

第二節 二零二零年熱帶氣旋概述

2.1 二零二零年的熱帶氣旋回顧

2.1.1 北太平洋西部(包括南海區域)的熱帶氣旋

二零二零年有25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），少於1961-2010年約30個的長期年平均數目。全年有12個熱帶氣旋達到颱風或以上強度，少於1961-2010年約15個的長期年平均數目，其中有三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)。

圖2.1是二零二零年在北太平洋西部及南海區域熱帶氣旋數目之逐月分佈。

二零二零年內有六個熱帶氣旋在中國登陸，其中兩個在香港300公里內的華南沿岸登陸。四個熱帶氣旋登陸朝鮮半島，六個橫過菲律賓及七個登陸越南。十月的超強颱風天鵝(2019) (圖2.3) 是二零二零年北太平洋西部及南海區域最強的熱帶氣旋，其中心附近最高持續風速估計為每小時275公里，而最低海平面氣壓為895百帕斯卡（表4.1）。天鵝亦是本區域自二零一三年十一月超強颱風海燕以來最強的熱帶氣旋。

2.1.2 香港責任範圍內的熱帶氣旋

在二零二零年的25個熱帶氣旋中，有18個出現在香港責任範圍（即北緯10至30度、東經105至125度），多於1961-2010年約16個的長期年平均數目（表2.1），當中有十個在香港責任範圍內形成。年內，香港天文台總共發出405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

二零二零年共有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，當中有八個在南海上形成。

2.1.4 影響香港的熱帶氣旋

二零二零年香港的颱風季節始於六月十二日，當天隨著熱帶低氣壓鸚鵡(2002)在菲律賓上空形成並進入南海，天文台發出一號戒備信號。十月二十四日強烈熱帶風暴沙德爾(2017)繼續遠離香港及減弱，二零二零年颱風季節隨著天文台當天取消所有熱帶氣旋警告信號而結束。

年內共有五個熱帶氣旋影響香港（圖2.2），略少於1961-2010年約六個的長期年平均數目（表2.2）。這五個熱帶氣旋分別為六月的熱帶風暴鸚鵡(2002)、七月至八月的熱帶風暴森拉克(2003)、八月的颱風海高斯(2007)、十月的熱帶風暴浪卡(2016)及颱風沙德爾(2017)。海高斯影響香港期間，天文台在八月十九日曾發出九號烈風或暴風風力增強信號，是年內發出的最高熱帶氣旋警告信號，也是繼二零一八年超強颱風山竹吹襲本港以來首次。浪卡吹襲本港期間天文台曾發出八號烈風或暴風信號。其餘三個影響香港的熱帶氣旋均引致天文台發出三號強風信號。

2.1.5 熱帶氣旋的雨量

二零二零年熱帶氣旋為香港帶來的雨量（即由熱帶氣旋出現於香港600公里範圍內至其消散或離開香港600公里範圍之後72小時期間天文台總部錄得的雨量）共為421.7毫米（表4.8.1），約佔年內總雨量2395.0毫米的百分之17.6，較1961-2010年長期年平均值的728.8毫米少約百分之42.1。

颱風海高斯(2007)為天文台總部帶來172.2毫米的雨量(表4.8.1)，是年內雨量最多的熱帶氣旋。

2.2 每月概述

這一節逐月介紹二零二零年北太平洋西部及南海區域的熱帶氣旋概況。影響香港的各熱帶氣旋及傷亡報告則詳述於第三節。

一月至四月

二零二零年一月至四月並無熱帶氣旋在北太平洋西部及南海區域上形成。

五月

熱帶低氣壓黃蜂(2001)於五月十一日凌晨在馬尼拉之東南偏東約1210公里的北太平洋西部上形成，初時緩慢地向西北偏北移動。黃蜂於五月十二日晚上增強為熱帶風暴，翌日開始迅速增強並轉向西移動。黃蜂於五月十四日凌晨發展為強颱風，早上達到其最高強度，中心附近最高持續風速估計為每小時165公里。隨後兩天黃蜂採取西北路徑橫過菲律賓，並逐漸減弱，最後於五月十六日晚上在呂宋海峽減弱為低壓區。

根據報章報導，黃蜂吹襲菲律賓期間造成最少一人死亡及一百人受傷，超過一萬間房屋損毀。

六月

熱帶低氣壓鸚鵡(2002)於六月十二日凌晨在馬尼拉之西北偏北約110公里的菲律賓上空形成，並逐漸增強。日間鸚鵡向西北移動橫過南海。翌日凌晨鸚鵡發展為熱帶風暴，下午達到其最高強度，中心附近最高持續風速估計為每小時75公里。鸚鵡於六月十四日早上稍後時間在廣東陽江市登陸，下午在廣東內陸減弱為低壓區。

七月至九月

一個熱帶低氣壓於七月十三日凌晨在馬尼拉之東北偏東約550公里的北太平洋西部上形成，中心附近最高持續風速估計為每小時45公里。該熱帶低氣壓大致向西北移動，翌日凌晨在呂宋海峽減弱為低壓區。

一個季風低壓於七月三十日進入南海，並於七月三十一日晚上發展為熱帶低氣壓，大致向西北偏西移向海南島。該熱帶低氣壓在八月一日下午被命名為森拉克(2003)。翌日凌晨森拉克在北部灣增強為熱帶風暴及達到其最高強度，最高持續風速估計為每小時65公里。森拉克於八月二日早上在越南北部登陸，晚上在越南內陸減弱為低壓區。

熱帶低氣壓黑格比(2004)於八月一日早上在沖繩島以南約670公里的北太平洋西部上形成，大致採取西北路徑橫過台灣以東海域並逐漸增強。黑格比於八月三日下午發展為颱風，晚上達到最高強度，中心附近最高持續風速估計為每小時140公里。黑格比於八月四日清晨在浙江沿岸登陸及減弱。隨後黑格比轉向偏北方向橫過浙江至江蘇一帶，翌日採取東北路徑進入黃海。黑格比最後於當晚在黃海演變為一股溫帶氣旋。

根據報章報導，黑格比掠過台灣附近期間造成至少一人死亡及一人受傷。黑格比亦為浙江及江蘇帶來狂風大雨，多處嚴重水浸。浙江最少有兩人死亡，逾188萬用戶停電。

熱帶低氣壓薔薇(2005)於八月九日凌晨在沖繩島之西南偏南約600公里的北太平洋西部上形成，當日早上增強為熱帶風暴，日間迅速向北橫過琉球群島一帶。八月十日薔薇達到最高強度，中心附近最高持續風速估計為每小時85公里。日間薔薇採取向東北偏北路徑掠過朝鮮半島東南部，翌日清晨在本州以北的海域演變為一股溫帶氣旋。

熱帶低氣壓米克拉(2006)於八月九日晚上在東沙之東南偏南約470公里的南海東北部上形成，向偏北方向移動，翌日早上增強為熱帶風暴。當晚米克拉迅速增強，八月十一日早上發展為颱風，登陸福建前達到最高強度，中心附近最高持續風速估計為每小時130公里。米克拉日間移入福建內陸並逐漸消散。

根據報章報導，米克拉吹襲福建期間，多處有樹木倒塌，約16萬戶電力中斷。

一個熱帶低氣壓於八月十日晚上在硫黃島之東北偏東約320公里的北太平洋西部上形成，中心附近最高持續風速估計為每小時45公里，大致向偏西方向移動，移向琉球群島一帶。該熱帶低氣壓於八月十二日早上在琉球群島附近減弱為低壓區。

熱帶低氣壓海高斯(2007)於八月十七日晚上在香港之東南偏東約650公里的南海東北部上形成，大致向西北移動橫過南海北部。翌日海高斯迅速增強，下午發展為強烈熱帶風暴並趨向珠江口一帶。當晚海高斯在珠江口附近進一步增強為颱風，八月十九日凌晨達到最高強度，中心附近最高持續風速估計為每小時130公里。海高斯於八月十九日早上在珠海登陸，日間移入廣東西部並逐漸減弱，晚上在廣西減弱為低壓區。

根據報章報導，海高斯在澳門造成15人受傷，內港低窪地區出現水浸。

熱帶低氣壓巴威(2008)於八月二十一日晚上在台北之東南偏南約350公里的北太平洋西部上形成，初時大致向東北漂移及逐漸增強。巴威於八月二十四日移速減慢及發展為颱風。翌日巴威進一步增強為強颱風及達到最高強度，中心附近最高持續風速估計為每小時165公里。其後巴威加速向偏北方向橫過東海及黃海，八月二十七日早上在朝鮮半島西北部附近登陸，當晚在中國東北部演變為一股溫帶氣旋。

根據報章報導，巴威吹襲朝鮮期間造成最少一人死亡，多處有樹木倒塌及電線桿被吹倒，部分道路水浸。

熱帶低氣壓美莎克(2009)於八月二十八日早上在馬尼拉之東北偏東約1100公里的北太平洋西部上形成，隨後兩天在菲律賓以東海域徘徊並增強。美莎克於八月三十日凌晨發展為颱風及加速向偏北方向移動。美莎克於八月三十一日晚上進一步增強為超強颱風，採取西北偏北路徑移向琉球群島一帶。美莎克於九月一日早上達到最高強度，中心附近最高持續風速估計為每小時195公里。隨後美莎克轉向東北偏北移動，先後橫過東海及朝鮮半島。美莎克最後於九月三日下午在朝鮮半島東北部海域演變為一股溫帶氣旋。

根據報章報導，美莎克吹襲日本期間，造成至少26人受傷。一艘貨船在鹿兒島縣奄美大島附近海域上沉沒，船上最少42人失蹤。而美莎克掠過朝鮮半島期間亦造成至少兩人死亡及12人受傷。

熱帶低氣壓海神(2010)於九月一日早上在硫黃島之東南約510公里的北太平洋西部上形成，當日向西南移動並逐漸增強。海神於九月二日轉向西北偏西移動橫過北太平洋西部，翌日凌晨增強為颱風。海神於九月四日進一步發展為超強颱風及達到最高強度，中心附近最高持續風速估計為每小時220公里。隨後海神逐漸轉向西北偏北移動，先後橫過日本九州以西海域及朝鮮半島，並逐漸減弱。海神最後於九月八日凌晨在中國東北部演變為一股溫帶氣旋。

根據報章報導，海神吹襲日本期間造成至少兩人死亡、四人失蹤及100人受傷。海神是繼美莎克之後一星期內第二個吹襲朝鮮半島的風暴，在當地造成至少兩人死亡及廣泛地區水浸，多間房屋受到破壞。

熱帶低氣壓紅霞(2011)於九月十五日晚上在西沙之東南偏東約900公里的南海南部上形成，向西北偏西移動並逐漸增強。紅霞於九月十六日早上增強為熱帶風暴，當晚達到最高強度，中心附近最高持續風速估計為每小時85公里。紅霞於九月十八日橫過越南中部並減弱，最後於晚上在中南半島減弱為一個低壓區。

根據報章報導，紅霞吹襲越南期間造成至少六人死亡。

熱帶低氣壓白海豚(2012)於九月二十日晚上在大阪以南約1190公里的北太平洋西部上形成，向東北偏北方向緩慢移動並逐漸增強。九月二十二日下午白海豚發展為強烈熱帶風暴，晚上達到最高強度，中心附近最高持續風速估計為每小時105公里。隨後白海豚轉向東北偏東移動，最後於九月二十四日在日本以東海域上演變為一股溫帶氣旋。

熱帶低氣壓鯨魚(2013)於九月二十六日晚上在硫黃島之東南偏東約2040公里的太平洋西部上形成，大致向西北移動並逐漸增強。鯨魚於九月二十八日晚上增強為強烈熱帶風暴，翌日達到最高強度，中心附近最高持續風速估計為每小時110公里。隨後鯨魚逐漸轉向東北移動，最後於九月三十日在日本以東的北太平洋西部演變為一股溫帶氣旋。

十月至十一月

熱帶低氣壓燦鴻(2014)於十月五日凌晨在硫黃島之西南約350公里的北太平洋西部上形成，初時向北漂移。燦鴻翌日轉向西北偏西移動，橫過日本以南海域並逐漸增強。燦鴻於十月七日下午發展為颱風，晚上達到最高強度，中心附近最高持續風速估計為每小時130公里。隨後數天燦鴻逐漸轉為向東移動並減弱，最後於十月十二日凌晨在硫黃島以北的西北太平洋上減弱為一個低壓區。

熱帶低氣壓蓮花(2015)於十月十日早上在峴港之東南偏東約670公里的南海南部上形成，向偏西方向移動，移向越南中部並逐漸增強。蓮花於十月十一日凌晨發展為熱帶風暴，早上達到最高強度，中心附近最高持續風速估計為每小時75公里。當日下午蓮花於越南中部登陸，翌日在中南半島減弱為一個低壓區。

根據報章報導，蓮花為越南帶來暴雨，造成至少17人死亡，13人失蹤。

熱帶低氣壓浪卡(2016)於十月十一日下午在東沙之東南約500公里的南海中部上形成，隨後採取西北偏西路徑移向海南島，並逐漸增強。浪卡於十月十二日下午增強為熱帶風暴，當晚達到其最高強度，中心附近最高持續風速估計為每小時85公里。浪卡於十月十三日晚上橫過海南島並逐漸減弱，翌日進入北部灣，當晚在越南內陸減弱為低壓區。

根據報章報導，浪卡吹襲海南期間，一艘貨輪於琼州海峽附近翻沉，船上有兩人遇難、三人失蹤。浪卡亦為越南帶來狂風大雨，造成最少兩人死亡、一人失蹤。

熱帶低氣壓沙德爾(2017)於十月十九日早上在馬尼拉以東約920公里的北太平洋西部上形成，大致向西北偏西移動，並逐漸增強。沙德爾於十月二十日晚上橫過呂宋，翌日早上進入南海中部。日間沙德爾轉向西北方向移動。沙德爾於十月二十二日增強為颱風，翌日達到其最高強度，中心附近最高持續風速估計為每小時140公里。受乾燥的東北季候風影響，沙德爾隨後轉向偏西方向移動，並逐漸減弱。最後於十月二十五日晚上在越南中部以東海域減弱為一個低壓區。

根據報章報導，沙德爾吹襲菲律賓期間，當地出現洪水及山泥傾瀉，超過6000人需要撤離。

熱帶低氣壓莫拉菲(2018)於十月二十四日早上在馬尼拉以東約1100 公里的北太平洋西部上形成，大致向偏西方向移動並迅速增強。莫拉菲於十月二十五日晚上增強為颱風，隨後橫過菲律賓中部，翌日早上進入南海南部。莫拉菲於十月二十七日進一步發展為強颱風並達到其最高強度，中心附近最高持續風速估計為每小時165公里。隨後莫拉菲逐漸減弱，並於十月二十八日中午前後在越南中部登陸。莫拉菲最後於十月二十九日在中南半島減弱為一個低壓區。

根據報章報導，莫拉菲為菲律賓帶來狂風暴雨，造成至少9 人死亡、6人受傷、2人失蹤。莫拉菲亦在越南造成至少27人死亡及74 人失蹤。

熱帶低氣壓天鵝(2019)於十月二十八日早上在馬尼拉以東約2100公里的北太平洋西部上形成，向西至西南偏西移動並迅速增強。天鵝於十月三十日早上增強為超強颱風，並於十一月一日凌晨達到最高強度，中心附近最高持續風速估計為每小時275 公里。天鵝是本區域自二零一三年十一月超強颱風海燕以來最強的熱帶氣旋，當晚橫過菲律賓中部並減弱。隨後數天天鵝橫過南海中部，並在十一月五日晚上在越南以東海域減弱為一個低壓區。

根據報章報導，超強颱風天鵝正面吹襲菲律賓，造成最少25人死亡，超過17萬間房屋受損。

熱帶低氣壓艾莎尼(2020)於十月三十日下午在關島之西南偏南約350公里的北太平洋西部上形成，隨後兩天大致向西北移動，移向菲律賓以東海域並逐漸增強。十一月二日凌晨艾莎尼增強成為熱帶風暴，翌日凌晨艾莎尼移速開始減慢，在菲律賓東北海域徘徊。十一月四日艾莎尼增強為強烈熱帶風暴，翌日達到最高強度，中心附近最高持續風速估計為每小時105公里。隨後艾莎尼加速向西北偏西方向移動，移向台灣南部沿岸海域。十一月七日艾莎尼進入南海東北部並迅速減弱，晚上在台灣海峽減弱為一個低壓區。

熱帶低氣壓艾濤(2021)於十一月八日晚上在南沙之東北約410公里的南海南部上形成，向西移動。艾濤於十一月九日增強為熱帶風暴，當晚達到最高強度，中心附近最高持續風速估計為每小時75公里。艾濤於十一月十日在越南南部登陸並迅速減弱，當晚在中南半島減弱為一個低壓區。

熱帶低氣壓環高(2022)於十一月九日下午在馬尼拉之東南偏東約1130公里的北太平洋西部上形成，向西北偏西方向移動，並迅速增強。環高於十一月十一日早上發展為颱風並橫過呂宋，翌日早上進入南海中部。環高向偏西方向移動，於十一月十四日增強為強颱風，並達到最高強度，中心附近最高持續風速估計為每小時175公里。環高隨後迅速減弱，翌日下午在越南中部登陸，最後於當晚在中南半島減弱為一個低壓區。

根據報章報導，環高吹襲菲律賓期間，造成至少101人死亡，85人受傷及10人失蹤。環高亦在越南造成最少1人死亡，5人受傷。

十二月

熱帶低氣壓科羅旺(2023)於十二月二十日凌晨在南沙以東約350公里的南海南部上形成，向西至西南偏西移動並逐漸增強。科羅旺於十二月二十日晚上達到最高強度，中心附近最高持續風速估計為每小時55公里。隨後科羅旺繼續採取西南路徑，移向越南以南海域並逐漸減弱。最後科羅旺於十二月二十二日在越南以南海域減弱為一個低壓區。

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 2020

2.1 Review of tropical cyclones in 2020

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

In 2020, a total of 25 tropical cyclones occurred over the western North Pacific (WNP) and the South China Sea (SCS) bounded by the Equator, 45°N, 100°E and 180°, less than the long-term (1961 - 2010) average figure of around 30. During the year, 12 of the tropical cyclones attained typhoon intensity or above, less than the long-term average (1961 - 2010) of about 15, with three of them reaching super typhoon intensity (maximum 10-minute wind speed of 185 km/h or above near the centre).

Figure 2.1 shows the monthly frequencies of the occurrence of tropical cyclones in WNP and SCS in 2020.

During the year, six tropical cyclones made landfall over China, with two of them crossing the south China coast within 300 km of Hong Kong. Four tropical cyclones made landfall over the Korean Peninsula, six traversed the Philippines and seven made landfall over Vietnam. With an estimated maximum sustained wind speed of 275 km/h and a minimum sea-level pressure of 895 hPa near the centre (Table 4.1), Super Typhoon Goni (2019) in October (Figure 2.3) is the most intense tropical cyclone over the WNP and the SCS in 2020. It is also the most intense tropical cyclone in the region since Super Typhoon Haiyan in November 2013.

2.1.2 Tropical cyclones in Hong Kong's area of responsibility

Amongst the 25 tropical cyclones in 2020, 18 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 (1961-2010) figure of around 16 (Table 2.1). Ten of them developed within Hong Kong's area of responsibility. Altogether, 405 tropical cyclone warnings to ships and vessels were issued by the Hong Kong Observatory this year (Table 4.2).

2.1.3 Tropical cyclones over the South China Sea

14 tropical cyclones affected SCS bounded by 10°N, 25°N, 105°E and 120°E in 2020, more than the long-term annual average (1961-2010) of around 12. Eight of them formed within SCS.

2.1.4 Tropical cyclones affecting Hong Kong

In 2020, the typhoon season in Hong Kong started on 12 June when Tropical Depression Nuri (2002) formed over the Philippines and entered the SCS, necessitating the issuance of the Standby Signal No. 1. The typhoon season ended with the cancellation of all tropical cyclone warning signals on 24 October when Severe Tropical Storm Soudel (2017) moved away from Hong Kong and weakened that day.

Five tropical cyclones affected Hong Kong during 2020 (Figure 2.2), slightly less than the long-term (1961-2010) average of about six in a year (Table 2.2). They were Tropical Storm Nuri (2002) in June, Tropical Storm Sinlaku (2003) in July to August, Typhoon Higos (2007) in August, Tropical Storm Nangka (2016) and Typhoon Saudel (2017) in October. The No. 9 Increasing Gale or Storm Signal was issued by the Hong Kong Observatory during the passage of Higos on 19 August. It was the highest tropical cyclone warning signal issued in 2020 and for the first time since Super Typhoon Mangkhut hitting Hong Kong in 2018. The No. 8 Gale or Storm Signal was issued during the passage of Nangka. The rest of the three tropical cyclones all necessitated the issuance of the Strong Wind Signal No. 3 in Hong Kong.

2.1.5 Tropical cyclone rainfall

Tropical cyclone rainfall (total rainfall recorded at the Hong Kong Observatory Headquarters 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 2020 was 421.7 mm (Table 4.8.1). This accounted for approximately 17.6 % of the year's total rainfall of 2395.0 mm and was about 42.1 % below the 1961-2010 long-term average of 728.8 mm.

Typhoon Higos (2007) brought 172.2 mm of rainfall to the Hong Kong Observatory Headquarters (Table 4.8.1) and was the wettest tropical cyclone in 2020.

2.2 Monthly overview

A monthly overview of tropical cyclones in 2020 is given in this section. Detailed reports on tropical cyclones affecting Hong Kong, including reports of damage, are presented in Section 3.

JANUARY TO APRIL

No tropical cyclone formed over the western North Pacific and the South China Sea from January to April 2020.

MAY

Vongfong (2001) formed as a tropical depression over the western North Pacific about 1210 km east-southeast of Manila in the small hours on 11 May. It moved north-northwestwards slowly at first. Vongfong intensified into a tropical storm on the night of 12 May. It started to intensify rapidly and turned to move westwards the next day. Vongfong developed into a severe typhoon in the small hours on 14 May and reached its peak intensity in the morning with an estimated sustained wind of 165 km/h near its centre. It moved northwestwards across the Philippines and weakened gradually in the following two days. Vongfong finally degenerated into an area of low pressure over the Luzon Strait on the night of 16 May.

According to press reports, Vongfong brought at least one death and 100 injuries and damaged more than 10000 houses during its passage to the Philippines.

JUNE

Nuri (2002) formed as a tropical depression over the Philippines about 110 km north-northwest of Manila in the small hours on 12 June and intensified gradually. It moved generally northwestward across the South China Sea during the day. Nuri developed into a tropical storm in the small hours on 13 June and reached its peak intensity with an estimated sustained wind of 75 km/h near its centre in the afternoon. Nuri made landfall over Yangjiang of Guangdong later in the morning of 14 June and weakened into an area of low pressure over inland Guangdong in the afternoon.

JULY TO SEPTEMBER

A tropical depression formed over the western North Pacific about 550 km east-northeast of Manila in the small hours on 13 July with an estimated sustained wind of 45 km/h near its centre. It generally tracked northwestwards and weakened into an area of low pressure over the Luzon Strait in the small hours of the next day.

A monsoon depression entered the South China Sea on 30 July and developed into a tropical depression the next night. The tropical depression generally tracked west-northwestward towards Hainan Island and was named Sinlaku (2003) on the afternoon of 1 August. Sinlaku intensified into a tropical storm over Beibu Wan in the small hours of the next day and reached its peak intensity with an estimated maximum sustained wind of 65 km/h. It made landfall over the northern part of Vietnam on the morning of 2 August and weakened into an area of low pressure over inland Vietnam that night.

Tropical depression Hagupit (2004) formed over the western North Pacific about 670 km south of Okinawa on the morning of 1 August. It moved generally northwestward across the seas east of Taiwan and intensified gradually. Hagupit developed into a typhoon on the afternoon of 3 August and reached its peak intensity at night with an estimated maximum sustained wind of 140 km/h near its centre. Hagupit made landfall over the coast of Zhejiang in the early morning of 4 August and weakened. It then turned to move northward across the vicinity of Zhejiang and Jiangsu and then tracked northeastward entered the Yellow Sea the next day. Hagupit finally evolved into an extratropical cyclone over the Yellow Sea at night.

According to press reports, Hagupit left at least one death and one injury when it skirted past the vicinity of Taiwan. Hagupit also brought heavy rain and squalls to Zhejiang and Jiangsu and there were severe flooding in many places. At least two persons were killed in Zhejiang and power supply to over 1.8 million households was suspended.

Jangmi (2005) formed as a tropical depression over the western North Pacific about 600 km south-southwest of Okinawa in the small hours on 9 August. It intensified into a tropical storm in the morning and rapidly moved northward across the vicinity of Ryukyu Islands. Jangmi reached its peak intensity on 10 August with an estimated maximum sustained wind of 85 km/h near its centre. It tracked north-northeast across the southeastern part of the Korean Peninsula during the day and evolved into an extratropical cyclone over the seas north of Honshu in the early morning of the next day.

Mekkhala (2006) formed as a tropical depression over the northeastern part of the South China Sea about 470 km south-southeast of Dongsha on the night of 9 August and moved northwards. It intensified into a tropical storm the next morning. Mekkhala rapidly intensified at night and developed into a typhoon on the morning of 11 August. It reached its peak intensity before making landfall over Fujian with an estimated maximum sustained wind of 130 km/h near its centre. Mekkhala moved inland Fujian and dissipated gradually during the day.

According to press reports, many trees were fallen in Fujian during the passage of Mekkhala. Power supply to more than 160 000 households was suspended.

A tropical depression was formed over the western North Pacific about 320 km east-northeast of Iwo Jima on the night of 10 August with an estimated sustained wind of 45 km/h near its centre. It moved generally westward towards the vicinity of Ryukyu Islands. The tropical depression degenerated into an area of low pressure near Ryukyu Islands on the morning of 12 August.

Higos (2007) formed as a tropical depression over the northeastern part of the South China Sea at about 650 km east-southeast of Hong Kong on the night of 17 August. It generally moved northwestwards across the northern part of the South China Sea. While edging towards the vicinity of the Pearl River Estuary, Higos intensified rapidly the next day and developed into a severe tropical storm in the afternoon. Higos further intensified into a typhoon near the Pearl River Estuary that night, reaching its peak intensity in the small hours of 19 August with an estimated maximum sustained wind of 130 km/h near its centre. It made landfall over Zhuhai on the morning of 19 August. Higos then moved into the western part of Guangdong and weakened gradually during the day. It degenerated into an area of low pressure over Guangxi that night.

According to press reports, 15 persons were injured in Macao during the passage of Higos. There were flooding in low lying areas in Inner Harbour.

Bavi (2008) formed as a tropical depression over the western North Pacific about 350 km south-southeast of Taipei on the night of 21 August. It drifted generally northeastwards at first and intensified gradually. Bavi slowed down and developed into a typhoon on 24 August. It further intensified into a severe typhoon the next day and reached its peak intensity with an estimated maximum sustained wind of 165 km/h near its centre. Bavi then picked up speed to move northwards across the East China Sea and the Yellow Sea. It made landfall near vicinity of the northwestern part of the Korean Peninsula on the morning of 27 August. Bavi evolved into an extratropical cyclone over the northeastern part of China that night.

According to press reports, Bavi left at least one death to DPR Korea during its passage. There were fallen trees and electric poles in many places. Some of the roads were flooded.

Maysak (2009) formed as a tropical depression over the western North Pacific about 1100 km east-northeast of Manila on the morning of 28 August. It lingered around the sea areas east of the Philippines and intensified in the following two days. Maysak developed into a typhoon in the small hours of 30 August and accelerated northward. It further intensified into a super typhoon on the night of 31 August and tracked north-northwestward towards the vicinity of Ryukyu Islands. Maysak reached its peak intensity on the morning of 1 September with an estimated sustained wind of 195 km/h near its centre. Maysak then turned to move north-northeastward and swept across the East China Sea and the Korean Peninsula. It finally evolved into an extratropical cyclone on the afternoon of 3 September over the seas northeast of the Korean Peninsula.

According to press reports, at least 26 people were injured in Japan during the passage of Maysak. A cargo ship sank near Amami Oshima of the Kagoshima Prefecture with at least 42 people on board missing. Besides, at least two persons were killed and 12 people were injured when Maysak moved across the Korean Peninsula.

Haishen (2010) formed as a tropical depression over the western North Pacific about 510 km southeast of Iwo Jima on the morning of 1 September. It moved southwestward and intensified gradually on that day. Haishen turned to track west-northwestward across the western North Pacific on 2 September and developed into a typhoon in the small hours on 3 September. Haishen further intensified into a super typhoon on 4 September and reached its peak intensity with an estimated maximum sustained wind of 220 km/h near its centre. Turning to track north-northwestward gradually, Haishen swept across the seas west of Kyushu and then the Korean Peninsula and weakened gradually. Haishen finally evolved into an extratropical cyclone over the northeastern part of China in the small hours on 8 September.

According to press reports, Haishen left at least two deaths, four missing and 100 injuries in Japan during its passage. Haishen was the second storm hitting the Korean Peninsula within a week after Maysak, causing at least two deaths and wide-spread flooding. Many houses were damaged.

Noul (2011) formed as a tropical depression over the southern part of the South China Sea about 900 km east-southeast of Xisha on the night of 15 September. It moved west-northwestward and intensified gradually. Noul developed into a tropical storm on the morning of 16 September. It reached its peak intensity that night with an estimated maximum sustained wind of 85 km/h near its centre. Noul moved across the central part of Vietnam on 18 September and weakened. It finally degenerated into an area of low pressure over the Indochina Peninsula at night.

According to press reports, at least six people were killed in Vietnam during the passage of Noul.

Dolphin (2012) formed as a tropical depression over the western North Pacific about 1190 km south of Osaka on the night of 20 September. It tracked north-northeastward slowly and intensified gradually. Dolphin developed into a severe tropical storm on the afternoon of 22 September and reached its peak intensity that night with an estimated maximum sustained wind of 105 km/h near its centre. Dolphin then turned to move east-northeastward and finally evolved into an extratropical cyclone over the seas east of Japan on 24 September.

Kujira (2013) formed over the western North Pacific about 2040 km east-southeast of Iwo Jima on the night of 26 September. It moved generally northwestward and intensified gradually. Kujira intensified into a severe tropical storm on the night of 28 September and reached its peak intensity in the next morning with an estimated maximum sustained wind of 110 km/h near its centre. Kujira then gradually turned to track northeastward and finally evolved into an extratropical cyclone over the western North Pacific east of Japan on 30 September.

OCTOBER TO NOVEMBER

Chan-hom (2014) formed as a tropical depression over the western North Pacific about 350 km southwest of Iwo Jima in the small hours on 5 October and drifted northwards at first. Chan-hom turned to move west-northwestwards across the sea areas south of Japan the next day and intensified gradually. Chan-hom developed into a typhoon on the afternoon of 7 October and reached its peak intensity at night with an estimated maximum sustained wind of 130 km/h near its centre. Chan-hom turned gradually to move eastwards and weakened in the following few days. It finally degenerated into an area of low pressure over the western North Pacific to the north of Iwo Jima in the small hours on 12 October.

Linfa (2015) formed as a tropical depression over the southern part of the South China Sea about 670 km east-southeast of Da Nang on the morning of 10 October. It moved westwards towards the central part of Vietnam and intensified gradually. Linfa developed into a tropical storm in the small hours on 11 October, reaching its peak intensity in the morning with an estimated sustained wind of 75 km/h near its centre. Linfa made landfall over the central part of Vietnam in the afternoon and degenerated into an area of low pressure over Indo-China the next day.

According to press reports, Linfa brought torrential rain to Vietnam, leading to at least 17 deaths and 13 missing.

Nangka (2016) formed as a tropical depression over the central part of the South China Sea about 500 km southeast of Dongsha on the afternoon of 11 October. It then moved west-northwestwards towards Hainan Island and intensified gradually. Nangka intensified into a tropical storm on the afternoon of 12 October, reaching its peak intensity at night with an estimated maximum sustained wind of 85 km/h near its centre. It moved across Hainan Island on the night of 13 October and weakened gradually. Nangka entered Beibu Wan the next day and finally degenerated into an area of low pressure over inland Vietnam that night.

According to press reports, a cargo ship overturned near Qiongzhou Strait when Nangka was striking Hainan. Two crew members on board died and three were missing. Nangka also brought heavy rain and squalls to Vietnam, leaving at least two deaths and one missing.

Saudel (2017) formed as a tropical depression over the western North Pacific about 920 km east of Manila on the morning of 19 October. Saudel moved generally west-northwestwards and intensified gradually. It moved across Luzon on the night of 20 October and entered the central part of the South China Sea in the next morning. Saudel turned to move northwestwards during the day. It intensified into a typhoon on 22 October and reached its peak intensity the next day with an estimated sustained wind of 140 km/h near its centre. Affected by the dry northeast monsoon, Saudel then turned to track westwards and weakened gradually. It finally degenerated into an area of low pressure over the seas east of central Vietnam on the night of 25 October.

According to press reports, over 6000 people were evacuated because of flooding and landslips in the Philippines during the passage of Saudel.

Molave (2018) formed as a tropical depression over the western North Pacific about 1100km east of Manila on the morning of 24 October. It moved generally westwards and intensified rapidly. Molave intensified into a typhoon on the night of 25 October and then moved across the central part of the Philippines. It entered the southern part of the South China Sea in the next morning. Molave further developed into a severe typhoon on 27 October, reaching its peak intensity with an estimated sustained wind of 165 km/h near its centre. Molave then weakened gradually and made landfall over the central part of Vietnam around noon on 28 October. Molave finally degenerated into an area of low pressure over Indo-China on 29 October.

According to press report, Molave brought torrential rain and squalls to the Philippines, leaving at least 9 deaths, 6 injuries and 2 missing. At least 27 people were killed and 74 were missing in Vietnam during the passage of Molave.

Goni (2019) formed as a tropical depression over the western North Pacific about 2100 km east of Manila on the morning of 28 October. It moved west to west-southwestwards and intensified rapidly. Goni intensified into a super typhoon on the morning of 30 October and reached its peak intensity in the small hours on 1 November with an estimated maximum sustained wind of 275 km/h near its centre. Goni is the most intense tropical cyclone in the region since Super Typhoon Haiyan in November 2013. It moved across the central part of the Philippines and weakened that night. Goni traversed the central part of the South China Sea in the following couple of days and degenerated into an area of low pressure over the seas east of Vietnam on 5 November.

According to press reports, the Philippines was directly hit by Super Typhoon Goni. At least 25 people were killed and over 170 000 houses were damaged.

Atsani (2020) formed as a tropical depression over the western North Pacific about 350 km south-southwest of Guam on the afternoon of 30 October. It moved generally northwestwards in the following two days. It moved towards the seas east of the Philippines and intensified gradually. Atsani intensified into a tropical storm in the small hours on 2 November. Atsani began to slow down in the small hours the next day and lingered over the seas northeast of the Philippines. Atsani intensified into a severe tropical storm on 4 November and reached its peak intensity the next day with an estimated maximum sustained wind of 105 km/h near its centre. It then picked up its speed to move west-northwestwards towards the coastal waters of southern part of Taiwan. Atsani entered the northeastern part of the South China Sea on 7 November and weakened rapidly. It finally degenerated into an area of low pressure over Taiwan Strait at night.

Etau (2021) formed as a tropical depression over the southern part of the South China Sea about 410 km northeast of Nansha on the night of 8 November and moved westwards. It intensified into a tropical storm on 9 November and reached its peak intensity that night with an estimated maximum sustained wind of 75 km/h near its centre. Etau made landfall over the southern part of Vietnam on 10 November and weakened rapidly. It degenerated into an area of low pressure over Indo-China that night.

Vamco (2022) formed as a tropical depression over the western North Pacific about 1130 km east-southeast of Manila on the afternoon of 9 November. It moved west-northwestwards and intensified rapidly. Vamco developed into a typhoon on the morning of 11 November and moved across Luzon. It entered the central part of the South China Sea the next morning. It tracked westwards and intensified into a severe typhoon on 14 November, reaching its peak intensity with an estimated maximum sustained wind of 175 km/h near its centre. Vamco then weakened rapidly and made landfall over the central part of Vietnam the next afternoon. It finally degenerated into an area of low pressure over Indo-China that night.

According to press reports, Vamco left at least 101 deaths, 85 injuries and 10 missing in the Philippines during its passage. In Vietnam, at least one people was killed and 5 others were injured during the passage of Vamco.

DECEMBER

Krovanh (2023) formed as a tropical depression over the southern part of the South China Sea about 350 km east of Nansha in the small hours on 20 December. It moved west to west-southwestwards and intensified gradually. Krovanh reached its peak intensity with an estimated maximum sustained wind of 55 km/h near its centre on the night of 20 December. Krovanh then continued to track southwestwards towards the seas south of Vietnam and weaken gradually. Krovanh finally degenerated into an area of low pressure over the seas south of Vietnam on 22 December.

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

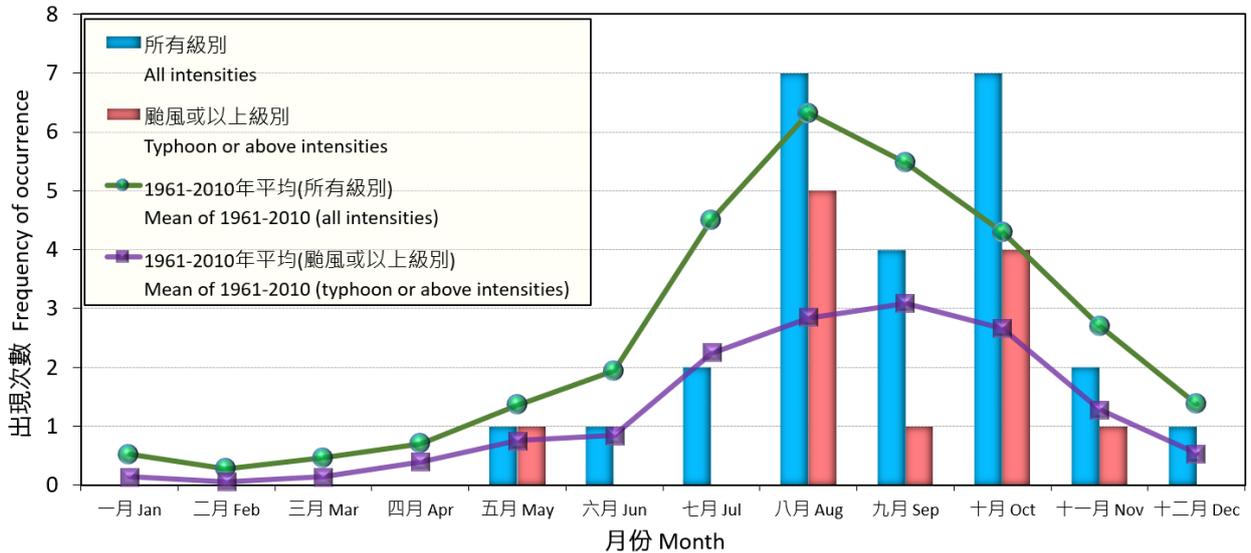


圖 2.1 二零二零年在北太平洋西部及南海區域的熱帶氣旋出現次數之每月分佈 (以熱帶氣旋在該月初次出現為準，假如一熱帶氣旋在九月形成並在十月首次增強為颱風或以上級別，它在「所有級別」及「颱風或以上級別」的統計數字將分別計算在九月及十月份內)。

Figure 2.1 Monthly frequencies of the occurrence of tropical cyclones in the western North Pacific and the South China Sea in 2020 (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).

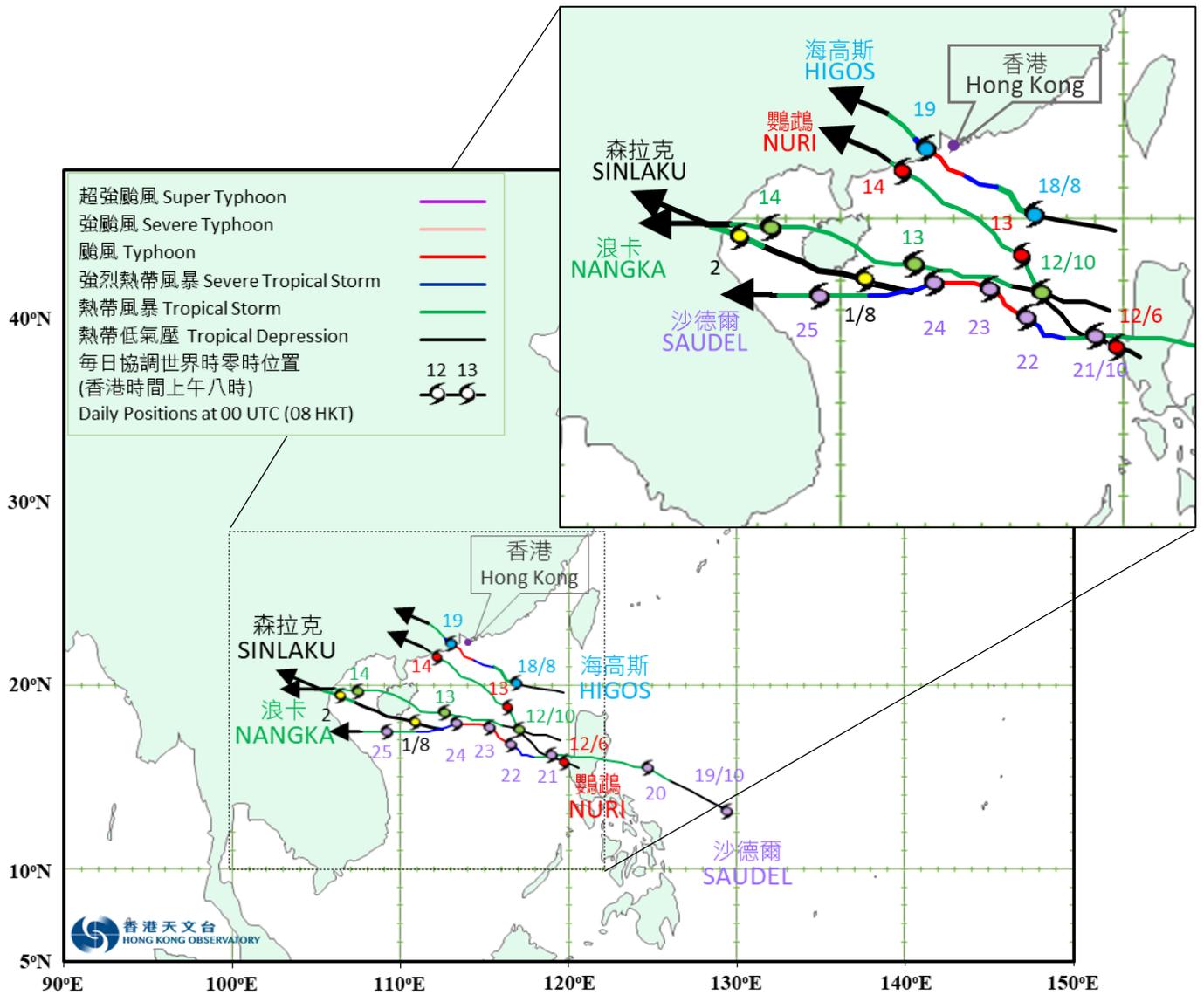


圖 2.2 二零二零年五個影響香港的熱帶氣旋的路徑圖。
Figure 2.2 Tracks of the five tropical cyclones affecting Hong Kong in 2020.

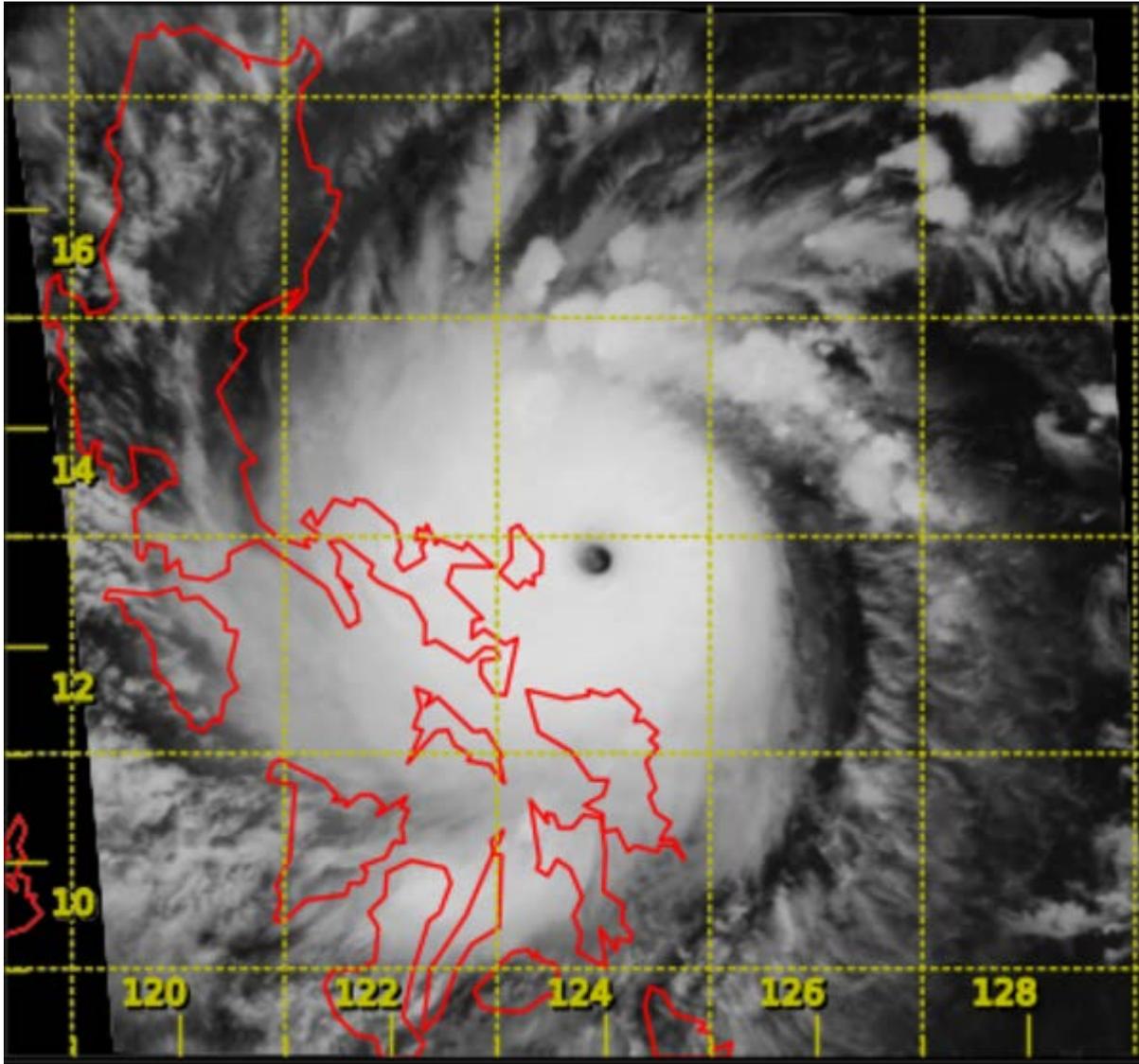


圖2.3 二零二零年十一月一日上午2時左右超強颱風天鵝(2019)的紅外線衛星圖片，當時天鵝達到其最高強度，中心附近最高持續風速估計為每小時275公里，而最低中心氣壓為895百帕斯卡。

Figure 2.3 Infra-red satellite imagery of Super Typhoon Goni (2019) around 2 a.m. on 1 November 2020, when Goni was at its peak intensity with estimated maximum sustained winds of 275 km/h near its centre and minimum sea-level pressure of 895 hPa.

[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).]

表 2.1 在香港責任範圍內(10°-30°N, 105°-125°E)熱帶氣旋出現之每月分佈(以熱帶氣旋在該月初次出現為準)
 Table 2.1 Monthly distribution of the occurrence of tropical cyclones in Hong Kong's area of responsibility (10° - 30°N, 105° - 125°E), based on the first occurrence of the tropical cyclone in the month

月份 Month 年份 Year	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	共 Total
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
2014	1					1	2		3		1	2	10
2015	1			1	1	1	2	2	2	2		1	13
2016					1		3	1	4	3	1	2	15
2017	1			1		1	6	3	4	2	3	1	22
2018	1					2	4	4	2	1	2	1	17
2019							3	3	3	1	3	2	15
2020					1	1	2	4	1	4	4	1	18
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

月份 Month [#] 年份 Year	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	共 Total
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
2014						1	1		2				4
2015						1	1			1			3
2016					1		2	1	2	3			9
2017						1	1	2	2	1			7
2018						1	1	1	2	1			6
2019							2	2	1				5
2020						1	1	1		2			5
平均 Average (1961-2010)	0.0	0.0	0.0	0.1	0.2	0.7	1.5	1.3	1.5	0.9	0.1	0.0	6.0

熱帶氣旋警告信號首次發出的月份。*The month that the tropical cyclone warning signal was first issued.