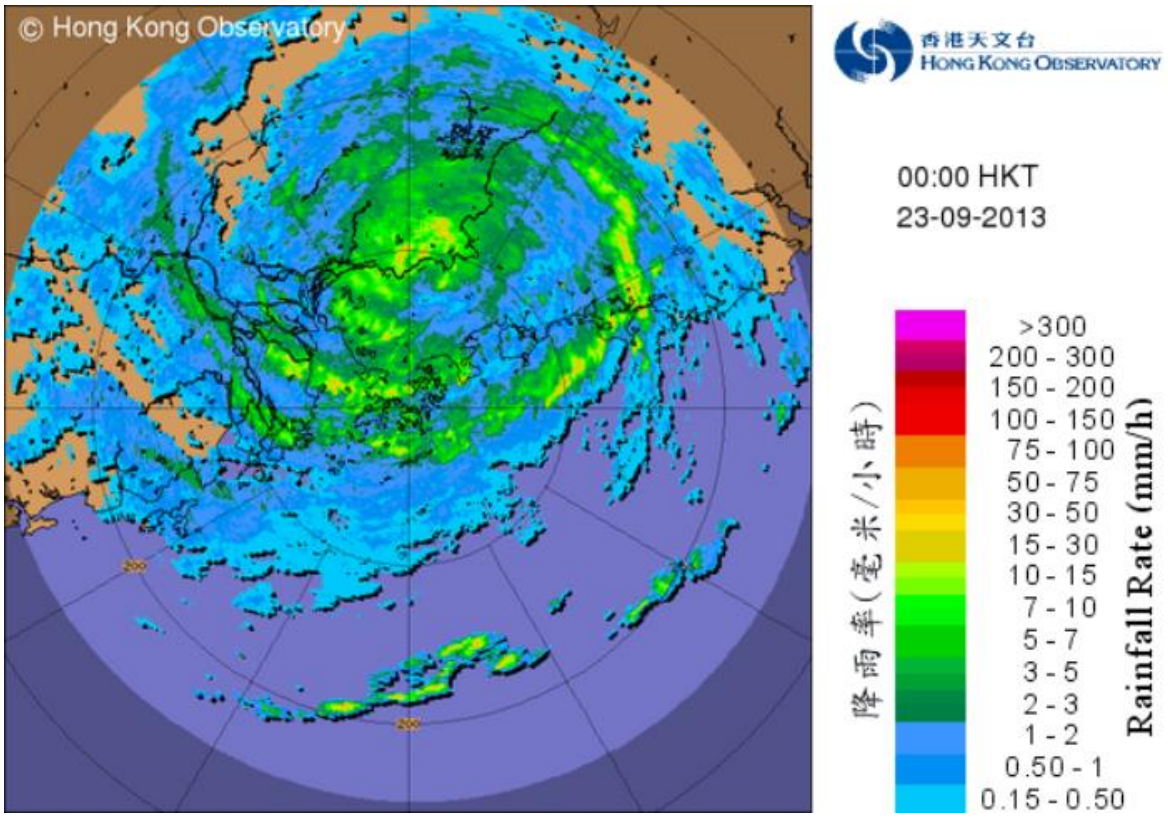


圖 3.6.6　二零一三年九月二十二日午夜時的雷達回波圖像，強颱風天兔最接近本港的一刻，其中心集結在香港天文台以北約 80 公里。

Figure 3.6.6　Image of radar echoes at midnight on 22 September 2013, when Severe Typhoon Usagi was closest to Hong Kong, with its centre about 80 km north of the Hong Kong Observatory.

3.7 強颱風羅莎 (1329): 二零一三年十月二十九日至十一月四日

羅莎是香港天文台在二零一三年第七個需要發出熱帶氣旋警告信號的熱帶氣旋，也是自二零零六年以來天文台首個在十一月需要發出信號的熱帶氣旋。

熱帶低氣壓羅莎於十月二十九日在馬尼拉以東約1 580公里的北太平洋西部上空形成，並大致向西至西北偏西移動，翌日逐漸增強為強烈熱帶風暴。它於十月三十一日進一步增強為颱風，並橫過呂宋北端。下午八時，呂宋北端上的阿巴里錄得的持續風速為每小時108公里。羅莎於翌日進入南海北部，於十一月二日移動轉為緩慢及增強為強颱風，並達到其最高強度，中心附近最高持續風速為每小時165公里。羅莎的環流較小但組織相當緊密，其風眼在衛星雲圖上清晰可見。羅莎於十一月三日凌晨減弱為颱風。隨著一股東北季候風的補充逐步擴展至南海北部，傍晚時羅莎轉向西南移動及減弱為熱帶風暴。它於翌日繼續減弱為熱帶低氣壓，晚上在越南中部沿岸地區附近的南海中部上消散。根據報章報道，羅莎在菲律賓造成三人死亡、兩人失蹤及超過17 000間房屋受損。

香港天文台於十一月一日下午3時20分發出一號戒備信號，當時羅莎位於香港之東南約520公里。當日本港吹和緩東北風，晚上高地間中吹強風。隨後兩天東北風轉為清勁，離岸及高地吹強風。天文台總部於十一月二日下午2時06分錄得最低瞬時海平面氣壓1010.2百帕斯卡，當時羅莎位於香港之東南偏南約290公里。羅莎於十一月三日在香港以南的南海北部上緩慢移動及減弱，於下午二時左右最接近香港，在本港以南約220公里處掠過。隨著羅莎向西南移離本港及進一步減弱，天文台在下午10時50分取消所有熱帶氣旋警告信號。

羅莎吹襲期間，橫瀾島錄得的最高每小時平均風速為51公里，而青洲更錄得每小時68公里的最高陣風。最高潮位2.88米(海圖基準面以上)在尖鼻咀錄得，而最大風暴潮0.47米則在大埔滘錄得。

羅莎對香港的影響不大，期間並沒有嚴重破壞報告。十一月一日本港天色晴朗及乾燥，日間陽光充沛。受羅莎的雨帶影響，隨後兩天本港轉為多雲及有幾陣驟雨，期間本港只有部分地區錄得數毫米的雨量。。

表3.7.1- 3.7.3 分別是羅莎影響香港期間各站錄得的最高風速、香港的日雨量及最高潮位資料。圖3.7.1 - 3.7.3 分別為羅莎的路徑圖、本港的雨量分佈圖、羅莎的衛星圖像。

3.7 Severe Typhoon Krosa (1329): 29 October - 4 November 2013

Krosa was the seventh tropical cyclone necessitating the issuance of tropical cyclone warning signals by the Hong Kong Observatory in 2013. It was also the first tropical cyclone that requiring warning signals in Hong Kong in November since 2006.

Krosa formed as a tropical depression over the western North Pacific about 1 580 km east of Manila on 29 October. Moving generally west to west-northwestwards, it intensified gradually into a severe tropical storm the following day. Krosa intensified further into a typhoon on 31 October and crossed the northern tip of Luzon, where sustained wind of 108 km/h was reported at Aparri at 8 p.m. Krosa entered the northern part of the South China Sea the following day. It became slow moving and intensified into a severe typhoon over the northern part of the South China Sea on 2 November, reaching its peak intensity with estimated sustained winds of 165 km/h near its centre. Even though the circulation of Krosa was relatively small, it was rather compact in organisation, with an eye clearly visible on satellite imageries. Krosa weakened into a typhoon in the early hours on 3 November. As a replenishment of the northeast monsoon extended gradually towards the northern part of the South China Sea, Krosa turned southwestwards and weakened into a tropical storm that evening. It continued to weaken into a tropical depression the following day and dissipated over the central part of the South China Sea near the coastal areas of central Vietnam at night. According to press reports, three people were killed, two people were reported missing and more than 17 000 houses were damaged in the Philippines during the passage of Krosa.

The Hong Kong Observatory issued the Standby Signal No. 1 at 3:20 p.m. on 1 November when Krosa was about 520 km southeast of the territory. Local winds were moderate northeasterlies that day, occasionally strong on high ground at night. The northeasterlies freshened in the next couple of days, becoming strong offshore and on high ground. At the Hong Kong Observatory Headquarters, the lowest instantaneous mean sea-level pressure of 1010.2 hPa was recorded at 2:06 p.m. on 2 November, when Krosa was about 290 km to the south-southeast. Krosa moved slowly and weakened over the northern part of the South China Sea passing to the south of Hong Kong on 3 November. It was closest to the territory around 2 p.m. that day when it was about 220 km to the south. As Krosa moved southwestwards away from Hong Kong and continued to weaken, all signals were cancelled at 10:50 p.m.

During the passage of Krosa, maximum hourly mean wind of 51 km/h was recorded at Waglan Island, while maximum gust of 68 km/h was recorded at Green Island. A maximum sea level of 2.88 m (above chart datum) was recorded at Tsim Bei Tsui, while a maximum storm surge of 0.47 m was recorded at Tai Po Kau.

No significant damage was reported in Hong Kong during the passage of Krosa. The weather was fine and dry with abundant sunshine during the day on 1 November. Affected by the rainbands of Krosa, local weather became cloudy with a

few showers over the next two days. Only several millimetres of rainfall were recorded in parts of the territory during the period.

Information on the maximum wind, daily rainfall and maximum sea level reached in Hong Kong during the passage of Krosa is given in Tables 3.7.1 - 3.7.3 respectively. Figures 3.7.1 - 3.7.3 show respectively the track of Krosa, the rainfall distribution for Hong Kong, a satellite imagery of Krosa.

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

Table 3.7.1　Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for Krosa 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)	-	-	51	2/11	18:54	-	-	19	1/11	17:00
中環碼頭	Central Pier	北	N	38	3/11	08:39	東北偏北	NNE	23	2/11	07:00
長洲	Cheung Chau	東北偏北	NNE	58	3/11	08:55	東北偏北	NNE	38	3/11	09:00
長洲泳灘	Cheung Chau Beach	東北	NE	65	2/11	20:22	東北	NE	45	3/11	00:00
青洲	Green Island	東北偏北	NNE	68	3/11	10:50	東北偏北	NNE	47	3/11	11:00
香港國際機場	Hong Kong International Airport	東北	NE	51	3/11	12:28	東北	NE	31	3/11	12:00
啟德	Kai Tak	東北偏北	NNE	49	3/11	10:44	東北偏北	NNE	20	3/11	11:00
京士柏	King's Park	東北	NE	49	3/11	08:23	東北	NE	20	3/11	09:00
流浮山	Lau Fau Shan	東北偏北	NNE	51	3/11	18:29	東北偏北	NNE	31	3/11	16:00
昂坪	Ngong Ping	東北	NE	62	3/11	05:06	東北偏東	ENE	49	2/11	22:00
北角	North Point	東北	NE	51	2/11	18:00	東北偏東	ENE	25	3/11	11:00
坪洲	Peng Chau	東北偏東	ENE	52	2/11	20:39	東北	NE	31	3/11	16:00
平洲	Ping Chau	東北	NE	30	3/11	17:06	東北偏北	NNE	7	2/11	15:00
							東北	NE	7	3/11	03:00
							東北偏北	NNE	7	3/11	13:00
西貢	Sai Kung	東北偏北	NNE	56	3/11	10:46	東北偏北	NNE	31	3/11	11:00
沙洲	Sha Chau	東北偏北	NNE	52	3/11	09:50	北	N	40	3/11	11:00
沙螺灣	Sha Lo Wan	東北	NE	40	3/11	10:40	東北	NE	22	3/11	12:00
沙田	Sha Tin	東北偏北	NNE	40	3/11	12:52	東北偏北	NNE	20	3/11	09:00
							東北偏北	NNE	20	3/11	11:00
							東北偏北	NNE	20	3/11	12:00
石崗	Shek Kong	東北	NE	34	3/11	09:12	東北偏東	ENE	19	2/11	19:00
九龍天星碼頭	Star Ferry (Kowloon)	東	E	36	2/11	16:15	東	E	16	3/11	22:00
打鼓嶺	Ta Kwu Ling	北	N	49	3/11	10:21	北	N	22	3/11	14:00
大美督	Tai Mei Tuk	東北	NE	59	3/11	12:50	東北偏北	NNE	36	3/11	02:00
大帽山	Tai Mo Shan	東	E	85	3/11	12:45	東	E	59	3/11	01:00
大埔滘	Tai Po Kau	東北偏東	ENE	36	3/11	13:41	東北	NE	14	3/11	15:00
塔門	Tap Mun	北	N	40	3/11	11:50	北	N	19	3/11	10:00
大老山	Tate's Cairn	東	E	85	3/11	02:13	東	E	58	3/11	02:00
將軍澳	Tseung Kwan O	東北偏北	NNE	40	3/11	10:54	北	N	14	3/11	08:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	-	-	31	3/11	08:05	-	-	14	3/11	08:00
		-	-	31	3/11	13:59					
屯門政府合署	Tuen Mun Government Offices	北	N	47	3/11	10:46	東北偏北	NNE	22	3/11	11:00
橫瀾島	Waglan Island	東北	NE	62	3/11	02:27	東北	NE	51	3/11	17:00
濕地公園	Wetland Park	東北偏北	NNE	40	3/11	11:55	東北	NE	19	3/11	12:00
黃竹坑	Wong Chuk Hang	東	E	52	3/11	08:31	東	E	20	3/11	17:00

表 3.7.2　羅莎影響香港期間，香港天文台總部及其他各站所錄得的日雨量

Table 3.7.2　Daily rainfall amounts recorded at the Hong Kong Observatory Headquarters and other stations during the passage of Krosa

站 (參閱圖 3.7.2) Station (See Fig. 3.7.2)			十一月一日 1 Nov	十一月二日 2 Nov	十一月三日 3 Nov	總雨量 (毫米) Total (mm)
香港天文台 Hong Kong Observatory			0.0	微量 Trace	0.4	0.4
香港國際機場 Hong Kong International Airport (HKA)			0.0	微量 Trace	1.9	1.9
長洲 Cheung Chau (CCH)			0.0	0.0	1.0	1.0
H23	香港仔	Aberdeen	0.0	0.0	1.0	1.0
N05	粉嶺	Fanling	0.0	0.0	0.5	0.5
N13	糧船灣	High Island	0.0	0.0	1.0	1.0
K04	佐敦谷	Jordan Valley	0.0	0.0	1.0	1.0
N06	葵涌	Kwai Chung	0.0	0.0	0.0	0.0
H12	半山區	Mid Levels	0.0	0.0	0.0	0.0
N09	沙田	Sha Tin	0.0	0.0	0.0	0.0
H19	筲箕灣	Shau Kei Wan	0.0	0.0	1.0	1.0
SEK	石崗	Shek Kong	0.0	0.0	1.0	1.0
K06	蘇屋邨	So Uk Estate	0.0	0.0	0.0	0.0
R31	大美督	Tai Mei Tuk	0.0	0.0	0.0	0.0
R21	踏石角	Tap Shek Kok	0.0	0.0	2.5	2.5
N17	東涌	Tung Chung	0.0	0.0	3.5	3.5
R27	元朗	Yuen Long	0.0	0.0	0.0	0.0

表 3.7.3　羅莎影響香港期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.7.3　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of Krosa

站 (參閱圖 1.1) Station (See Fig. 1.1)		最高潮位 (海圖基準面以上) Maximum sea level (above chart datum)			最大風暴潮 (天文潮高度以上) Maximum storm surge (above astronomical tide)		
		高度(米) Height (m)	日期/月份 Date/Month	時間 Time	高度(米) Height (m)	日期/月份 Date/Month	時間 Time
鰂魚涌	Quarry Bay	2.62	3/11	21:20	0.36	2/11	15:26
石壁	Shek Pik	2.69	3/11	21:03	0.36	2/11	16:21
大埔滘	Tai Po Kau	2.71	3/11	22:03	0.47	2/11	08:51
尖鼻咀	Tsim Bei Tsui	2.88	3/11	21:19	0.43	2/11	17:58
橫瀾島	Waglan Island	2.62	3/11	21:10	0.26	2/11	08:40

大廟灣 - 沒有資料 Tai Miu Wan - data not available

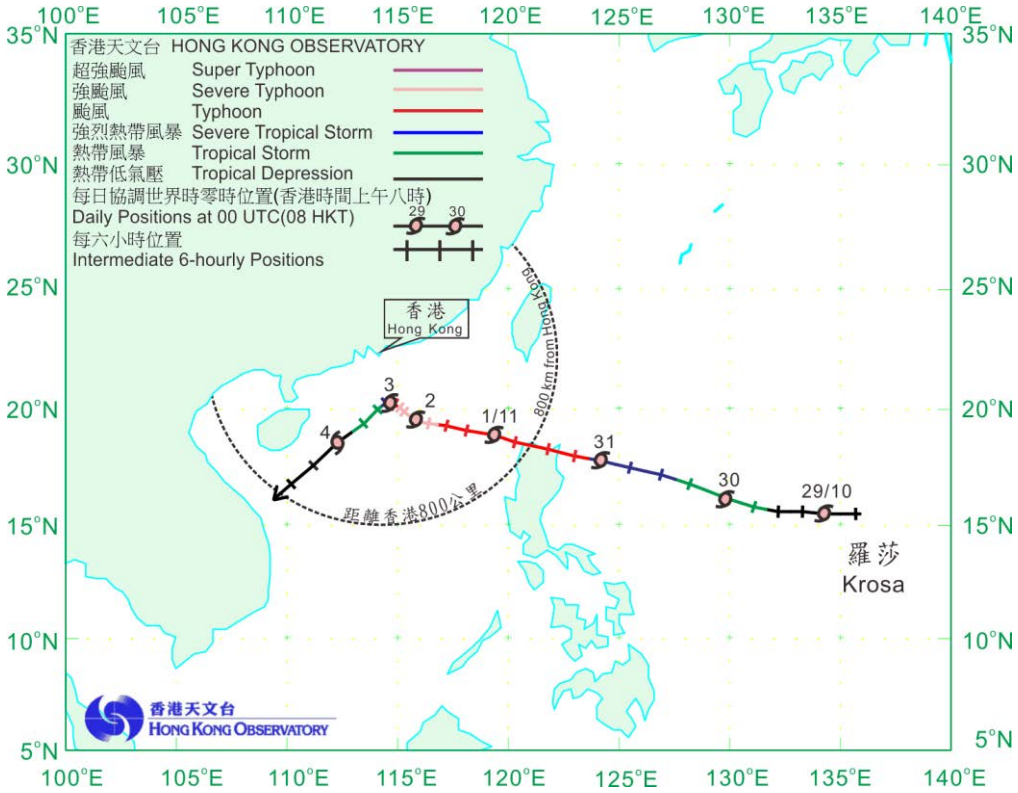


圖 3.7.1a　　二零一三年十月二十九日至十一月四日羅莎 (1329) 的路徑圖。
Figure 3.7.1a　　Track of Krosa (1329) on 29 October - 4 November 2013.

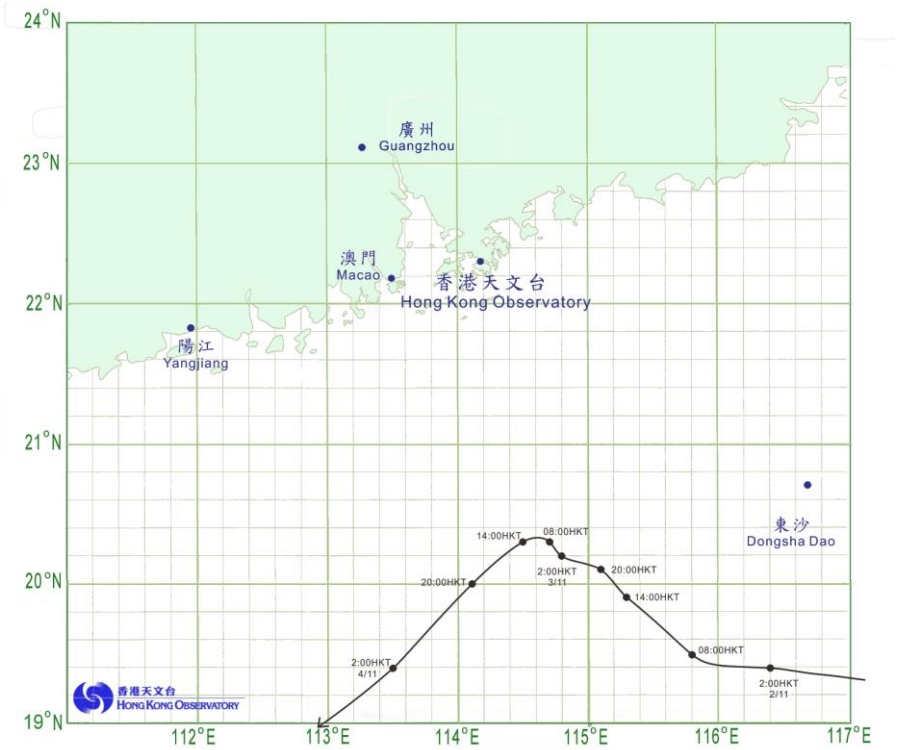


圖 3.7.1b　　羅莎 (1329) 接近香港時的路徑圖。
Figure 3.7.1b　　Track of Krosa (1329) near Hong Kong.

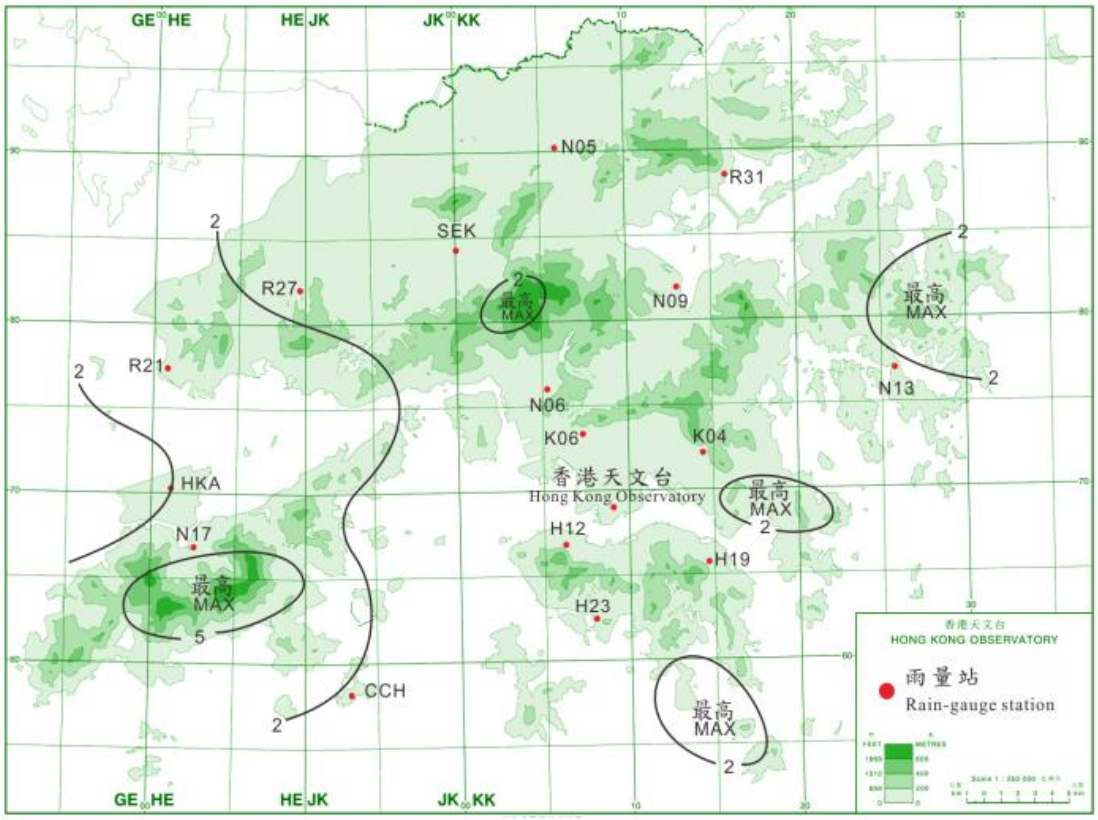


圖 3.7.2 二零一三年十一月一日至三日的雨量分佈(等雨量線單位為毫米)。

Figure 3.7.2 Rainfall distribution on 1 - 3 November 2013 (isohyets are in millimetres).

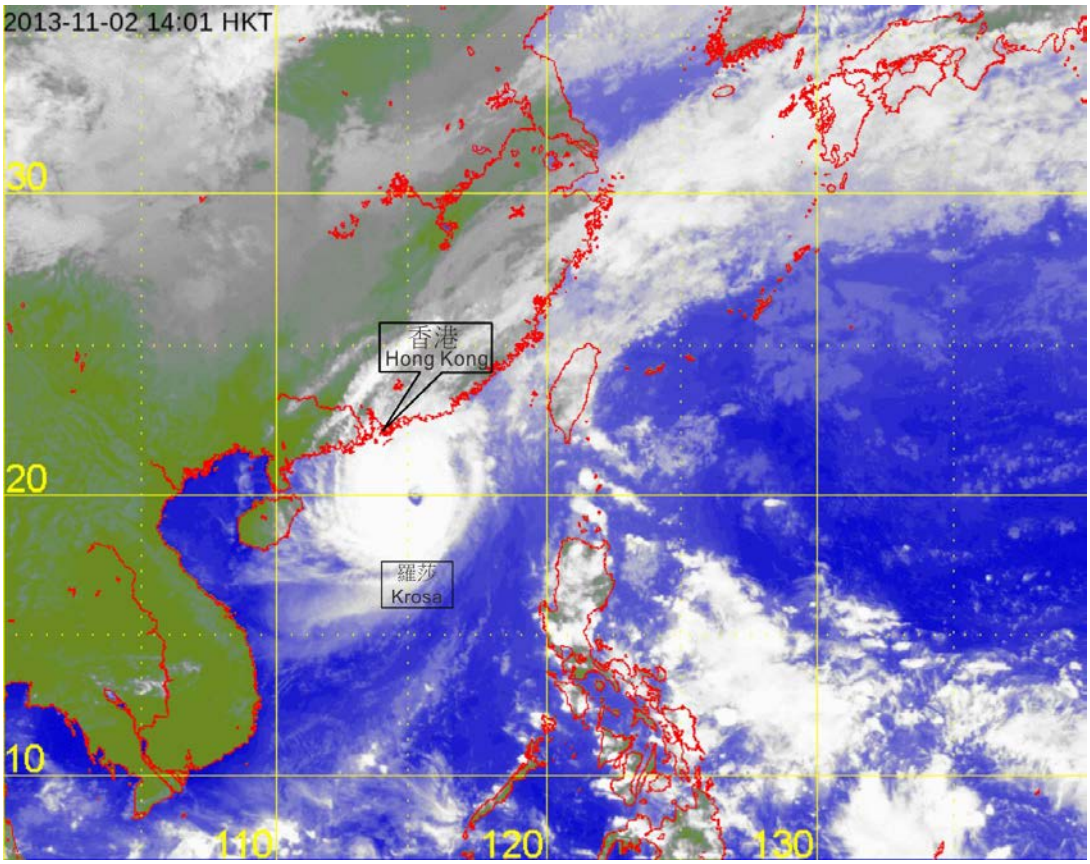


圖 3.7.3　二零一三年十一月二日下午 2 時的紅外線衛星圖片，當時羅莎達到強颱風強度，中心附近最高持續風速估計為每小時 165 公里。

Figure 3.7.3　Infra-red satellite imagery at 2 p.m. on 2 November 2013, as Krosa reached severe typhoon intensity with estimated maximum sustained winds of 165 kilometres per hour near its centre.

〔此衛星圖像接收自日本氣象廳的多用途輸送衛星-2。〕

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

第四節　熱帶氣旋統計表

表4.1是二零一三年在北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋一覽。表內所列出的日期只說明某熱帶氣旋在上述範圍內出現的時間，因而不一定包括整個風暴過程。這個限制對表內其他元素亦同樣適用。

表4.2是天文台在二零一三年為船舶發出的熱帶氣旋警告的次數、時段、首個及末個警告發出的時間。當有熱帶氣旋位於香港責任範圍內時（即由北緯10至30度、東經105至125度所包括的範圍），天文台會發出這些警告。表內使用的時間為協調世界時。

表4.3是二零一三年熱帶氣旋警告信號發出的次數及其時段的摘要。表內亦提供每次熱帶氣旋警告信號生效的時間和發出警報的次數。表內使用的時間為香港時間。

表4.4是一九五六至二零一三年間熱帶氣旋警告信號發出的次數及其時段的摘要。

表4.5是一九五六至二零一三年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數。

表4.6是一九五六至二零一三年間天文台發出各種熱帶氣旋警告信號的最長、最短及平均時段。

表 4.7 是二零一三年當熱帶氣旋影響香港時本港的氣象觀測摘要。資料包括熱帶氣旋最接近香港時的位置及時間和當時估計熱帶氣旋中心附近的最低氣壓、京士柏、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是二零一三年位於香港600公里範圍內的熱帶氣旋及其為香港所帶來的雨量。

表4.8.2是一八八四至一九三九年以及一九四七至二零一三年十個為香港帶來最多雨量的熱帶氣旋和有關的雨量資料。

表4.9是自一九四六年以來，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是二零一三年熱帶氣旋在香港所造成的損失。資料參考了各政府部門和公共事業機構所提供的報告及本地報章的報導。

表4.11是一九六零至二零一三年間熱帶氣旋在香港所造成的人命傷亡及破壞。資料參考了各政府部門和公共事業機構所提供的報告及本地報章的報導。

Section 4 TROPICAL CYCLONE STATISTICS AND TABLES

TABLE 4.1 is a list of tropical cyclones in 2013 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 2013, 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 2013. 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 2013 inclusive.

TABLE 4.5 gives the annual number of tropical cyclones in Hong Kong's area of responsibility between 1956 and 2013 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 1956-2013.

TABLE 4.7 is a summary of meteorological information for each tropical cyclone affecting Hong Kong in 2013, 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 2013.

TABLE 4.8.2 highlights the 10 wettest tropical cyclones in Hong Kong for the period 1884-1939 and 1947-2013.

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 2013. 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: 1960-2013. The information is based on reports from various government departments, public utility companies and local newspapers.

表 4.1　　二零一三年在北太平洋西部及南海區域的熱帶氣旋一覽

TABLE 4.1　　LIST OF TROPICAL CYCLONES IN THE WESTERN NORTH PACIFIC AND THE SOUTH CHINA SEA IN 2013

熱帶氣旋名稱	Name of tropical cyclone	編號 Code	路徑起點 Beginning of track				最高強度 (估計) Peak intensity (estimated)		路徑終點 End of track				DISP: 消散 Dissipated XT: 變為溫帶氣旋 Became Extratropical
			日期/月份 Date/Month	時間+ Time+	位置 Position 北緯 °N	東經 °E	風力 (公里每小時) Winds (km/h)	氣壓 (百帕斯卡) Pressure (hPa)	日期/月份 Date/Month	時間+ Time+	位置 Position 北緯 °N	東經 °E	
強烈熱帶風暴清松	Severe Tropical Storm Sonamu	1301	3 / 1	0600	8.7	121.1	90	990	8 / 1	1800	4.8	108.9	DISP
熱帶低氣壓珊珊	Tropical Depression Shanshan	1302	22 / 2	0000	5.7	109.1	45	1002	23 / 2	0000	3.9	109.3	DISP
強烈熱帶風暴摩羯	Severe Tropical Storm Yagi	1303	8 / 6	1200	17.8	130.1	90	984	13 / 6	0000	32.0	139.6	XT
熱帶風暴麗琵	Tropical Storm Leepi	1304	17 / 6	0600	13.6	126.9	85	990	20 / 6	1800	31.0	126.3	DISP
熱帶風暴貝碧嘉	Tropical Storm Bebinca	1305	20 / 6	0000	15.6	117.0	85	984	23 / 6	1800	20.8	106.6	DISP
強烈熱帶風暴溫比亞	Severe Tropical Storm Rumbia	1306	28 / 6	0600	9.7	128.6	105	980	2 / 7	1200	24.1	108.5	DISP
超強颱風蘇力	Super Typhoon Soulik	1307	7 / 7	0000	19.0	151.0	210	915	14 / 7	0000	28.2	116.2	DISP
熱帶風暴西馬侖	Tropical Storm Cimaron	1308	16 / 7	0600	15.6	124.3	65	994	18 / 7	1800	24.8	117.8	DISP
強烈熱帶風暴飛燕	Severe Tropical Storm Jebi	1309	31 / 7	0000	14.8	116.0	105	980	3 / 8	1200	22.0	104.5	DISP
熱帶風暴山竹	Tropical Storm Mangkhut	1310	5 / 8	0600	11.4	117.0	75	992	8 / 8	0000	20.0	104.4	DISP
超強颱風尤特	Super Typhoon Utor	1311	9 / 8	0600	13.7	133.5	195	926	15 / 8	1800	24.3	111.0	DISP
颱風潭美	Typhoon Trami	1312	17 / 8	0600	20.8	125.2	120	965	23 / 8	0600	27.2	112.2	DISP
強烈熱帶風暴佩娃	Severe Tropical Storm Pewa	1313	18 / 8	0600	12.0	179.9	110	994	24 / 8	0600	27.9	168.8	DISP
熱帶低氣壓烏娜拉	Tropical Depression Unala	1314	19 / 8	0600	17.5	180.0	55	1000	19 / 8	1200	17.5	179.2	DISP
強烈熱帶風暴康妮	Severe Tropical Storm Kong-Rey	1315	26 / 8	0000	15.7	126.6	105	980	30 / 8	1200	30.7	125.6	XT
熱帶低氣壓玉兔	Tropical Depression Yutu	1316	31 / 8	0600	30.0	173.6	55	1002	3 / 9	1200	32.3	177.0	DISP
熱帶風暴桃芝	Tropical Storm Toraji	1317	1 / 9	0600	25.6	123.8	85	988	4 / 9	0000	32.8	132.3	XT
強烈熱帶風暴萬宜	Severe Tropical Storm Man-yi	1318	12 / 9	0600	22.2	145.2	105	970	16 / 9	0600	38.4	141.1	XT
超強颱風天兔	Super Typhoon Usagi	1319	16 / 9	1800	17.1	132.3	205	920	23 / 9	0600	24.3	111.2	DISP
熱帶低氣壓	Tropical Depression	-	18 / 9	0000	16.3	111.2	55	996	18 / 9	1800	16.2	108.6	DISP
颱風帕布	Typhoon Pabuk	1320	20 / 9	1800	19.6	146.8	140	955	26 / 9	1800	36.9	149.8	XT
強颱風蝴蝶	Severe Typhoon Wutip	1321	26 / 9	1200	15.1	117.8	155	950	30 / 9	1800	17.9	104.0	DISP
熱帶風暴聖帕	Tropical Storm Sepat	1322	29 / 9	1800	26.3	148.2	75	994	2 / 10	1200	37.3	143.3	XT
強颱風菲特	Severe Typhoon Fitow	1323	30 / 9	1200	13.6	132.5	155	950	7 / 10	0600	26.8	117.9	DISP
超強颱風丹娜絲	Super Typhoon Danas	1324	4 / 10	0000	16.2	146.5	195	930	8 / 10	1800	35.5	131.5	XT
颱風百合	Typhoon Nari	1325	9 / 10	0000	14.1	130.2	145	955	15 / 10	1200	15.1	105.8	DISP
強颱風韋帕	Severe Typhoon Wipha	1326	10 / 10	1200	13.8	143.0	175	940	15 / 10	1800	32.8	138.6	XT
超強颱風范斯高	Super Typhoon Francisco	1327	15 / 10	1800	13.4	147.0	230	910	26 / 10	0000	32.1	140.3	XT
超強颱風利奇馬	Super Typhoon Lekima	1328	20 / 10	1200	10.3	160.6	220	910	26 / 10	0600	36.9	152.4	XT
強颱風羅莎	Severe Typhoon Krosa	1329	28 / 10	1800	15.5	135.7	165	955	4 / 11	1200	16.8	110.2	DISP
超強颱風海燕	Super Typhoon Haiyan	1330	3 / 11	0600	5.9	157.2	285	890	11 / 11	1200	22.6	108.8	DISP
熱帶低氣壓	Tropical Depression	-	5 / 11	0600	10.5	116.9	55	1000	6 / 11	1500	11.2	108.3	DISP
熱帶低氣壓楊柳	Tropical Depression Podul	1331	14 / 11	0000	11.5	114.8	55	1000	15 / 11	0000	12.4	109.3	DISP

+ 時間為協調世界時 / + Times are given in UTC.

表 4.2　　二零一三年為船舶發出的熱帶氣旋警告

TABLE 4.2　TROPICAL CYCLONE WARNINGS FOR SHIPPING ISSUED IN 2013

熱帶氣旋名稱	Name of 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+	
* 熱帶風暴貝碧嘉	* Tropical Storm Bebinca	34	20 / 6	0000	23 / 6	1800	90
* 強烈熱帶風暴溫比亞	* Severe Tropical Storm Rumbia	29	29 / 6	0300	2 / 7	0600	75
超強颱風蘇力	Super Typhoon Soulik	13	12 / 7	0600	13 / 7	1800	36
* 熱帶風暴西馬侖	* Tropical Storm Cimaron	22	16 / 7	0300	18 / 7	1800	63
* 強烈熱帶風暴飛燕	* Severe Tropical Storm Jebi	29	31 / 7	0000	3 / 8	0900	81
熱帶風暴山竹	Tropical Storm Mangkhut	22	5 / 8	0600	7 / 8	1800	60
* 超強颱風尤特	* Super Typhoon Utor	32	11 / 8	0600	15 / 8	0000	90
颱風潭美	Typhoon Trami	11	21 / 8	0000	22 / 8	0600	30
強烈熱帶風暴康妮	Severe Tropical Storm Kong-rey	35	26 / 8	0900	30 / 8	0900	96
熱帶風暴桃芝	Tropical Storm Toraji	6	1 / 9	0600	1 / 9	2100	15
熱帶低氣壓	Tropical Depression	8	18 / 9	0000	18 / 9	2100	21
* 超強颱風天兔	* Super Typhoon Usagi	25	20 / 9	0300	23 / 9	0300	72
強颱風蝴蝶	Severe Typhoon Wutip	36	26 / 9	0900	30 / 9	1800	105
強颱風菲特	Severe Typhoon Fitow	12	5 /10	1800	7 /10	0300	33
颱風百合	Typhoon Nari	37	10 /10	2100	15 /10	0600	105
* 強颱風羅莎	* Severe Typhoon Krosa	41	30 /10	2100	4 /11	1800	117
熱帶低氣壓	Tropical Depression	13	5 /11	0300	6 /11	1500	36
超強颱風海燕	Super Typhoon Haiyan	29	8 /11	0000	11 /11	0900	81
熱帶低氣壓楊柳	Tropical Depression Podul	10	13 /11	2100	15 /11	0000	27
	共 Total	444					1233

* 這些熱帶氣旋引致天文台需要發出熱帶氣旋警告信號。

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

+ 時間為協調世界時。

+ Times are given in UTC.

表 4.3　　二零一三年天文台所發出的熱帶氣旋警告信號及警報發出的次數
TABLE 4.3　TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG AND NUMBER OF WARNING BULLETINS ISSUED IN 2013

摘要 SUMMARY

信號 Signal	次數 No. of occasions	總時段 Total duration	
		時 h	分 min
1	10	154	15
3	7	111	55
8 西北 NW	1	5	45
8 西南 SW	1	8	55
8 東北 NE	-	-	
8 東南 SE	1	12	0
9	-	-	
10	-	-	
共 Total	20	292	50

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*
熱帶風暴貝碧嘉 Tropical Storm Bebinca	31	1 3 1	21/06 21/06 22/06	07:40 20:20 09:10	21/06 22/06 22/06	20:20 09:10 11:15
強烈熱帶風暴溫比亞 Severe Tropical Storm Rumbia	41	1 3 1	30/06 01/07 02/07	21:10 13:15 05:10	01/07 02/07 02/07	13:15 05:10 09:40
熱帶風暴西馬侖 Tropical Storm Cimaron	18	1	17/07	23:20	18/07	15:40
強烈熱帶風暴飛燕 Severe Tropical Storm Jebi	39	1 3	01/08 01/08	09:40 16:10	01/08 02/08	16:10 22:15
超強颱風尤特 Super Typhoon Utor	76	1 3 8 東南 SE 3 1	12/08 13/08 14/08 14/08 15/08	16:05 04:40 01:40 13:40 01:40	13/08 14/08 14/08 15/08 15/08	04:40 01:40 13:40 01:40 16:40
超強颱風天兔 Super Typhoon Usagi	54	1 3 8 西北 NW 8 西南 SW 3	21/09 21/09 22/09 23/09 23/09	10:40 23:40 18:40 00:25 09:20	21/09 22/09 23/09 23/09 23/09	23:40 18:40 00:25 09:20 10:25
強颱風羅莎 Severe Typhoon Krosa	58	1	01/11	15:20	03/11	22:50

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

表 4.4　　一九五六至二零一三年間每年各熱帶氣旋警告信號的發出次數及總時段

TABLE 4.4　FREQUENCY AND TOTAL DURATION OF DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS : 1956-2013

信號 Signals / 年份 Year	1	3	8 西北 NW	8 西南 SW	8 東北 NE	8 東南 SE	9	10	總時段 Total duration 時 h	分 min
1956	5	4	0	0	0	0	0	0	191	25
1957	4	9	1	1	2	2	0	1	295	45
1958	4	5	0	0	1	0	0	0	214	5
1959	1	1	0	0	0	0	0	0	36	35
1960	11	7	0	2	2	2	1	1	432	35
1961	6	7	1	2	1	0	1	1	192	55
1962	4	3	0	1	1	0	1	1	158	10
1963	4	5	0	0	1	0	0	0	175	50
1964	11	14	1	3	5	3	3	2	570	15
1965	7	6	0	0	1	1	0	0	239	40
1966	6	5	0	0	2	2	0	0	284	40
1967	8	6	0	0	2	1	0	0	339	10
1968	7	7	0	1	1	0	1	1	290	10
1969	4	2	0	0	0	0	0	0	110	15
1970	6	8	2	1	2	0	0	0	286	45
1971	9	10	1	3	2	2	1	1	323	25
1972	8	6	0	0	1	1	0	0	288	20
1973	8	6	1	1	1	0	1	0	416	50
1974	12	10	0	0	2	1	1	0	525	20
1975	8	6	1	0	0	1	1	1	292	20
1976	6	6	0	0	1	2	0	0	351	30
1977	8	6	0	0	1	0	0	0	395	10
1978	8	9	1	1	3	2	0	0	462	10
1979	5	5	1	0	2	2	1	1	281	15
1980	10	8	0	0	1	1	0	0	414	5
1981	5	4	0	0	1	1	0	0	202	20
1982	7	4	0	0	0	0	0	0	247	35
1983	8	7	0	1	2	2	1	1	289	42
1984	6	6	0	0	1	0	0	0	280	2
1985	5	4	1	0	0	1	0	0	193	35
1986	6	7	0	1	1	0	0	0	305	0
1987	6	1	0	0	0	0	0	0	165	45
1988	6	4	0	0	0	0	0	0	204	10
1989	7	8	0	0	2	2	0	0	306	10
1990	6	4	0	0	0	0	0	0	245	10
1991	8	6	0	0	1	1	0	0	349	55
1992	5	5	0	0	1	1	0	0	167	5
1993	8	9	0	0	2	4	0	0	325	40
1994	4	3	0	0	0	0	0	0	138	10
1995	8	6	2	2	1	1	0	0	348	50
1996	7	2	0	0	0	1	0	0	189	0
1997	2	3	0	1	1	0	1	0	97	30
1998	5	2	0	0	0	0	0	0	188	35
1999	10	13	4	3	2	0	2	1	520	0
2000	7	3	0	0	0	0	0	0	329	5
2001	6	6	1	1	2	1	0	0	253	35
2002	3	2	0	0	0	1	0	0	144	25
2003	4	5	1	1	1	1	1	0	158	0
2004	3	2	1	1	1	0	0	0	77	35
2005	3	1	0	0	0	0	0	0	142	45
2006	10	3	0	0	0	0	0	0	317	50
2007	4	3	0	1	0	0	0	0	86	50
2008	8	9	2	2	3	2	1	0	347	0
2009	13	9	1	1	1	2	1	0	255	30
2010	8	3	0	0	0	0	0	0	220	0
2011	8	5	0	0	0	1	0	0	213	0
2012	9	7	0	0	2	3	1	1	252	45
2013	10	7	1	1	0	1	0	0	292	50
共 Total	385	324	24	32	60	49	20	13	15424	4
平均 Mean	6.6	5.6	0.4	0.6	1.0	0.8	0.3	0.2	265	56

表 4.5　一九五六至二零一三年間每年位於香港責任範圍內以及每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數

TABLE 4.5 ANNUAL NUMBER OF TROPICAL CYCLONES IN HONG KONG'S AREA OF RESPONSIBILITY AND THE NUMBER THAT NECESSITATED THE DISPLAY OF TROPICAL CYCLONE WARNING SIGNALS IN HONG KONG : 1956-2013

年份 Year	每年位於香港責任範圍內的熱帶氣旋總數 Annual number of tropical cyclones in Hong Kong's area of responsibility	每年引致天文台需要發出熱帶氣旋警告信號的熱帶氣旋總數 Annual number of tropical cyclones necessitating the display of signals in Hong Kong
1956	23	5
1957	12	6
1958	15	5
1959	18	2
1960	18	9
1961	24	6
1962	20	4
1963	13	4
1964	26	10
1965	16	6
1966	17	6
1967	17	8
1968	12	6
1969	11	4
1970	20	6
1971	20	9
1972	15	5
1973	17	9
1974	21	11
1975	12	7
1976	10	5
1977	10	8
1978	20	8
1979	18	6
1980	17	10
1981	15	5
1982	16	5
1983	15	7
1984	14	5
1985	15	5
1986	16	4
1987	12	5
1988	17	6
1989	17	7
1990	18	6
1991	14	6
1992	11	5
1993	14	9
1994	20	4
1995	17	8
1996	15	7
1997	10	2
1998	15	5
1999	12	8
2000	20	7
2001	14	6
2002	10	3
2003	12	4
2004	15	3
2005	15	3
2006	16	7
2007	12	2
2008	17	6
2009	17	8
2010	11	5
2011	12	5
2012	14	5
2013	19	7
平均 Mean	15.7	5.9

表 4.6　一九五六至二零一三年間天文台發出熱帶氣旋警告信號的時段

TABLE 4.6　DURATION OF TROPICAL CYCLONE WARNING SIGNALS ISSUED IN HONG KONG : 1956-2013

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	359	42 58	161 0 (桃麗達Tilda, 1964)	4 30 (熱帶低氣壓 T.D., 2000)	265 56	570 15 (1964)	36 35 (1959)
三號或以上 3 or higher	240	29 26	124 15 (瑪麗Mary, 1960)	4 5 (熱帶低氣壓 T.D., 2006)	121 50	306 35 (1974)	15 5 (2004)
八號或以上 8 or higher	86	14 44	66 50 (瑪麗Mary, 1960)	2 40 (雲茵Wynne, 1984)	21 50	100 55 (1964)	0 0
8 西北 NW	24	5 47	15 45	1 30	2 24	18 0	0 0
8 西南 SW	32	4 56	10 45	2 0	2 44	16 10	0 0
8 東北 NE	60	7 41	35 35	1 35	7 57	40 20	0 0
8 東南 SE	49	7 26	21 45	0 20	6 17	31 15	0 0
九號或以上 9 or higher	21	6 54	12 25 (約克York, 1999)	2 0 (杜鵑Dujuan, 2003)	2 30	19 25 (1964)	0 0
10	13	6 17	11 0 (約克York, 1999)	2 30 (愛麗斯Alice, 1961)	1 24	12 10 (1964)	0 0

註：( ) 內為創造該記錄的熱帶氣旋名稱及年份。

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

表 4.7　　二零一三年當熱帶氣旋影響香港時本港的氣象觀測摘要

TABLE 4.7　A SUMMARY OF METEOROLOGICAL OBSERVATIONS RECORDED IN HONG KONG DURING THE PASSAGES OF TROPICAL CYCLONES IN 2013

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
熱帶風暴貝碧嘉 Tropical Storm Bebinca	6	22	00	西南偏南 SSW	340	西北偏西 WNW 18	985	6	21	17:40 - 17:43#	1000.3	0.33	0.25	0.25	0.44	0.38	0.28
										18:00	1000.8						
強烈熱帶風暴溫比亞 Severe Tropical Storm Rumbia	7	1	15	西南偏南 SSW	385	西北 NW 30	980	7	1	14:43 - 16:31#	1004.0	0.27	0.38	0.21	0.33	0.45	0.19
										16:00	1004.4						
熱帶風暴西馬侖 Tropical Storm Cimaron	7	18	12	東 E	390	北 N 20	994	7	18	4:36 - 15:40#	1003.8	0.21	0.19	0.11	0.29	0.20	0.27
										05:00	1003.8						
強烈熱帶風暴飛燕 Severe Tropical Storm Jebi	8	2	19	西南 SW	430	西北 NW 24	980	8	2	3:08 - 3:27#	1002.0	0.31	0.32	0.15	0.40	0.33	0.33
										03:00	1002.2						
超強颱風尤特 Super Typhoon Utor	8	14	13	西南偏西 WSW	240	西北偏北 NNW 19	950	8	14	3:37 - 3:42#	996.8	0.45	0.56	0.36	0.63	0.52	0.36
										04:00,05:00	997.2						
超強颱風天兔 Super Typhoon Usagi	9	23	00	北 N	80	西北偏西 WNW 25	950	9	22	22:06 - 22:16#	985.7	0.62	0.53	0.59	0.99	0.97	0.65
										22:00	986.1						
強颱風羅莎 Severe Typhoon Krosa	11	3	14	南 S	220	西 W 2	980	11	2	14:06 - 14:20#	1010.2	0.36	0.36	-	0.47	0.43	0.26
										14:00, 15:00, 16:00	1010.3						

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

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

\- 沒有資料　- Data not available

表 4.7 (續) TABLE 4.7 (cont'd)

熱帶氣旋名稱 Name of tropical cyclone	月份 Month	最高60分鐘平均風向及風速 (公里每小時) Maximum 60-min mean wind in points and km/h			最高10分鐘平均風向及風速 (公里每小時) Maximum 10-min mean wind in points and km/h			最高陣風風向及風速 (公里每小時) Maximum gust peak speed in km/h with direction in points		
		京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island	京士柏 King's Park	香港國際機場 Hong Kong International Airport	橫瀾島 Waglan Island
熱帶風暴貝碧嘉 Tropical Storm Bebinca	6	東南偏東 ESE 25	東南偏東 ESE 36	東 E 52	東南偏東 ESE 30	東南偏東 ESE 43	東 E 56	東南 SE 54	東南 SE 59	東 E 65
強烈熱帶風暴溫比亞 Severe Tropical Storm Rumbia	6 - 7	東南偏東 ESE 23	東南偏東 ESE 40	東南偏南 SSE 52	南 S 30	東南偏東 ESE 45	東南偏南 SSE 72	南 S 56	東南偏東 ESE 65	東南偏南 SSE 96
熱帶風暴西馬侖 Tropical Storm Cimaron	7	東南 SE 13	東, 東南偏東 E, ESE 27	東南偏東 ESE 22	東南 SE 16	東南偏東 ESE 23	東北偏東 ENE 27	東南偏東 ESE 27	東南偏東 ESE 31	東北偏東 ENE 30
強烈熱帶風暴飛燕 Severe Tropical Storm Jebi	8	東南偏東 ESE 20	東 E 38	東北偏東 ENE 52	南 S 30	東南偏東 ESE 58	東南, 東北偏東 SE, ENE 59	南 S 63	東南偏東 ESE 75	南 S 77
超強颱風尤特 Super Typhoon Utor	8	東南偏東 ESE 31	南 S 51	東北偏東 ENE 75	東南 SE 38	東南偏東 ESE 63	東北偏東 ENE 77	東北偏東 ENE 76	南 S 90	東南 SE 96
超強颱風天兔 Super Typhoon Usagi	9	西北偏西 WNW 38	西 W 65	西南偏西 WSW 87	西北偏西 WNW 40	西南偏南 SSW 68	西南偏西 WSW 92	西北偏西 WNW 88	西南偏南 SSW 87	西南偏西 WSW 110
強颱風羅莎 Severe Typhoon Krosa	11	東北 NE 20	東北 NE 31	東北 NE 51	東北 NE 25	東北 NE 36	東北 NE 52	東北 NE 49	東北 NE 51	東北 NE 62

表 4.8.1　二零一三年位於香港600公里範圍內的熱帶氣旋及其為本港帶來的雨量期間，天文台錄得的雨量
TABLE 4.8.1　RAINFALL ASSOCIATED WITH EACH TROPICAL CYCLONE THAT CAME WITHIN 600 KM OF HONG KONG IN 2013

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)
熱帶風暴貝碧嘉 Tropical Storm Bebinca	(T_1) 21 / 6 0300 - (T_2) 22 / 6 1600	11.4	16.2	73.7	74.4	85.8
強烈熱帶風暴溫比亞 Severe Tropical Storm Rumbia	(T_1) 1 / 7 0100 - (T_2) 2 / 7 1900	29.5	微量 Trace	微量 Trace	微量 Trace	29.5
熱帶風暴西馬侖 Tropical Storm Cimaron	(T_1) 18 / 7 0100 - (T_2) 19 / 7 0200	0.5	23.0	26.5	26.9	27.4
強烈熱帶風暴飛燕 Severe Tropical Storm Jebi	(T_1) 2 / 8 0400 - (T_2) 3 / 8 0600	75.8	9.9	9.9	9.9	85.7
超強颱風尤特 Super Typhoon Utor	(T_1) 12 / 8 2300 - (T_2) 16 / 8 0200	108.5	6.8	40.9	45.6	154.1
颱風潭美 Typhoon Trami	(T_1) 22 / 8 0800 - (T_2) 23 / 8 1400	46.1	50.8	57.3	58.9	105.0
超強颱風天兔 Super Typhoon Usagi	(T_1) 21 / 9 2000 - (T_2) 23 / 9 1400	87.5	0.8	1.3	1.3	88.8
強颱風蝴蝶 Severe Typhoon Wutip	(T_1) 27 / 9 1900 - (T_2) 28 / 9 0200	0.2	2.5	7.0	15.4	15.6
強颱風羅莎 Severe Typhoon Krosa	(T_1) 1 / 11 1200 - (T_2) 4 / 11 1300	1.6	14.6	14.6	14.6	16.2
超強颱風海燕 Super Typhoon Haiyan	(T_1) 11 / 11 1700 - (T_2) 11 / 11 2000	0.0	29.1	37.3	37.3	37.3
					共 Total	645.4

* 香港時間（協調世界時加八小時）。

T_1 - 熱帶氣旋首次出現於香港600公里範圍內的時間。

T_2 - 熱帶氣旋在香港600公里範圍內消散或離開該範圍的時間。

* Hong Kong Time （UTC + 8 hours）.

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

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

表 4.8.2　一八八四至一九三九年及一九四七至二零一三年間十個為香港帶來最多雨量的熱帶氣旋
TABLE 4.8.2　TEN WETTEST TROPICAL CYCLONES IN HONG KONG (1884-1939, 1947-2013)

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　　一九四六至二零一三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 1946-2013

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 年份 Date/Month Year	方位 Direction	距離 (公里) Distance (km)	每小時 Hourly	瞬時 Inst.	香港天文台 Hong Kong Observatory	京士柏 King's Park	啟德機場 # Kai Tak Airport #	橫瀾島 Waglan Island	長洲 Cheung Chau	大老山 Tate's Cairn	青洲 Green Island	香港天文台 Hong Kong Observatory	京士柏 King's Park	啟德機場 # Kai Tak Airport #	橫瀾島 Waglan Island	長洲 Cheung Chau	大老山 Tate's Cairn	青洲 Green Island
-	18 / 7 1946	南 S	70	985.7	-	東北 NE	-	-	-	-	-	-	-	-	-	-	-	-	-
姬羅莉亞 Gloria	22 / 9 1957	西南 SW	55	986.2	984.3	東南偏東 ESE	115	-	東南偏東 ESE	72	東 E	113	-	-	-	東 E	187	-	東北偏東 ENE	158	東北偏東 ENE	185	-	-	-
瑪麗 Mary	9 / 6 1960	西北偏西 WNW	10	974.3	973.8	東南偏南 SSE	96	-	東南偏南 SSE	92	西南偏南 SSW	112	-	-	-	東南偏南 SSE	191	-	東南 SE	164	西南偏南 SSW	194	-	-	-
愛麗斯 Alice	19 / 5 1961		0	981.6	981.1	東北偏東 ENE	83	-	東 E	70	東南偏東 ESE	90	東北偏東 ENE	76	-	-	東 E	166	-	東北偏東 ENE	139	西南 SW	128	東北偏東 ENE	135	-	-
溫黛 Wanda	1 / 9 1962	西南偏南 SSW	20	955.1	953.2	北 N	133	-	北 N	108	西北 NW	148	西北 NW	118	東南 SE	189	-	北 N	259	-	北 N	229	西北偏北 NNW	216	西北 NW	232	東南偏東 ESE	284	-
露比 Ruby	5 / 9 1964	西南 SW	30	971.0	968.2	東 E	110	-	北 N	118	東北偏東 ENE	148	東北 NE	113	東南偏東 ESE	167	-	東北偏北 NNE	227	-	西北 NW	203	東 E	230	東北偏北 NNE	216	東 E	268	-
黛蒂 Dot	13 / 10 1964	東 E	35	978.9	977.3	西北偏北 NNW	88	-	北 N	67	北 N	117	西北偏北 NNW	96	東北偏北 NNE	157	-	北 N	175	-	北 N	198	北 N	184	西北偏西 WNW	205	東北 NE	220	-
雪麗 Shirley	21 / 8 1968		0	968.7	968.6	北 N	68	-	北 N	75	東北偏北 NNE	124	西南偏南 SSW	90	東北偏北 NNE	126	-	北 N	133	-	北 N	151	東北 NE	209	西南偏南 SSW	167	東北偏北 NNE	203	-
露絲 Rose	17 / 8 1971	西南偏西 WSW	20	984.5	982.8	東南 SE	103	-	東南 SE	122	東南偏東 ESE	140	東南 SE	131	南 S	148	-	東南偏東 ESE	224	-	東南偏東 ESE	211	東南偏東 ESE	189	東南 SE	194	南 S	221	-
愛茜 Elsie	14 /10 1975	南 S	50	996.4	996.2	東北偏東 ENE	58	北 N	75	西北偏北 NNW	67	東北偏北 NNE	118	北 N	106	東北 NE	130	西北偏北 NNW	118	東北 NE	140	北 N	137	北 N	140	東北偏東 ENE	176	東北 NE	158	東北偏北 NNE	180	東北 NE	167
荷貝 Hope	2 / 8 1979	西北偏北 NNW	10	961.8	961.6	西 W	75	西北偏西 WNW	79	西 W	115	西南 SW	144	西南偏南 SSW	117	西北 NW	115	西 W	108	西 W	175	西北偏西 WNW	166	西北偏西 WNW	182	西南 SW	198	西南偏西 WSW	185	西北偏西 WNW	229	西 W	167
愛倫 Ellen	9 / 9 1983	西南 SW	45	983.9	983.1	東 E	92	東 E	88	東 E	112	東南偏東 ESE	169	東南偏東 ESE	171	東 E	126	南 S	137	東 E	185	東 E	167	東 E	203	東 E	227	東南偏南 SSE	238	東北偏東 ENE	218	南 S	220*
約克 York	16 / 9 1999	西南偏南 SSW	20	976.8	976.1	東 E	63	北 N	68	東北偏北 NNE	59	東北偏北 NNE	153	東北偏北 NNE	113	-		-	東 E	137	東北偏北 NNE	149	東北偏東 ENE	142	東北偏北 NNE	234	東北 NE	182	-		-
韋森特 Vicente	24 / 7 2012	西南 SW	100	986.3	986.0	東 E	56	東南偏東 ESE	56	東南偏東 ESE	70	東 E	108	東南偏東 ESE	128	東 E	117	東北 NE	92	東南偏東 ESE	117	東南偏東 ESE	110	東 E	135	東南偏東 ESE	149	東 E	184	東南偏東 ESE	166	東北 NE	155

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　　二零一三年熱帶氣旋在香港所造成的損失

TABLE 4.10　DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG IN 2013

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 (處) Public works facilities (site)	公用業務 (處) Public utilities (site)	物業單位 (個) Property (unit)	山泥傾瀉及斜坡倒塌 (宗) Landslip and collapse of slope (case)	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
強烈熱帶風暴溫比亞 Severe Tropical Storm Rumbia	6 - 7				1	1						
熱帶風暴西馬侖 Tropical Storm Cimaron	7		空曠地區 Open space: 1			1						
強烈熱帶風暴飛燕 Severe Tropical Storm Jebi	8		小徑及通道 Footpath & access road: 1			1						
超強颱風尤特 Super Typhoon Utor	8	農地 Farmland: 255 公頃 hectares 農作物 Crops: 1471 噸 tons				4	22.620					22.620
超強颱風天兔 Super Typhoon Usagi	9	農地 Farmland: 291 公頃 hectares 農作物 Crops: 1655 噸 tons	遊樂場 Playground: 1	鐵路 Railway: 4	1	6	25.740		0.172	0.234		26.146

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　　一九六零至二零一三年間熱帶氣旋在香港所造成的人命傷亡及破壞

TABLE 4.11　CASUALTIES AND DAMAGE CAUSED BY TROPICAL CYCLONES IN HONG KONG : 1960-2013

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 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
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
2012	26 / 6 - 30 / 6	T.S. Doksuri	杜蘇芮	0	0	2	0	1	0
	20 / 7 - 25 / 7	S.T. Vicente	韋森特	0	0	138	0	1	0
	12 / 8 - 18 / 8	T. Kai-tak	啟德	0	0	1	0	0	0
	18 / 8 - 30 / 8	S.T. Tembin	天秤	1	0	1	0	0	0
2013	9 / 8 - 16 / 8	SuperT. Utor	尤特	0	1	9	0	0	0
	17 / 9 - 23 / 9	SuperT. Usagi	天兔	0	0	17	0	0	1

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　二零一三年熱帶氣旋的位置及強度數據

以下是二零一三年位於北太平洋西部及南海區域（即由赤道至北緯45度、東經100度至180度所包括的範圍）的熱帶氣旋。其每六小時之位置及強度刊於本節。

熱帶氣旋名稱	頁
強烈熱帶風暴清松 (1301)	132
熱帶低氣壓珊珊 (1302)	132
強烈熱帶風暴摩羯 (1303)	133
熱帶風暴麗琵 (1304)	133
熱帶風暴貝碧嘉 (1305)	134
強烈熱帶風暴溫比亞 (1306)	134
超強颱風蘇力 (1307)	135
熱帶風暴西馬侖 (1308)	136
強烈熱帶風暴飛燕 (1309)	136
熱帶風暴山竹 (1310)	137
超強颱風尤特 (1311)	137
颱風潭美 (1312)	138
強烈熱帶風暴佩娃 (1313)	139
熱帶低氣壓烏娜拉 (1314)	139
強烈熱帶風暴康妮 (1315)	140
熱帶低氣壓玉兔 (1316)	140
熱帶風暴桃芝 (1317)	141
強烈熱帶風暴萬宜 (1318)	141
超強颱風天兔 (1319)	142
熱帶低氣壓(由九月十八日至九月十九日)	142
颱風帕布 (1320)	143
強颱風蝴蝶 (1321)	144
熱帶風暴聖帕 (1322)	144
強颱風菲特 (1323)	145
超強颱風丹娜絲 (1324)	146
颱風百合 (1325)	146
強颱風韋帕 (1326)	147
超強颱風范斯高 (1327)	148
超強颱風利奇馬 (1328)	149
強颱風羅莎 (1329)	150
超強颱風海燕 (1330)	151
熱帶低氣壓(由十一月五日至十一月六日)	152
熱帶低氣壓楊柳 (1331)	152

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

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

Section 5 TROPICAL CYCLONE POSITION AND INTENSITY DATA, 2013

Six-hourly position and intensity data are tabulated in this section for the following tropical cyclones in 2013 over the western North Pacific and the South China Sea (i.e. the area bounded by the Equator, 45°N, 100°E and 180°).

Name of tropical cyclone	Page
Severe Tropical Storm Sonamu (1301)	132
Tropical Depression Shanshan (1302)	132
Severe Tropical Storm Yagi (1303)	133
Tropical Storm Leepi (1304)	133
Tropical Storm Bebinca (1305)	134
Severe Tropical Storm Rumbia (1306)	134
Super Typhoon Soulik (1307)	135
Tropical Storm Cimaron (1308)	136
Severe Tropical Storm Jebi (1309)	136
Tropical Storm Mangkhut (1310)	137
Super Typhoon Utor (1311)	137
Typhoon Trami (1312)	138
Severe Tropical Storm Pewa (1313)	139
Tropical Depression Unala (1314)	139
Severe Tropical Storm Kong-Rey (1315)	140
Tropical Depression Yutu (1316)	140
Tropical Storm Toraji (1317)	141
Severe Tropical Storm Man-yi (1318)	141
Super Typhoon Usagi (1319)	142
Tropical Depression of 18 – 19 September	142
Typhoon Pabuk (1320)	143
Severe Typhoon Wutip (1321)	144
Tropical Storm Sepat (1322)	144
Severe Typhoon Fitow (1323)	145
Super Typhoon Danas (1324)	146
Typhoon Nari (1325)	146
Severe Typhoon Wipha (1326)	147
Super Typhoon Francisco (1327)	148
Super Typhoon Lekima (1328)	149
Severe Typhoon Krosa (1329)	150
Super Typhoon Haiyan (1330)	151
Tropical Depression of 5 - 6 November	152
Tropical Depression Podul (1331)	152

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

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

強烈熱帶風暴清松(1301)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM SONAMU (1301)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
一月 JAN	3	0600	T.D.	1004	13	8.7	121.1
		1200	T.D.	1002	16	8.8	119.6
		1800	T.D.	1002	16	8.5	117.8
	4	0000	T.S.	998	18	8.5	116.3
		0600	T.S.	996	21	8.5	115.4
		1200	T.S.	996	21	8.5	114.1
		1800	T.S.	992	23	8.3	113.0
	5	0000	T.S.	992	23	8.0	112.0
		0600	S.T.S.	990	25	7.9	111.3
		1200	S.T.S.	990	25	7.8	110.9
		1800	S.T.S.	990	25	7.5	110.3
	6	0000	T.S.	992	23	7.3	110.0
		0600	T.S.	992	23	7.3	109.5
		1200	T.S.	992	23	7.3	108.8
		1800	T.S.	992	23	7.0	108.5
	7	0000	T.S.	996	21	6.6	108.1
		0600	T.S.	998	18	6.4	107.8
		1200	T.S.	998	18	6.2	107.8
		1800	T.D.	1002	16	6.1	107.8
	8	0000	T.D.	1002	16	6.0	107.8
		0600	T.D.	1004	13	5.4	108.4
		1200	T.D.	1004	13	5.1	108.6
		1800	T.D.	1004	13	4.8	108.9
			消散 Dissipated				

熱帶低氣壓珊珊(1302)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION SHANSHAN (1302)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
二月 FEB	22	0000	T.D.	1002	13	5.7	109.1
		0600	T.D.	1002	13	5.5	109.7
		1200	T.D.	1004	13	5.0	109.7
		1800	T.D.	1004	13	4.7	109.4
	23	0000	T.D.	1006	13	3.9	109.3
			消散 Dissipated				

強烈熱帶風暴摩羯(1303)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM YAGI (1303)

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	8	1200	T.D.	1000	13	17.8	130.1
		1800	T.D.	998	16	18.7	130.5
	9	0000	T.S.	996	18	19.5	130.9
		0600	T.S.	992	21	20.5	131.5
		1200	T.S.	992	21	21.1	132.2
		1800	T.S.	992	21	21.5	132.9
	10	0000	T.S.	988	23	22.3	133.4
		0600	T.S.	988	23	23.3	134.1
		1200	T.S.	988	23	24.4	134.8
		1800	S.T.S.	984	25	25.9	135.7
	11	0000	S.T.S.	984	25	27.6	136.2
		0600	S.T.S.	984	25	29.1	136.9
		1200	T.S.	988	23	29.9	137.1
		1800	T.S.	992	21	30.5	137.1
	12	0000	T.S.	992	21	31.0	137.1
		0600	T.S.	995	18	31.0	138.0
		1200	T.D.	998	16	31.0	138.9
		1800	T.D.	998	16	31.8	139.5
	13	0000	T.D. 變為溫帶氣旋 Became Extratropical	1000	13	32.0	139.6

熱帶風暴麗琵(1304)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM LEEPI (1304)

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	17	0600	T.D.	998	13	13.6	126.9
		1200	T.D.	998	13	14.6	126.8
		1800	T.D.	998	13	15.5	126.7
	18	0000	T.D.	996	16	16.8	126.6
		0600	T.S.	992	18	17.9	126.4
		1200	T.S.	992	18	19.1	126.3
		1800	T.S.	990	23	20.1	126.1
	19	0000	T.S.	990	23	20.9	125.9
		0600	T.S.	990	23	22.5	125.5
		1200	T.S.	990	23	24.1	125.3
		1800	T.S.	990	23	25.2	125.1
	20	0000	T.S.	992	21	26.4	125.1
		0600	T.S.	992	21	28.2	125.4
		1200	T.S.	995	18	29.9	125.6
		1800	T.S. 消散 Dissipated	996	18	31.0	126.3

熱帶風暴貝碧嘉(1305)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM BEBINCA (1305)

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	20	0000	T.D.	998	13	15.6	117.0
		0600	T.D.	998	13	16.2	117.7
		1200	T.D.	998	13	17.0	117.7
		1800	T.D.	998	13	17.6	117.2
	21	0000	T.D.	997	16	18.1	116.2
		0600	T.S.	995	18	18.7	115.3
		1200	T.S.	985	23	19.1	114.6
		1800	T.S.	984	23	19.4	113.0
	22	0000	T.S.	984	23	19.5	111.5
		0600	T.S.	984	23	19.1	110.1
		1200	T.S.	990	21	19.0	108.9
		1800	T.S.	992	18	19.3	108.0
	23	0000	T.S.	988	21	19.4	107.2
		0600	T.S.	988	21	19.9	106.9
		1200	T.S.	992	18	20.3	106.7
		1800	T.D.	998	16	20.8	106.6
			消散 Dissipated				

強烈熱帶風暴溫比亞(1306)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM RUMBIA (1306)

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	28	0600	T.D.	1002	13	9.7	128.6
		1200	T.D.	1000	16	10.2	127.8
		1800	T.D.	1000	16	11.0	127.0
	29	0000	T.S.	996	18	11.8	125.3
		0600	T.S.	996	18	12.2	124.1
		1200	T.S.	996	18	13.4	122.7
		1800	T.S.	996	18	14.0	121.4
	30	0000	T.S.	996	18	14.5	120.0
		0600	T.S.	994	21	15.6	118.5
		1200	T.S.	992	23	16.4	117.2
		1800	T.S.	992	23	17.5	115.5
七月 JUL	1	0000	T.S.	990	23	18.3	114.0
		0600	S.T.S.	980	28	19.1	112.7
		1200	S.T.S.	980	28	19.6	111.8
		1800	S.T.S.	980	28	20.6	110.8
	2	0000	S.T.S.	984	25	21.4	109.9
		0600	T.S.	990	21	22.7	109.2
		1200	T.D.	996	16	24.1	108.5
			消散 Dissipated				

超強颱風蘇力(1307)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON SOULIK (1307)

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	7	0000	T.D.	1000	13	19.0	151.0
		0600	T.D.	1000	13	19.1	149.5
		1200	T.D.	1000	13	19.1	148.0
		1800	T.D.	996	16	18.9	146.6
	8	0000	T.S.	994	18	19.0	145.5
		0600	T.S.	988	23	19.2	143.8
		1200	S.T.S.	984	25	19.3	142.7
		1800	S.T.S.	975	31	19.5	141.3
	9	0000	T.	965	36	19.7	140.3
		0600	S.T.	950	43	19.9	139.4
		1200	S.T.	940	49	20.3	138.1
		1800	Super T.	925	54	20.7	137.1
	10	0000	Super T.	915	59	21.1	135.8
		0600	Super T.	915	59	21.5	134.9
		1200	Super T.	915	59	21.8	133.5
		1800	Super T.	920	57	22.0	132.1
	11	0000	Super T.	925	54	22.2	130.9
		0600	S.T.	940	49	22.4	129.8
		1200	S.T.	940	49	22.4	128.4
		1800	S.T.	940	49	22.6	127.0
	12	0000	S.T.	940	49	22.8	125.9
		0600	S.T.	945	46	23.3	124.9
		1200	S.T.	945	46	23.9	123.8
		1800	S.T.	945	46	24.7	122.3
	13	0000	T.	960	39	24.8	120.8
		0600	T.	970	33	25.9	120.1
		1200	S.T.S.	984	25	26.2	118.7
		1800	T.S.	992	21	27.0	117.3
	14	0000	T.D.	998	13	28.2	116.2
			消散 Dissipated				

熱帶風暴西馬侖(1308)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM CIMARON (1308)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
七月 JUL	16	0600	T.D.	1002	13	15.6	124.3
		1200	T.D.	1002	13	16.3	123.6
		1800	T.D.	1002	13	17.0	122.9
	17	0000	T.D.	1000	16	18.3	122.0
		0600	T.S.	994	18	19.5	121.2
		1200	T.S.	994	18	20.1	120.5
		1800	T.S.	994	18	20.8	119.5
	18	0000	T.S.	994	18	21.6	118.4
		0600	T.S.	994	18	23.0	118.0
		1200	T.S.	994	18	23.8	118.0
		1800	T.D.	1000	16	24.8	117.8
			消散 Dissipated				

強烈熱帶風暴飛燕(1309)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM JEBI (1309)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
七月 JUL	31	0000	T.D.	1000	13	14.8	116.0
		0600	T.S.	996	18	14.9	115.5
		1200	T.S.	996	18	15.3	114.9
		1800	T.S.	996	18	15.4	114.5
八月 AUG	1	0000	T.S.	992	21	15.5	113.9
		0600	T.S.	990	21	16.1	113.7
		1200	T.S.	990	21	16.6	113.4
		1800	T.S.	988	23	16.9	113.0
	2	0000	S.T.S.	984	25	17.4	112.7
		0600	S.T.S.	980	28	18.8	111.8
		1200	S.T.S.	980	28	19.8	110.9
		1800	S.T.S.	980	28	20.2	109.4
	3	0000	S.T.S.	980	28	21.0	108.3
		0600	T.S.	988	23	21.7	106.3
		1200	T.D.	994	16	22.0	104.5
			消散 Dissipated				

熱帶風暴山竹(1310)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM MANGKHUT (1310)

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	5	0600	T.D.	1002	13	11.4	117.0
		1200	T.D.	1002	13	12.0	116.0
		1800	T.D.	1000	16	12.8	114.7
	6	0000	T.D.	1000	16	13.7	113.5
		0600	T.D.	1000	16	14.8	112.2
		1200	T.S.	996	18	15.9	111.0
		1800	T.S.	996	18	16.9	109.8
	7	0000	T.S.	992	21	18.0	108.7
		0600	T.S.	992	21	19.1	107.4
		1200	T.S.	992	21	19.6	106.4
		1800	T.S.	996	18	20.0	105.4
	8	0000	T.D.	1000	13	20.0	104.4
			消散 Dissipated				

超強颱風尤特(1311)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON UTOR (1311)

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	9	0600	T.D.	1002	13	13.7	133.5
		1200	T.D.	998	16	13.7	132.5
		1800	T.S.	994	18	13.7	131.6
	10	0000	T.S.	990	23	13.7	130.5
		0600	T.	970	33	13.9	129.2
		1200	T.	960	39	14.0	128.2
		1800	T.	955	41	14.2	127.1
	11	0000	T.	955	41	14.5	125.9
		0600	S.T.	936	49	15.1	124.7
		1200	Super T.	926	54	15.5	123.5
		1800	Super T.	930	52	16.2	122.2
	12	0000	S.T.	940	46	16.6	120.8
		0600	S.T.	950	43	17.3	118.9
		1200	S.T.	950	43	17.8	118.0
		1800	S.T.	950	43	18.2	116.8
	13	0000	S.T.	945	46	18.3	115.3
		0600	S.T.	945	46	18.9	114.1
		1200	S.T.	945	46	19.3	113.6
		1800	S.T.	945	46	19.8	113.0
	14	0000	S.T.	950	43	20.6	112.4
		0600	T.	955	41	21.5	112.0
		1200	T.	970	33	21.9	111.4
		1800	S.T.S.	980	28	22.4	110.9
	15	0000	T.S.	988	21	23.1	110.8
		0600	T.D.	992	16	23.6	110.8
		1200	T.D.	994	13	24.1	111.0
		1800	T.D.	995	13	24.3	111.0
			消散 Dissipated				

颱風潭美(1312)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON TRAMI (1312)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
八月 AUG	17	0600	T.D.	997	13	20.8	125.2
		1200	T.D.	998	13	20.5	125.8
		1800	T.D.	996	13	20.1	126.6
	18	0000	T.D.	995	16	20.3	127.2
		0600	T.S.	992	18	20.3	127.5
		1200	T.S.	992	18	20.3	127.8
		1800	T.S.	992	21	20.3	127.8
	19	0000	T.S.	990	21	20.0	127.8
		0600	T.S.	988	23	20.0	128.1
		1200	S.T.S.	985	25	20.1	128.3
		1800	S.T.S.	980	28	21.0	128.5
	20	0000	S.T.S.	980	28	22.3	128.5
		0600	S.T.S.	980	28	22.9	127.4
		1200	S.T.S.	980	28	23.3	126.8
		1800	S.T.S.	975	31	24.1	126.0
	21	0000	S.T.S.	975	31	25.2	124.4
		0600	T.	970	33	25.5	122.9
		1200	T.	965	33	25.9	121.1
		1800	T.	965	33	25.7	119.6
	22	0000	S.T.S.	970	25	25.9	118.5
		0600	T.S.	984	21	26.5	117.1
		1200	T.S.	986	18	27.1	115.5
		1800	T.D.	988	16	27.4	114.7
	23	0000	T.D.	988	16	27.3	113.2
		0600	T.D.	992	13	27.2	112.2
			消散 Dissipated				

強烈熱帶風暴佩娃(1313)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM PEWA (1313)

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	18	0600	S.T.S.	996	28	12.0	179.9
		1200	S.T.S.	996	28	12.4	179.7
		1800	S.T.S.	996	28	12.7	179.0
	19	0000	S.T.S.	994	31	13.3	178.4
		0600	S.T.S.	994	31	13.8	177.8
		1200	S.T.S.	994	31	14.3	177.1
		1800	S.T.S.	996	28	14.8	176.5
	20	0000	S.T.S.	996	25	15.3	175.6
		0600	T.S.	998	23	16.2	174.8
		1200	T.S.	998	21	17.2	173.8
		1800	T.S.	998	21	18.0	172.8
	21	0000	T.S.	1000	18	18.6	171.8
		0600	T.S.	1000	18	19.4	171.2
		1200	T.S.	1000	18	20.2	170.5
		1800	T.S.	1000	18	21.3	170.1
	22	0000	T.S.	1000	18	22.2	169.7
		0600	T.S.	1000	18	23.2	169.6
		1200	T.S.	1000	18	24.2	169.3
		1800	T.S.	1000	18	25.2	168.9
	23	0000	T.S.	1002	18	25.8	168.5
		0600	T.S.	1002	18	26.4	168.5
		1200	T.S.	1002	18	26.8	168.9
		1800	T.S.	1002	18	27.2	169.3
	24	0000	T.D.	1004	16	27.5	169.3
		0600	T.D.	1004	16	27.9	168.8
			消散 Dissipated				

熱帶低氣壓烏娜拉(1314)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION UNALA (1314)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
八月 AUG	19	0600	T.D.	1000	16	17.5	180.0
		1200	T.D.	1004	13	17.5	179.2
			消散 Dissipated				

強烈熱帶風暴康妮(1315)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM KONG-REY (1315)

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	26	0000	T.D.	1002	13	15.7	126.6
		0600	T.D.	1000	16	16.4	125.3
		1200	T.S.	998	18	17.1	124.4
		1800	T.S.	990	21	17.7	124.0
	27	0000	T.S.	990	21	18.6	123.9
		0600	T.S.	990	21	19.4	123.9
		1200	T.S.	988	23	20.0	123.8
		1800	T.S.	988	23	20.6	123.2
	28	0000	S.T.S.	982	25	21.0	122.7
		0600	S.T.S.	982	25	21.7	122.6
		1200	S.T.S.	982	25	22.5	122.6
		1800	S.T.S.	980	28	23.7	122.6
	29	0000	S.T.S.	982	25	25.2	122.5
		0600	T.S.	985	23	26.1	122.4
		1200	T.S.	986	23	26.6	122.4
		1800	T.S.	990	21	27.3	122.5
	30	0000	T.S.	995	18	28.6	123.4
		0600	T.D.	1000	13	29.9	124.5
		1200	T.D.	1000	13	30.7	125.6
			變為溫帶氣旋 Became Extratropical				

熱帶低氣壓玉兔(1316)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION YUTU (1316)

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	31	0600	T.D.	1004	13	30.0	173.6
		1200	T.D.	1002	16	31.1	174.6
		1800	T.D.	1002	16	32.0	175.5
九月 SEP	1	0000	T.D.	1002	16	32.5	176.2
		0600	T.D.	1002	16	33.5	176.6
		1200	T.D.	1002	16	33.6	176.8
		1800	T.D.	1002	16	33.7	176.9
	2	0000	T.D.	1002	16	33.7	177.1
		0600	T.D.	1004	13	33.7	177.2
		1200	T.D.	1004	13	33.5	177.3
		1800	T.D.	1004	13	33.4	177.4
	3	0000	T.D.	1004	13	33.1	177.3
		0600	T.D.	1004	13	32.8	177.2
		1200	T.D.	1004	13	32.3	177.0
			消散 Dissipated				

熱帶風暴桃芝(1317)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM TORAJI (1317)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
九月 SEP	1	0600	T.D.	1002	13	25.6	123.8
		1200	T.D.	1002	13	26.1	124.3
		1800	T.D.	1000	16	26.3	124.8
	2	0000	T.S.	996	18	26.5	125.3
		0600	T.S.	994	18	27.2	126.1
		1200	T.S.	990	21	27.8	126.5
		1800	T.S.	990	21	28.0	127.3
	3	0000	T.S.	988	23	28.8	127.6
		0600	T.S.	988	23	29.4	128.2
		1200	T.S.	988	23	30.1	129.2
		1800	T.S.	988	21	31.3	130.5
	4	0000	T.S.	995	21	32.8	132.3
			變為溫帶氣旋 Became Extratropical				

強烈熱帶風暴萬宜(1318)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TROPICAL STORM MAN-YI (1318)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
九月 SEP	12	0600	T.D.	1002	13	22.2	145.2
		1200	T.D.	1002	13	22.3	144.7
		1800	T.D.	998	16	22.3	144.6
	13	0000	T.S.	994	18	22.3	143.2
		0600	T.S.	994	18	22.5	140.9
		1200	T.S.	994	18	23.0	140.1
		1800	T.S.	990	21	23.7	138.7
	14	0000	T.S.	985	23	24.0	137.3
		0600	S.T.S.	980	25	25.2	136.5
		1200	S.T.S.	980	25	26.1	135.5
		1800	S.T.S.	980	25	27.4	134.8
	15	0000	S.T.S.	980	25	28.7	134.3
		0600	S.T.S.	980	25	30.2	134.5
		1200	S.T.S.	970	28	31.5	134.9
		1800	S.T.S.	970	28	32.9	135.9
	16	0000	S.T.S.	980	25	35.3	138.0
		0600	T.S.	985	23	38.4	141.1
			變為溫帶氣旋 Became Extratropical				

超強颱風天兔(1319)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON USAGI (1319)

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	16	1800	T.D.	1000	13	17.1	132.3
	17	0000	T.D.	998	16	17.3	131.7
		0600	T.S.	995	18	17.4	131.0
		1200	T.S.	990	21	17.4	130.7
		1800	T.S.	986	23	17.3	130.6
	18	0000	S.T.S.	982	25	17.3	130.4
		0600	S.T.S.	978	28	17.3	130.0
		1200	T.	970	33	17.3	129.5
		1800	T.	960	39	17.3	128.6
	19	0000	T.	960	39	17.0	128.3
		0600	S.T.	935	49	17.6	128.0
		1200	Super T.	925	54	18.2	127.2
		1800	Super T.	920	57	18.8	126.3
	20	0000	Super T.	920	57	19.3	125.5
		0600	Super T.	920	57	19.7	124.6
		1200	Super T.	920	57	20.2	123.7
		1800	Super T.	920	57	20.4	122.5
	21	0000	Super T.	925	54	20.7	121.7
		0600	Super T.	925	54	20.8	120.7
		1200	S.T.	935	49	21.0	119.7
		1800	S.T.	945	46	21.4	118.8
	22	0000	S.T.	945	46	21.7	118.0
		0600	S.T.	945	46	22.4	116.8
		1200	S.T.	950	43	22.8	115.4
		1800	T.	965	36	23.1	113.9
	23	0000	T.S.	990	21	23.7	112.6
		0600	T.D.	994	13	24.3	111.2
			消散 Dissipated				

熱帶低氣壓(由九月十八日至十九日)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 18 - 19 SEPTEMBER

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
九月 SEP	18	0000	T.D.	996	16	16.3	111.2
		0600	T.D.	996	16	16.1	110.4
		1200	T.D.	996	16	16.3	109.4
		1800	T.D.	998	16	16.2	108.6
			消散 Dissipated				

颱風帕布(1320)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON PABUK (1320)

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	20	1800	T.D.	1000	13	19.6	146.8
	21	0000	T.D.	998	16	19.6	145.6
		0600	T.S.	996	18	19.7	145.1
		1200	T.S.	992	21	20.0	144.4
		1800	T.S.	992	21	20.6	144.1
	22	0000	T.S.	990	23	21.4	143.3
		0600	S.T.S.	985	25	22.2	142.7
		1200	S.T.S.	985	25	22.6	142.3
		1800	S.T.S.	975	25	23.2	141.8
	23	0000	S.T.S.	975	25	23.8	141.5
		0600	S.T.S.	970	28	24.8	141.2
		1200	S.T.S.	970	28	25.1	140.7
		1800	S.T.S.	970	31	25.3	140.4
	24	0000	S.T.S.	970	31	25.8	139.8
		0600	S.T.S.	970	31	26.1	139.2
		1200	T.	965	33	26.7	138.9
		1800	T.	965	33	27.4	138.7
	25	0000	T.	965	33	28.3	138.9
		0600	T.	960	36	29.4	138.9
		1200	T.	955	39	30.3	140.1
		1800	T.	955	39	31.0	141.6
	26	0000	T.	960	36	32.2	143.5
		0600	T.	965	33	33.8	145.2
		1200	T.	965	33	35.0	147.2
		1800	S.T.S. 變為溫帶氣旋 Became Extratropical	970	31	36.9	149.8

強颱風蝴蝶(1321)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON WUTIP (1321)

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	26	1200	T.D.	1004	13	15.1	117.8
		1800	T.D.	1004	13	15.6	117.8
	27	0000	T.D.	998	16	16.2	117.2
		0600	T.S.	995	18	16.8	116.3
		1200	T.S.	990	21	17.1	115.3
		1800	S.T.S.	985	25	16.9	114.3
	28	0000	S.T.S.	980	31	16.4	114.1
		0600	T.	975	33	16.7	114.0
		1200	T.	970	36	16.9	113.9
		1800	T.	965	39	16.8	113.1
	29	0000	T.	960	41	16.8	112.5
		0600	S.T.	950	43	16.8	111.6
		1200	S.T.	950	43	16.8	111.0
		1800	T.	960	41	16.9	109.9
	30	0000	T.	965	39	17.3	108.7
		0600	T.	970	36	17.5	107.5
		1200	S.T.S.	980	28	17.8	105.7
		1800	T.S.	998	18	17.9	104.0
			消散 Dissipated				

熱帶風暴聖帕(1322)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL STORM SEPAT (1322)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
九月 SEP	29	1800	T.D.	1002	13	26.3	148.2
	30	0000	T.D.	1000	16	26.4	147.0
		0600	T.S.	998	18	27.2	145.1
		1200	T.S.	994	21	27.9	143.8
		1800	T.S.	994	21	28.7	142.0
十月 OCT	1	0000	T.S.	994	21	29.1	141.7
		0600	T.S.	994	21	30.2	141.3
		1200	T.S.	994	21	31.2	141.2
		1800	T.S.	994	21	32.2	141.1
	2	0000	T.S.	994	21	33.9	141.6
		0600	T.S.	994	21	35.5	141.9
		1200	T.S.	994	21	37.3	143.3
			變為溫帶氣旋 Became Extratropical				

強颱風菲特(1323)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON FITOW (1323)

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	30	1200	T.D.	1002	13	13.6	132.5
		1800	T.D.	1000	16	13.8	132.1
十月 OCT	1	0000	T.S.	995	18	14.2	131.7
		0600	T.S.	990	21	15.2	131.4
		1200	S.T.S.	982	25	16.0	131.2
		1800	S.T.S.	978	28	17.1	131.1
	2	0000	S.T.S.	975	31	17.8	130.5
		0600	S.T.S.	975	31	18.4	129.9
		1200	S.T.S.	975	31	18.9	129.9
		1800	S.T.S.	975	31	19.5	129.8
	3	0000	T.	970	33	20.0	129.7
		0600	T.	970	33	20.7	129.7
		1200	T.	965	36	21.2	129.7
		1800	T.	965	36	21.6	129.7
	4	0000	T.	960	39	22.1	129.7
		0600	T.	955	41	22.7	129.6
		1200	S.T.	950	43	23.3	129.3
		1800	S.T.	950	43	23.7	128.5
	5	0000	S.T.	950	43	24.4	127.6
		0600	S.T.	950	43	24.7	126.9
		1200	S.T.	950	43	25.0	126.0
		1800	S.T.	950	43	25.5	124.9
	6	0000	T.	955	41	25.7	123.7
		0600	T.	960	39	26.1	122.9
		1200	T.	965	36	26.8	121.8
		1800	T.	970	33	27.1	120.3
	7	0000	T.S.	995	21	27.0	118.8
		0600	T.D.	1002	13	26.8	117.9
			消散 Dissipated				

超強颱風丹娜絲(1324)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON DANAS (1324)

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	4	0000	T.D.	1002	13	16.2	146.5
		0600	T.D.	1000	16	16.7	146.1
		1200	T.S.	1000	18	17.2	144.9
		1800	T.S.	995	21	17.9	144.0
	5	0000	T.S.	994	23	18.2	142.3
		0600	S.T.S.	986	25	18.7	141.2
		1200	S.T.S.	982	28	19.3	139.6
		1800	T.	975	33	20.4	138.0
	6	0000	T.	965	36	21.2	136.4
		0600	T.	960	39	22.0	135.0
		1200	S.T.	950	43	22.7	133.4
		1800	S.T.	940	49	23.9	131.8
	7	0000	Super T.	930	54	25.2	130.2
		0600	Super T.	930	54	26.6	128.7
		1200	Super T.	935	52	28.1	127.6
		1800	S.T.	945	46	29.6	127.1
	8	0000	T.	960	39	31.5	127.0
		0600	T.	970	33	32.8	127.5
		1200	S.T.S.	980	28	34.6	129.5
		1800	T.S.	986	23	35.5	131.5
			變為溫帶氣旋 Became Extratropical				

颱風百合(1325)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON NARI (1325)

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	9	0000	T.D.	1000	13	14.1	130.2
		0600	T.D.	998	16	14.3	129.4
		1200	T.S.	995	18	14.4	129.0
		1800	T.S.	990	21	14.7	128.5
	10	0000	S.T.S.	985	25	15.1	127.8
		0600	S.T.S.	980	28	15.3	126.8
		1200	S.T.S.	975	31	15.4	126.0
		1800	T.	970	33	15.4	125.4
	11	0000	T.	960	39	15.5	124.5
		0600	T.	955	41	15.5	123.4
		1200	T.	955	41	15.5	122.3
		1800	T.	960	39	15.4	120.5
	12	0000	T.	965	36	15.2	119.2
		0600	T.	965	36	15.2	118.0
		1200	T.	965	36	15.2	116.7
		1800	T.	965	36	15.2	115.7

颱風百合(1325)的每六小時位置及強度 (續)
SIX-HOURLY POSITION AND INTENSITY DATA OF TYPHOON NARI (1325) (CON'T)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十月 OCT	13	0000	T.	960	39	15.3	114.7
		0600	T.	960	39	15.3	113.6
		1200	T.	960	39	15.5	112.5
		1800	T.	960	39	15.5	111.8
	14	0000	T.	960	39	15.6	111.2
		0600	T.	960	39	15.9	110.7
		1200	T.	965	36	16.1	109.8
		1800	T.	965	36	16.2	109.0
	15	0000	S.T.S.	975	31	15.9	108.1
		0600	T.S.	988	23	15.3	107.1
		1200	T.D.	995	16	15.1	105.8
			消散 Dissipated				

強颱風韋帕(1326)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON WIPHA (1326)

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	1200	T.D.	1000	13	13.8	143.0
		1800	T.S.	998	18	13.5	142.6
	11	0000	T.S.	992	21	13.9	142.3
		0600	T.S.	988	23	14.2	141.5
		1200	S.T.S.	982	25	14.7	140.8
		1800	S.T.S.	978	28	15.4	139.8
	12	0000	S.T.S.	975	31	16.2	139.2
		0600	S.T.S.	975	31	16.8	138.8
		1200	S.T.S.	975	31	17.5	138.3
		1800	T.	970	33	18.0	137.9
	13	0000	T.	965	39	18.4	137.4
		0600	S.T.	955	43	19.1	137.1
		1200	S.T.	940	49	19.8	136.4
		1800	S.T.	940	49	20.6	135.9
	14	0000	S.T.	945	46	21.8	135.5
		0600	S.T.	945	46	23.0	134.9
		1200	S.T.	950	43	24.3	134.3
		1800	S.T.	950	43	25.6	134.0
	15	0000	T.	955	41	26.8	134.0
		0600	T.	960	39	28.5	134.7
		1200	T.	965	36	30.4	136.4
		1800	T.	965	36	32.8	138.6
			變為溫帶氣旋 Became Extratropical				

超強颱風范斯高(1327)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON FRANCISCO (1327)

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	15	1800	T.D.	1004	13	13.4	147.0
	16	0000	T.D.	1002	16	12.7	145.2
		0600	T.S.	1000	18	12.4	144.4
		1200	T.S.	995	21	11.7	143.8
		1800	S.T.S.	985	25	11.2	143.0
	17	0000	S.T.S.	975	31	11.0	142.9
		0600	T.	965	36	11.4	142.7
		1200	T.	955	41	12.1	142.8
		1800	S.T.	945	46	13.2	142.8
	18	0000	S.T.	940	49	13.8	142.3
		0600	Super T.	935	52	14.2	142.0
		1200	Super T.	930	54	15.2	141.8
		1800	Super T.	920	59	15.9	141.1
	19	0000	Super T.	910	64	16.2	140.4
		0600	Super T.	910	64	16.7	139.7
		1200	Super T.	910	64	17.1	139.1
		1800	Super T.	910	64	17.4	138.3
	20	0000	Super T.	910	64	17.7	137.7
		0600	Super T.	910	64	18.4	137.3
		1200	Super T.	920	59	18.7	136.9
		1800	Super T.	930	54	19.3	136.6
	21	0000	S.T.	940	49	19.8	136.2
		0600	S.T.	945	46	20.3	135.9
		1200	S.T.	945	46	21.0	135.6
		1800	S.T.	945	46	21.7	135.2
	22	0000	S.T.	950	43	22.3	134.5
		0600	S.T.	950	43	22.8	133.7
		1200	S.T.	950	43	23.2	133.1
		1800	S.T.	950	43	23.6	132.1
	23	0000	T.	955	41	24.1	131.3
		0600	T.	960	39	24.3	130.5
		1200	T.	960	36	24.6	130.0
		1800	T.	965	33	24.9	129.8
	24	0000	T.	965	33	25.2	129.7
		0600	T.	965	33	25.8	129.8
		1200	T.	965	33	26.5	130.3
		1800	S.T.S.	975	31	27.2	130.6
	25	0000	S.T.S.	975	31	27.8	131.7
		0600	S.T.S.	980	28	28.7	132.9
		1200	S.T.S.	980	28	30.0	134.7
		1800	S.T.S.	980	28	30.8	137.4
	26	0000	S.T.S.	985	25	32.1	140.3
			變為溫帶氣旋 Became Extratropical				

超強颱風利奇馬(1328)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON LEKIMA (1328)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十月 OCT	20	1200	T.D.	1004	16	10.3	160.6
		1800	T.S.	1000	18	10.8	160.8
	21	0000	T.S.	998	23	11.6	160.9
		0600	S.T.S.	990	25	12.2	160.5
		1200	S.T.S.	985	28	13.1	160.0
		1800	S.T.S.	980	31	13.8	159.1
	22	0000	T.	970	36	15.0	158.2
		0600	S.T.	955	43	16.2	156.8
		1200	Super T.	930	52	17.1	155.4
		1800	Super T.	925	57	18.0	153.9
	23	0000	Super T.	920	59	18.6	152.2
		0600	Super T.	920	59	19.0	150.9
		1200	Super T.	910	61	19.4	149.8
		1800	Super T.	910	61	19.9	148.7
	24	0000	Super T.	910	61	20.5	147.6
		0600	Super T.	920	59	21.4	146.5
		1200	Super T.	925	57	22.5	145.6
		1800	Super T.	920	54	23.6	144.6
	25	0000	Super T.	930	52	25.0	144.3
		0600	Super T.	930	52	27.0	144.5
		1200	S.T.	935	46	29.4	145.0
		1800	S.T.	950	43	31.4	146.6
	26	0000	T.	960	39	34.3	148.9
		0600	T.	960	39	36.9	152.4
			變為溫帶氣旋 Became Extratropical				

強颱風羅莎(1329)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SEVERE TYPHOON KROSA (1329)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十月 OCT	28	1800	T.D.	1000	13	15.5	135.7
	29	0000	T.D.	998	16	15.5	134.3
		0600	T.D.	998	16	15.6	133.3
		1200	T.D.	998	16	15.6	132.2
		1800	T.S.	995	18	15.8	131.1
	30	0000	T.S.	990	21	16.2	129.8
		0600	T.S.	985	23	16.8	128.2
		1200	S.T.S.	982	25	17.2	126.9
		1800	S.T.S.	975	31	17.5	125.5
	31	0000	S.T.S.	975	31	17.8	124.2
		0600	T.	970	33	18.0	123.0
		1200	T.	960	39	18.3	121.8
		1800	T.	970	33	18.6	120.3
十一月 NOV	1	0000	T.	970	33	18.9	119.4
		0600	T.	970	33	19.1	118.1
		1200	T.	965	39	19.3	117.2
		1800	S.T.	960	43	19.4	116.4
	2	0000	S.T.	955	46	19.5	115.8
		0600	S.T.	955	46	19.9	115.3
		1200	S.T.	960	43	20.1	115.1
		1800	T.	970	36	20.2	114.8
	3	0000	T.	970	36	20.3	114.7
		0600	S.T.S.	980	28	20.3	114.5
		1200	T.S.	988	23	20.0	114.1
		1800	T.S.	990	21	19.4	113.5
	4	0000	T.D.	1000	13	18.6	112.3
		0600	T.D.	1000	13	17.6	111.2
		1200	T.D.	1000	13	16.8	110.2
			消散 Dissipated				

超強颱風海燕(1330)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF SUPER TYPHOON HAIYAN (1330)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 NOV	3	0600	T.D.	1004	13	5.9	157.2
		1200	T.D.	1004	13	6.1	155.5
		1800	T.D.	1004	13	6.1	153.3
	4	0000	T.D.	1002	16	6.1	152.2
		0600	T.S.	1000	18	6.2	150.4
		1200	T.S.	998	21	6.3	148.8
		1800	T.S.	992	23	6.5	147.2
	5	0000	S.T.S.	985	28	6.5	145.9
		0600	S.T.S.	980	31	6.6	144.6
		1200	T.	970	36	6.8	142.9
		1800	T.	955	43	7.1	141.3
	6	0000	Super T.	930	54	7.3	139.7
		0600	Super T.	920	59	7.6	137.9
		1200	Super T.	910	64	7.9	136.2
		1800	Super T.	900	72	8.2	134.4
	7	0000	Super T.	895	75	8.7	132.8
		0600	Super T.	895	75	9.3	131.1
		1200	Super T.	895	75	10.2	129.1
		1800	Super T.	890	79	10.6	126.9
	8	0000	Super T.	900	72	11.1	124.8
		0600	Super T.	910	64	11.4	122.6
		1200	Super T.	915	61	11.8	120.5
		1800	Super T.	925	57	12.4	118.0
	9	0000	Super T.	935	52	12.4	116.6
		0600	Super T.	935	52	13.4	114.7
		1200	S.T.	940	49	14.4	112.9
		1800	S.T.	950	46	15.3	111.4
	10	0000	S.T.	955	43	16.5	110.2
		0600	S.T.	955	43	17.9	109.0
		1200	S.T.	955	43	19.2	107.9
		1800	T.	970	33	20.3	107.4
	11	0000	T.	975	33	21.5	107.3
		0600	S.T.S.	984	25	22.4	107.9
		1200	T.D.	998	16	22.6	108.8
			消散 Dissipated				

熱帶低氣壓(由十一月五日至六日)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION OF 5 - 6 NOVEMBER

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 NOV	5	0600	T.D.	1000	16	10.5	116.9
		1200	T.D.	1000	16	10.8	115.3
		1800	T.D.	1000	16	11.3	113.8
	6	0000	T.D.	1002	16	11.8	111.8
		0600	T.D.	1002	16	11.5	110.2
		1200	T.D.	1004	13	11.2	108.9
			消散 Dissipated				

熱帶低氣壓楊柳(1331)的每六小時位置及強度
SIX-HOURLY POSITION AND INTENSITY DATA OF TROPICAL DEPRESSION PODUL (1331)

月份 Month	日期 Date	時間 (協調世界時) Time (UTC)	強度 Intensity	估計最低中心氣壓 (百帕斯卡) Estimated minimum central pressure (hPa)	估計最高風速 (米每秒) Estimated maximum surface winds (m/s)	北緯 Lat. °N	東經 Long. °E
十一月 NOV	14	0000	T.D.	1002	13	11.5	114.8
		0600	T.D.	1002	13	11.8	112.8
		1200	T.D.	1000	16	11.8	111.6
		1800	T.D.	1000	16	12.0	110.5
	15	0000	T.D.	1002	13	12.4	109.3
			消散 Dissipated				