3.3 強烈熱帶風暴貝碧嘉 (1816)：二零一八年八月九日至十七日

貝碧嘉是二零一八年第三個影響香港的熱帶氣旋。在微弱引導氣流的背景下，貝碧嘉路徑飄忽，頗長時間在廣東西部沿海一帶徘徊，引致熱帶氣旋警告信號連續生效了132小時5分鐘，是一九四六年以來的第三最長，僅次於1964年桃麗達的161小時及1977年戴娜的139小時10分鐘。

熱帶低氣壓貝碧嘉於八月九日在香港之西南約540公里的南海北部上形成，向北緩慢移動，在八月十一日接近正午於廣東西部陽江附近登陸。隨後貝碧嘉以逆時針方向在廣東西部沿岸地區徘徊及於當晚移回沿岸海域，八月十二日貝碧嘉向東南漂移並增強為熱帶風暴，它於八月十三日至十四日以逆時針方向在廣東西部沿岸海域徘徊，八月十五日貝碧嘉加速向西南偏西移動，並增强爲强烈熱帶風暴，達到其最高強度，中心附近的最高持續風速估計為每小時90公里。翌日貝碧嘉橫過北部灣，八月十七日在越南北部登陸及在內陸減弱為一個低壓區。

根據報章報導，貝碧嘉為廣東、廣西及海南帶來狂風暴雨，造成最少三人死亡，二人失蹤。貝碧嘉吹襲越南期間，多處有水浸及山泥傾瀉，至少有10人死亡，三人失蹤。

香港天文台在八月九日下午5時15分發出一號戒備信號，當時貝碧嘉集結在香港之西南約540公里。在八月九日至十三日期間，本港普遍吹和緩至清勁的東至東南風，離岸及高地間中吹強風。八月十四日貝碧嘉開始緩慢地向偏北方向移動，稍為靠近珠江口一帶，天文台在八月十四日上午5時20分發出三號强風信號，當時貝碧嘉位於香港之西南偏南約190公里。由於貝碧嘉環流相對較細小，當日本港只普遍吹和緩至清勁的東至東南風，離岸及高地間中吹強風。貝碧嘉於當日下午2時左右最接近香港，在本港之西南偏南約150公里掠過。晚上貝碧嘉向偏西方向移動及遠離香港，天文台在八月十五日上午2時20分以一號戒備信號取代三號強風信號，並於當日上午5時20分取消所有熱帶氣旋警告信號。

貝碧嘉影響香港期間，尖鼻咀錄得最高潮位(海圖基準面以上) 3.33米，大埔滘則錄得最大風暴潮(天文潮高度以上) 0.43米。天文台總部於八月十二日下午5時34分錄得最低瞬時海平面氣壓994.7百帕斯卡，當時貝碧嘉位於本港之西南約260公里。

受華南高空反氣旋影響，八月九日本港部分時間有陽光，局部地區有驟雨，

日間天氣酷熱。與貝碧嘉相關的外圍雨帶在八月十至十五日間中為本港帶來狂風大驟雨及雷暴，天文台在八月十、十一及十二日均有發出黃色暴雨警告信號。在八月九至十五日期間，本港普遍錄得超過150毫米雨量，新界部分地區的雨量更超過250毫米。

貝碧嘉吹襲香港期間，本港有至少18宗塌樹報告。元朗新田公路有大樹倒塌，壓毀兩部駛經的私家車及貨櫃車，其中一名司機受輕傷。

表3.3.1 - 3.3.4 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3.3.1 - 3.3.2 分別為貝碧嘉的路徑圖及本港的雨量分佈圖。圖3.3.3 - 3.3.4 分別為貝碧嘉的衛星及雷達圖像。

3.3 Severe Tropical Storm Bebinca (1816): 9 – 17 August 2018

Bebinca was the third tropical cyclone affecting Hong Kong in 2018. Under the influence of weak steering flow, it exhibited an erratic movement and lingered over the seas off the coast of western Guangdong for a rather long time. The tropical cyclone warning signals had been in force for 132 hours and 5 minutes, making it the third longest since 1946, just after 161 hours for Tilda in 1964 and 139 hours 10 minutes for Dinah in 1977.

Bebinca formed as a tropical depression over the northern part of the South China Sea about 540 km southwest of Hong Kong. Moving slowly northwards, it made landfall near Yangjiang of western Guangdong around noon on 11 August. Bebinca then made an anti-clockwise loop over the coastal region of western Guangdong and moved back to the coastal waters that night. After drifting southeastwards on 12 August, Bebinca intensified into a tropical storm and looped slowly in anti-clockwise direction off the coast of western Guangdong on 13 and 14 August. Bebinca picked up speed to move west-southwestwards and intensified into a severe tropical storm on 15 August, reaching its peak intensity with an estimated sustained wind of 90 km/hr near its centre. It moved across Beibu Wan the next day. Bebinca made landfall over the northern part of Vietnam and weakened into an area of low pressure inland on 17 August.

According to press reports, Bebinca brought torrential rain and squalls to Guangdong, Guangxi and Hainan. At least three people were killed and 2 were reported missing. Bebinca also caused extensive flooding and landslides in Vietnam during its passage, killing 10 people with another three missing.

In Hong Kong, the No. 1 Standby Signal was issued at 5:15 p.m. on 9 August when Bebinca was about 540 km southwest of the territory. Local winds were moderate to fresh east to southeasterlies on 9 - 13 August, and occasionally reaching strong force offshore and on high ground. As Bebinca started to move slowly northwards on 14 August, edging slightly closer to the Pearl River Estuary, the No. 3 Strong Wind Signal was issued at 5:20 a.m. on 14 August when it was about 190 km south-southwest of Hong Kong. As the circulation of Bebinca was relatively small, local winds were only moderate to fresh east to southeasterlies during the day, and occasionally reaching strong force offshore and on high ground. Bebinca came closest to the territory at around 2 p.m. on that day as it skirted past about 150 km south-southwest of Hong Kong. As it tracked westwards and departed from Hong Kong at night, the No. 3 Strong Wind Signal was replaced by the No. 1 Standby Signal at 2:20 a.m. on 15 August, and all tropical cyclone warning signals were cancelled at 5:20 a.m. on that day.

During the passage of Bebinca, a maximum sea level (above chart datum) of 3.33 m was recorded at Tsim Bei Tsui and a maximum storm surge (above astronomical tide) of 0.43 m was recorded at Tai Po Kau. The lowest instantaneous mean sea-level pressure of 994.7 hPa was recorded at the Observatory headquarters at 5:34 p.m. on 12 August when Bebinca was about 260 km southwest of Hong Kong.

Under the influence of an anticyclone aloft over southern China, there were sunny periods and isolated showers in Hong Kong on 9 August. It was very hot during the day. The outer rainbands associated with Bebinca brought occasional heavy squally showers and thunderstorms to Hong Kong on 10 – 15 August. Amber Rainstorm Warning Signals were

issued on 10, 11 and 12 August. More than 150 millimetres of rainfall were generally recorded over the territory during 9 – 15 August, with rainfall over parts of the New Territories exceeding 250 millimetres.

In Hong Kong, there were at least 18 reports of fallen trees during the passage of Bebinca. A tree collapsed at San Tin Highway near Yuen Long and damaged a private car and a container truck passing by. One of the drivers suffered a minor injury.

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 3.3.1 - 3.3.4 respectively. Figures 3.3.1 - 3.3.2 show respectively the track of Bebinca and the rainfall distribution for Hong Kong. Fugures 3.3.3 - 3.3.4 show respectively a satellite imagery and a radar imagery of Bebinca.

表 3.3.1　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 3.3.1　Maximum gust peak speeds and maximum hourly mean winds with associated wind directions recorded at various stations when the tropical cyclone warning signals for 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)	東南偏南	SSE	52	10/8	03:05	東南偏東	ESE	31	9/8	18:00
中環碼頭	Central Pier	東	E	52	9/8	18:03	東南偏東	ESE	31	9/8	18:00
長洲	Cheung Chau	東南	SE	75	10/8	03:18	東南偏東	ESE	43	9/8	18:00
長洲泳灘	Cheung Chau Beach	東	E	59	9/8	17:25	東	E	45	10/8	00:00
青洲	Green Island	東北偏東	ENE	63	9/8	17:24	東北偏東	ENE	43	9/8	22:00
		東北偏東	ENE	63	9/8	17:30					
香港國際機場	Hong Kong International Airport	東南偏東	ESE	62	12/8	05:14	東	E	36	9/8	19:00
啟德	Kai Tak	東	E	52	9/8	20:04	東南偏東	ESE	25	9/8	18:00
京士柏	King's Park	東	E	45	10/8	03:31	東	E	20	9/8	19:00
流浮山	Lau Fau Shan	東	E	51	9/8	17:37	東北偏東	ENE	27	9/8	22:00
北角	North Point	東	E	49	9/8	22:12	東	E	30	9/8	23:00
坪洲	Peng Chau	東南偏南	SSE	56	10/8	03:30	東	E	34	9/8	18:00
平洲	Ping Chau	南	S	25	10/8	04:26	東南偏東	ESE	6	14/8	11:00
西貢	Sai Kung	東北偏東	ENE	47	9/8	22:02	東南偏南	SSE	31	10/8	05:00
沙洲	Sha Chau	東南偏南	SSE	47	11/8	05:14	東南偏東	ESE	34	9/8	19:00
沙螺灣	Sha Lo Wan	東南	SE	65	10/8	16:38	東	E	23	9/8	22:00
沙田	Sha Tin	東	E	34	9/8	22:18	東南偏東	ESE	14	9/8	19:00
		東南偏南	SSE	34	11/8	04:37					
九龍天星碼頭	Star Ferry (Kowloon)	東	E	51	9/8	17:20	東	E	30	9/8	18:00
打鼓嶺	Ta Kwu Ling	東	E	41	9/8	19:37	東	E	16	9/8	20:00
大美督	Tai Mei Tuk	東南	SE	56	12/8	06:53	東	E	38	9/8	18:00
大帽山	Tai Mo Shan	東南偏東	ESE	79	10/8	23:36	東南偏東	ESE	59	11/8	00:00
大埔滘	Tai Po Kau	東南	SE	54	9/8	17:56	東南偏東	ESE	30	9/8	18:00
塔門東	Tap Mun East	東南偏東	ESE	58	10/8	02:06	東	E	41	9/8	20:00
大老山	Tate's Cairn	東南偏東	ESE	63	12/8	05:11	東	E	47	9/8	18:00
將軍澳	Tseung Kwan O	東南偏東	ESE	40	9/8	18:15	東北偏東	ENE	13	13/8	12:00
							東北偏東	ENE	13	13/8	13:00
							東北偏東	ENE	13	13/8	14:00
青衣島蜆殼油庫	Tsing Yi Shell Oil Depot	東南	SE	43	10/8	03:46	東南偏東	ESE	20	11/8	07:00
屯門政府合署	Tuen Mun Government Offices	東	E	41	9/8	18:32	東	E	16	9/8	19:00
橫瀾島	Waglan Island	東北偏東	ENE	59	14/8	08:06	東	E	45	9/8	22:00
濕地公園	Wetland Park	東南偏南	SSE	31	11/8	06:39	東南偏東	ESE	16	9/8	18:00
黃竹坑	Wong Chuk Hang	東	E	52	10/8	03:16	東北偏東	ENE	14	9/8	18:00
							東北	NE	14	9/8	22:00

昂坪、石崗- 沒有資料　Ngong Ping, Shek Kong - data not available

表 3.3.2　在貝碧嘉影響下，熱帶氣旋警告信號系統的八個參考測風站在熱帶氣旋警告信號生效時錄得持續風力達到強風程度的時段

Table 3.3.2　Periods during which sustained strong winds were attained at the eight reference anemometers in the tropical cyclone warning system when tropical cyclone 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 when strong wind speed* was attained		最後達到強風*時間 End time when strong wind speed* was attained	
		日期/月份 Date/Month	時間 Time	日期/月份 Date/Month	時間 Time
長洲	Cheung Chau	9/8	17:15	14/8	17:00

香港國際機場、啟德、沙田、流浮山、西貢、打鼓嶺、青衣島蜆殼油庫的持續風力未達到強風程度。

The sustained wind speed did not attain strong force at Hong Kong International Airport, Kai Tak, Sha Tin, Lau Fau Shan, Sai Kung, Ta Kwu Ling and Tsing Yi Shell Oil Depot.

* 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: 本表列出持續風力達到強風程度的起始及終結時間。期間風力可能高於或低於指定的風力。

Note: The table gives the start and end time of sustained strong force winds. Winds might fluctuate above or below the specified wind speeds in between the times indicated.

表 3.3.3　貝碧嘉掠過期間，香港天文台總部及其他各站所錄得的日雨量

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

站 (參閱圖 3.3.2) Station (See Fig. 3.3.2)			八月九日 9 Aug	八月十日 10 Aug	八月十一日 11 Aug	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 rainfall (mm)
香港天文台 Hong Kong Observatory (HKO)			微量 Trace	47.9	51.9	18.9	0.1	32.9	2.2	153.9
香港國際機場 Hong Kong International Airport (HKA)			微量 Trace	45.0	53.1	44.7	微量 Trace	15.3	1.9	160.0
長洲 Cheung Chau (CCH)			0.0	51.0	[38.5]	41.5	11.0	14.5	2.0	[158.5]
H23	香港仔	Aberdeen	0.0	47.5	51.5	43.0	5.0	20.5	3.5	171.0
N05	粉嶺	Fanling	0.5	36.5	77.5	69.5	0.0	28.0	9.0	221.0
N13	糧船灣	High Island	0.0	36.0	27.5	62.0	0.5	58.5	6.5	191.0
K04	佐敦穀	Jordan Valley	0.5	55.0	57.0	29.5	2.0	26.5	4.0	174.5
N06	葵涌	Kwai Chung	0.0	43.5	154.5	36.0	0.5	39.5	1.0	275.0
H12	半山區	Mid Levels	0.0	45.5	66.5	36.5	8.0	37.0	5.0	198.5
N09	沙田	Sha Tin	0.0	40.5	76.0	91.5	0.0	57.0	10.0	275.0
H19	筲箕灣	Shau Kei Wan	0.0	55.0	26.0	21.5	15.0	30.5	0.0	148.0
K06	蘇屋邨	So Uk Estate	0.0	43.5	[125.0]	25.0	2.0	20.5	0.5	[216.5]
R31	大美督	Tai Mei Tuk	1.5	35.5	57.0	[77.0]	[0.0]	18.0	17.0	[206.0]
R21	踏石角	Tap Shek Kok	0.0	35.0	34.0	49.0	[0.0]	34.5	1.5	[154.0]
TMR	屯門水庫	Tuen Mun Reservoir	0.0	51.1	41.3	30.7	0.0	32.3	6.3	161.7

石崗、東涌 - 沒有資料　Shek Kong, Tung Chung - data not available

註 : [ ] 基於不完整的每小時雨量數據。Note : [ ] based on incomplete hourly data

表 3.3.4　貝碧嘉掠過期間，香港各潮汐站所錄得的最高潮位及最大風暴潮

Table 3.3.4　Times and heights of the maximum sea level and the maximum storm surge recorded at tide stations in Hong Kong during the passage of 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	2.77	12/8	09:31	0.31	14/8	08:59
石壁	Shek Pik	2.83	12/8	08:58	0.26	12/8	23:24
大廟灣	Tai Miu Wan	2.66	12/8	09:37	0.31	12/8	23:30
大埔滘	Tai Po Kau	2.78	12/8	10:54	0.43	12/8	15:14
尖鼻咀	Tsim Bei Tsui	3.33	12/8	09:54	0.42	12/8	18:02
橫瀾島	Waglan Island	2.71	12/8	09:27	0.18	12/8	23:30

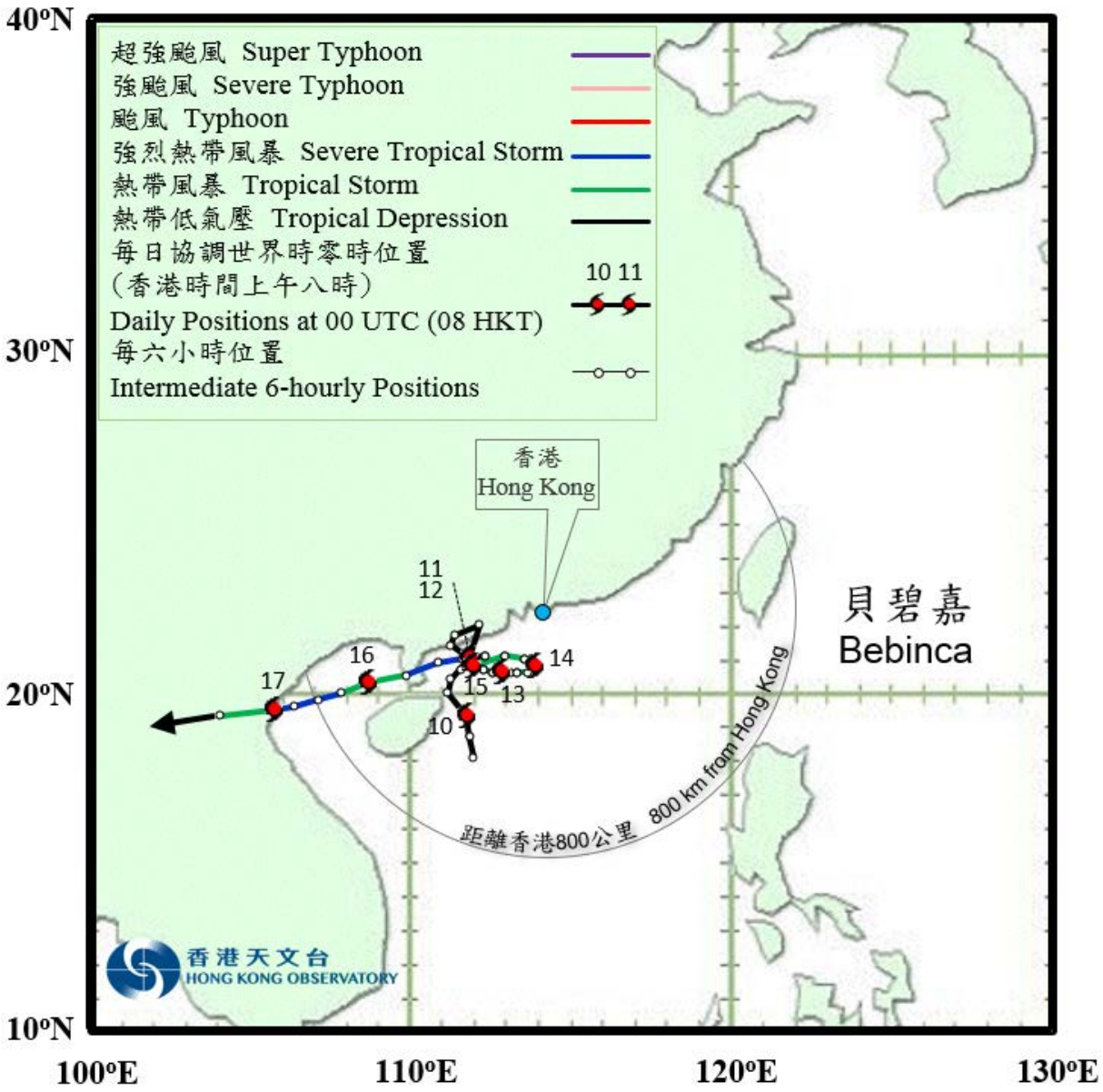

圖 3.3.1a　　二零一八年八月九日至十七日貝碧嘉的路徑圖。

Figure 3.3.1a　Track of Bebinca on 9 - 17 August 2018.

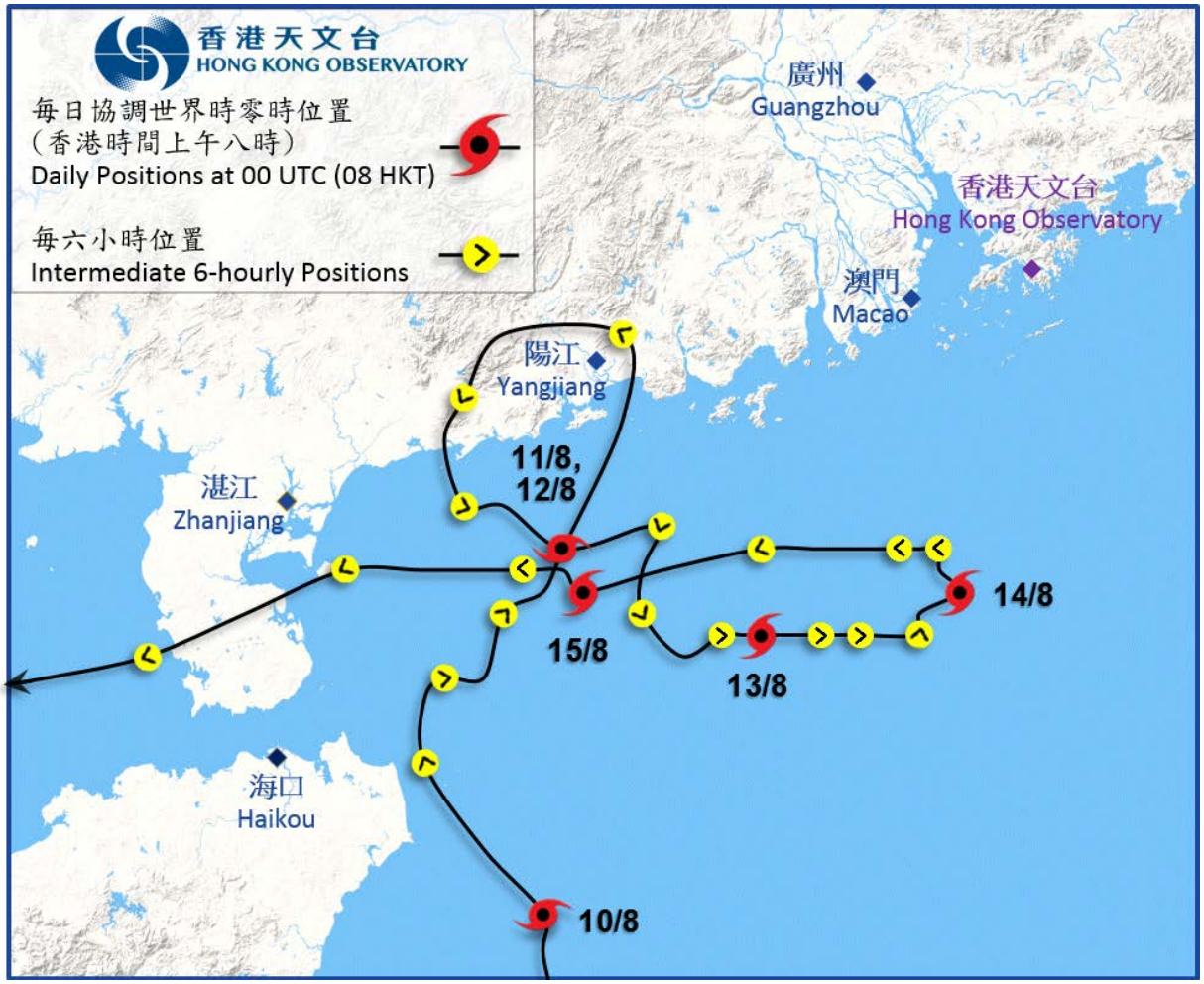

圖 3.3.1b　　貝碧嘉接近香港時的路徑圖。

Figure 3.3.1b　Track of Bebinca in the vicinity of Hong Kong.

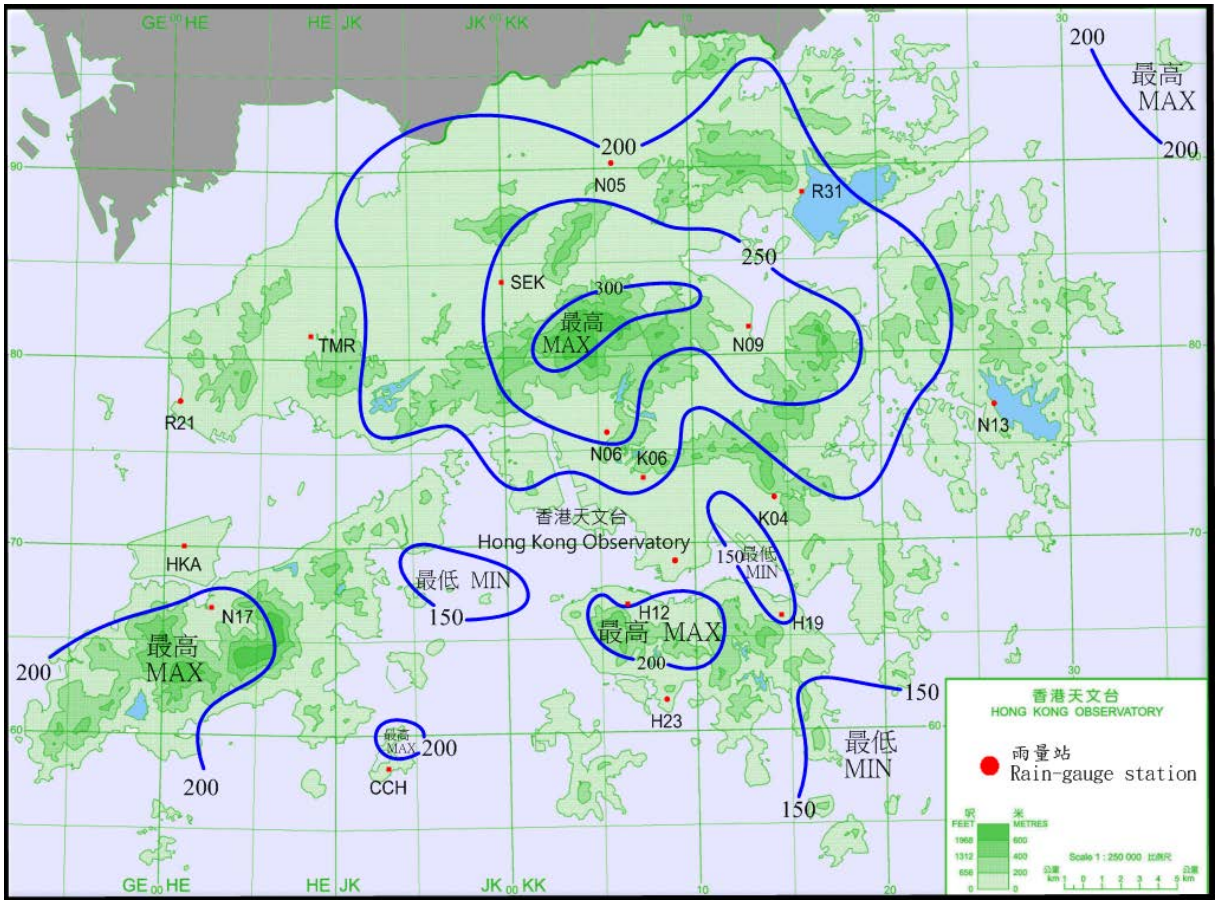

圖 3.3.2　　二零一八年八月九日至十五日的雨量分佈 (等雨量線單位為毫米)。

Figure 3.3.2　　Rainfall distribution on 9 – 15 August 2018 (isohyets in millimetres).

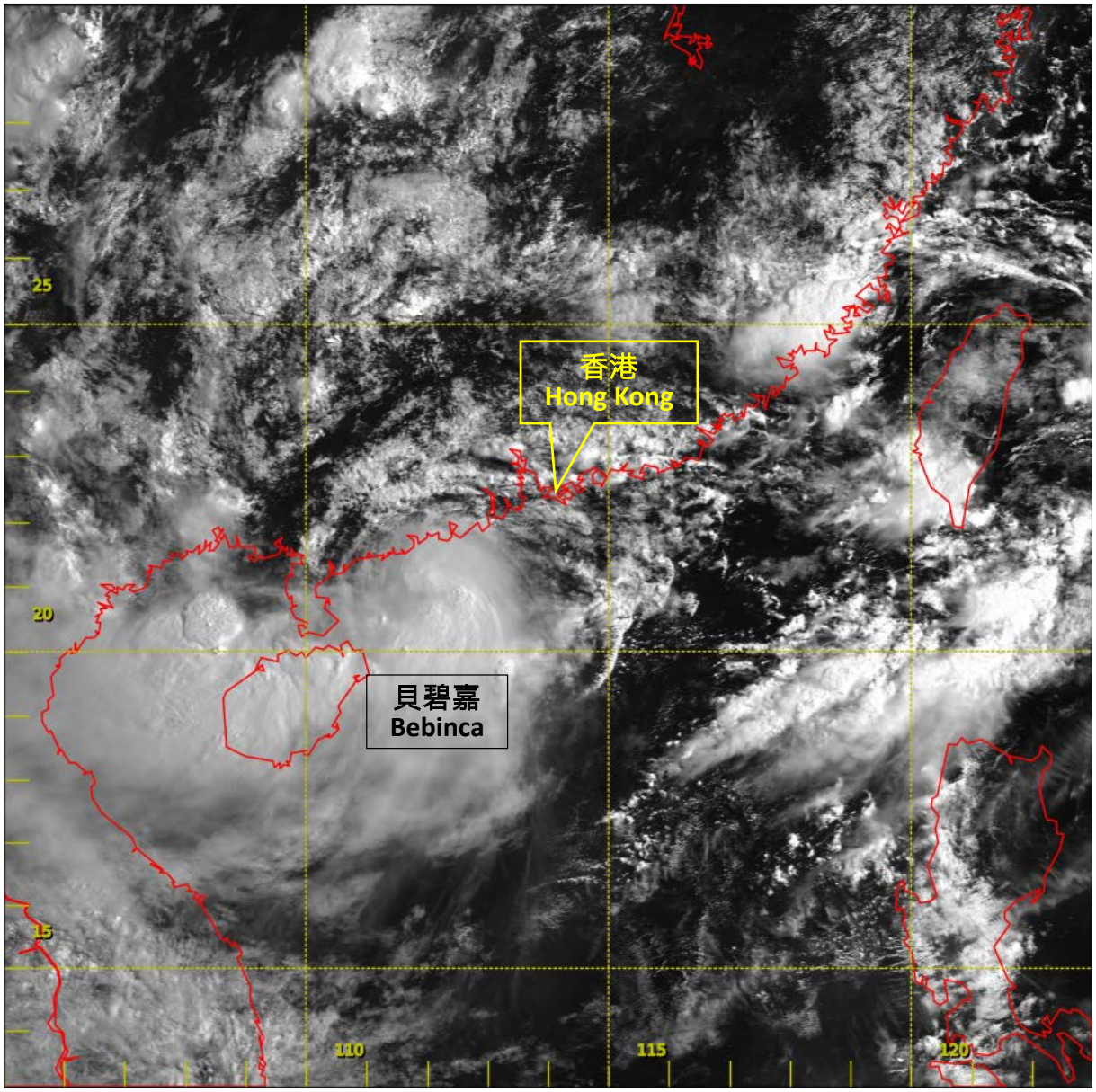

圖 3.3.3　二零一八年八月十五日上午 8 時左右的可見光衛星圖片，當時貝碧嘉達到其最高強度，中心附近最高持續風速估計為每小時 90 公里。

Figure 3.3.3　Visible satellite imagery around 8 a.m. on 15 August 2018, when Bebinca was at peak intensity with an estimated maximum sustained winds of 90 km/h near its centre.

〔此衛星圖像接收自日本氣象廳的向日葵 8 號衛星。〕

[The satellite imagery was originally captured by Himawari-8 Satellite (H-8) of Japan Meteorological Agency (JMA).]

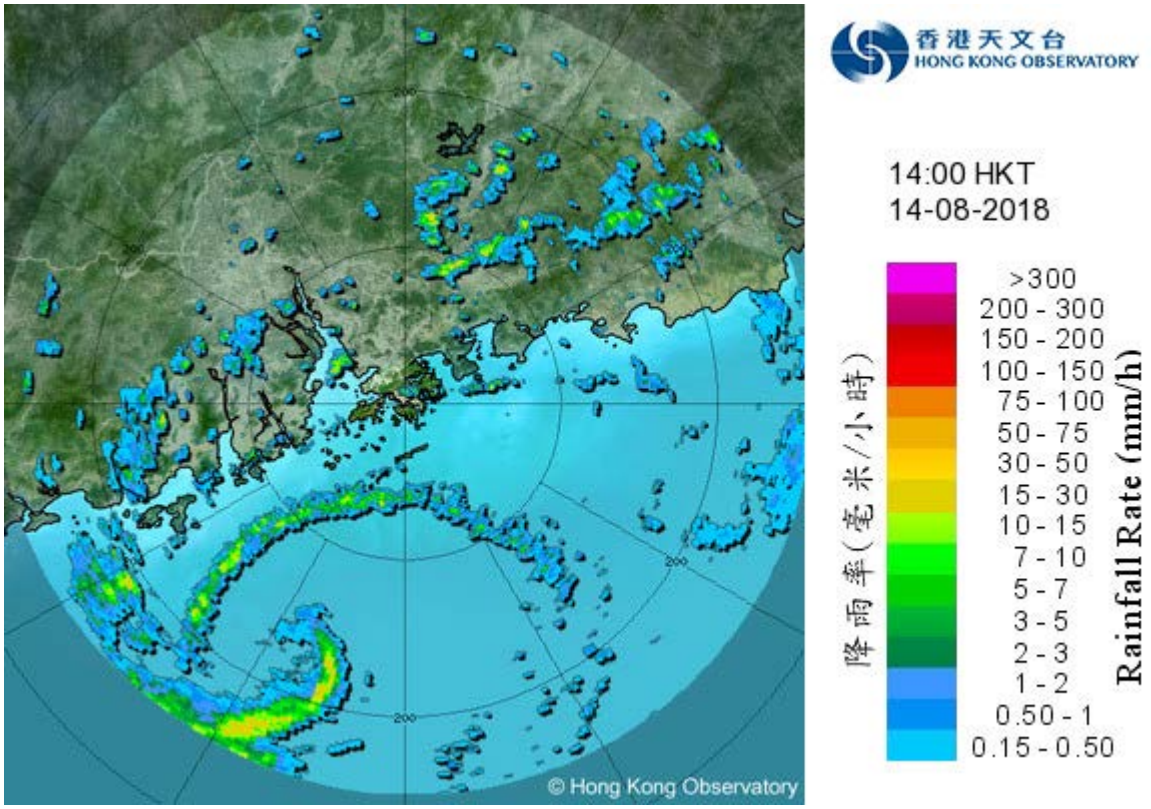

圖 3.3.4　二零一八年八月十四日下午 2 時的雷達回波圖像，當時貝碧嘉位於本港之西南偏南約 150 公里。與貝碧嘉相關的雨帶正影響廣東沿岸地區及南海北部。

Figure 3.3.4　Radar echoes captured at 2 p.m. on 14 August 2018 when the centre of Bebinca was located about 150 km south-southwest of Hong Kong. Showers associated with Bebinca were affecting the coastal areas of Guangdong and the northern part of the South China Sea.