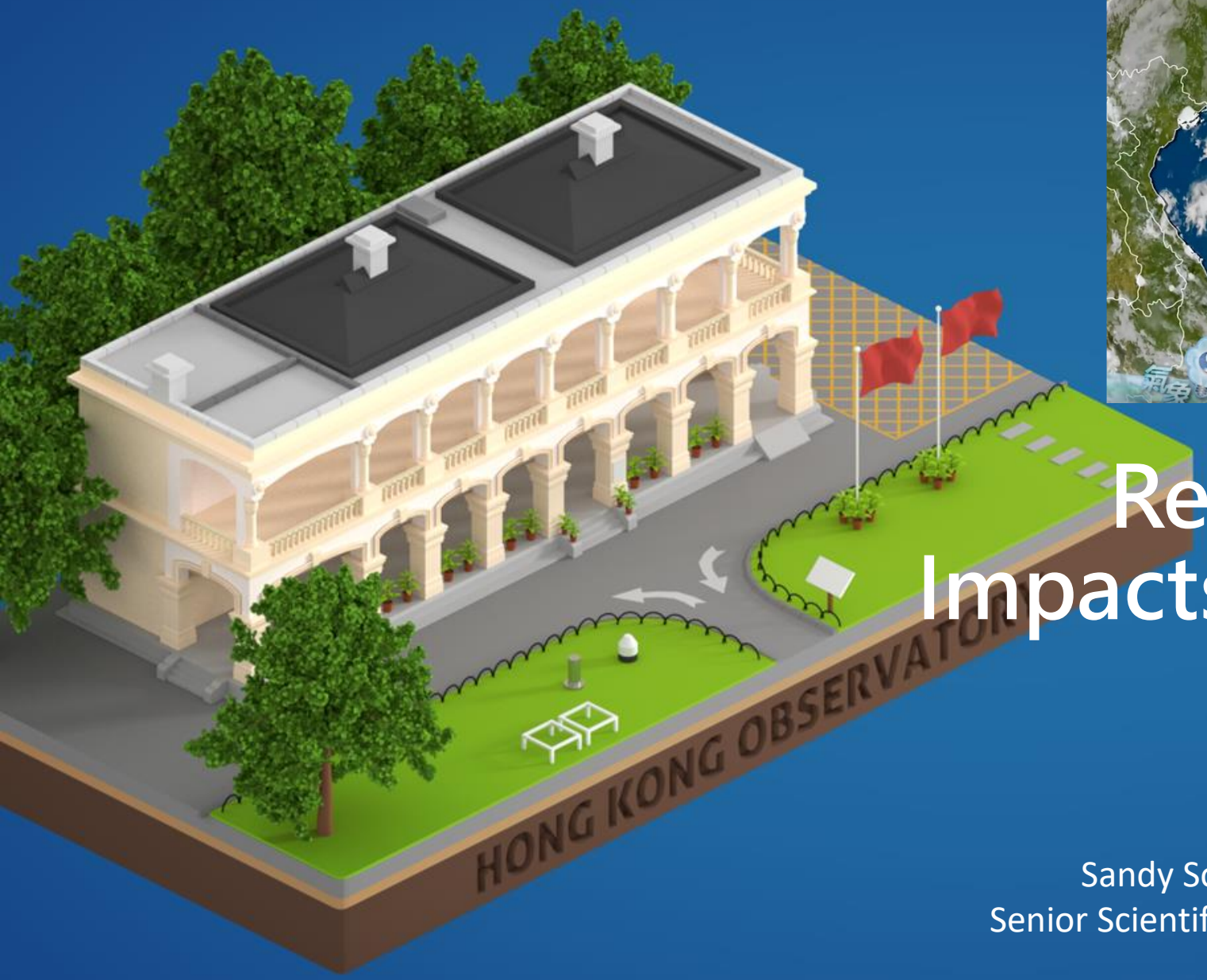
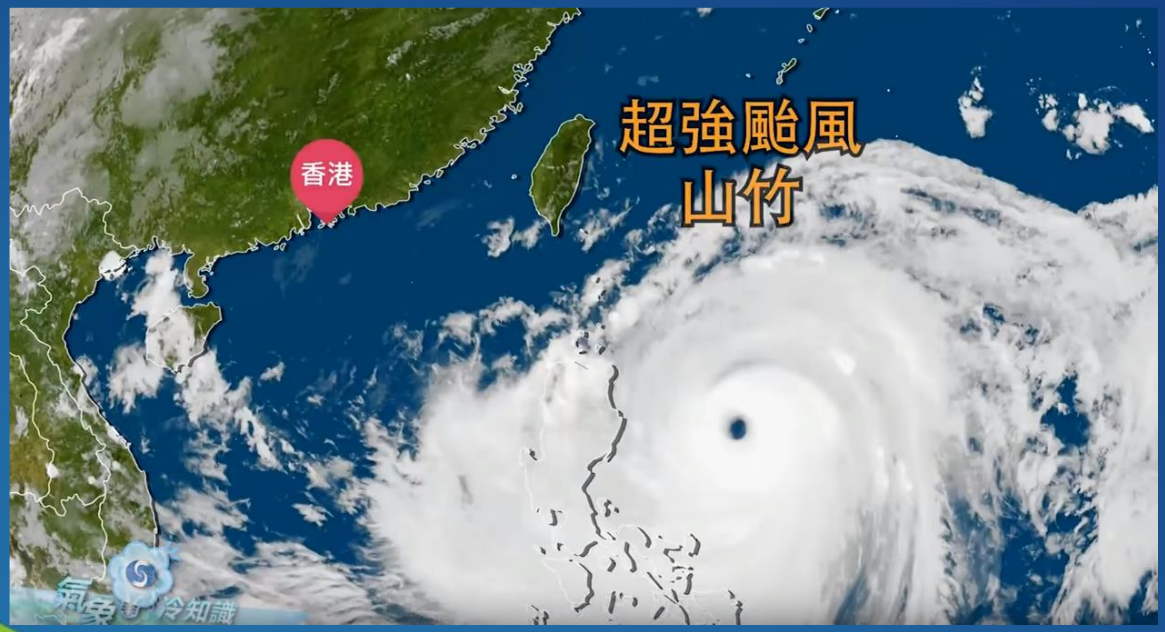


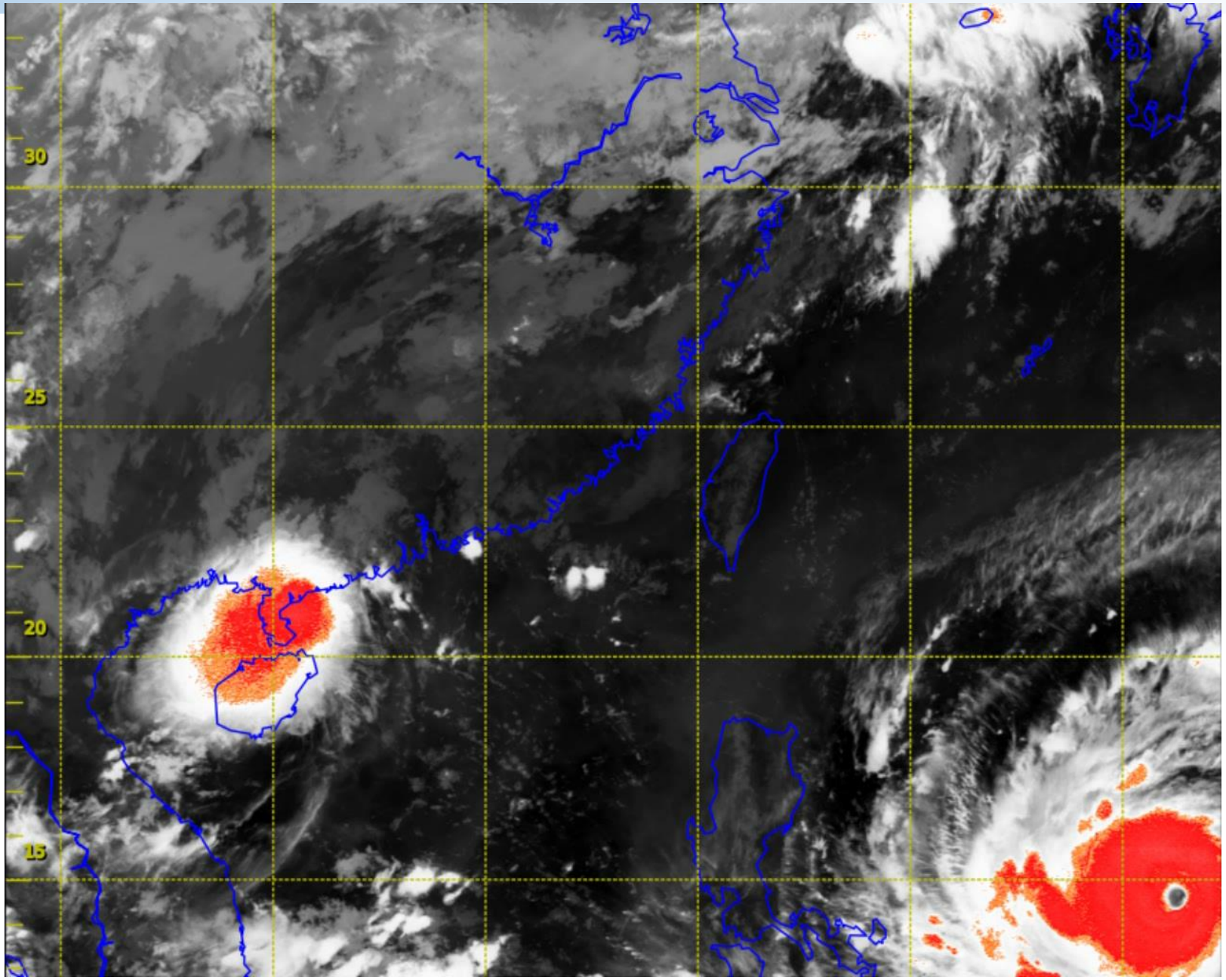


Research Forum 2019
Impacts of Super Typhoon Mangkhut

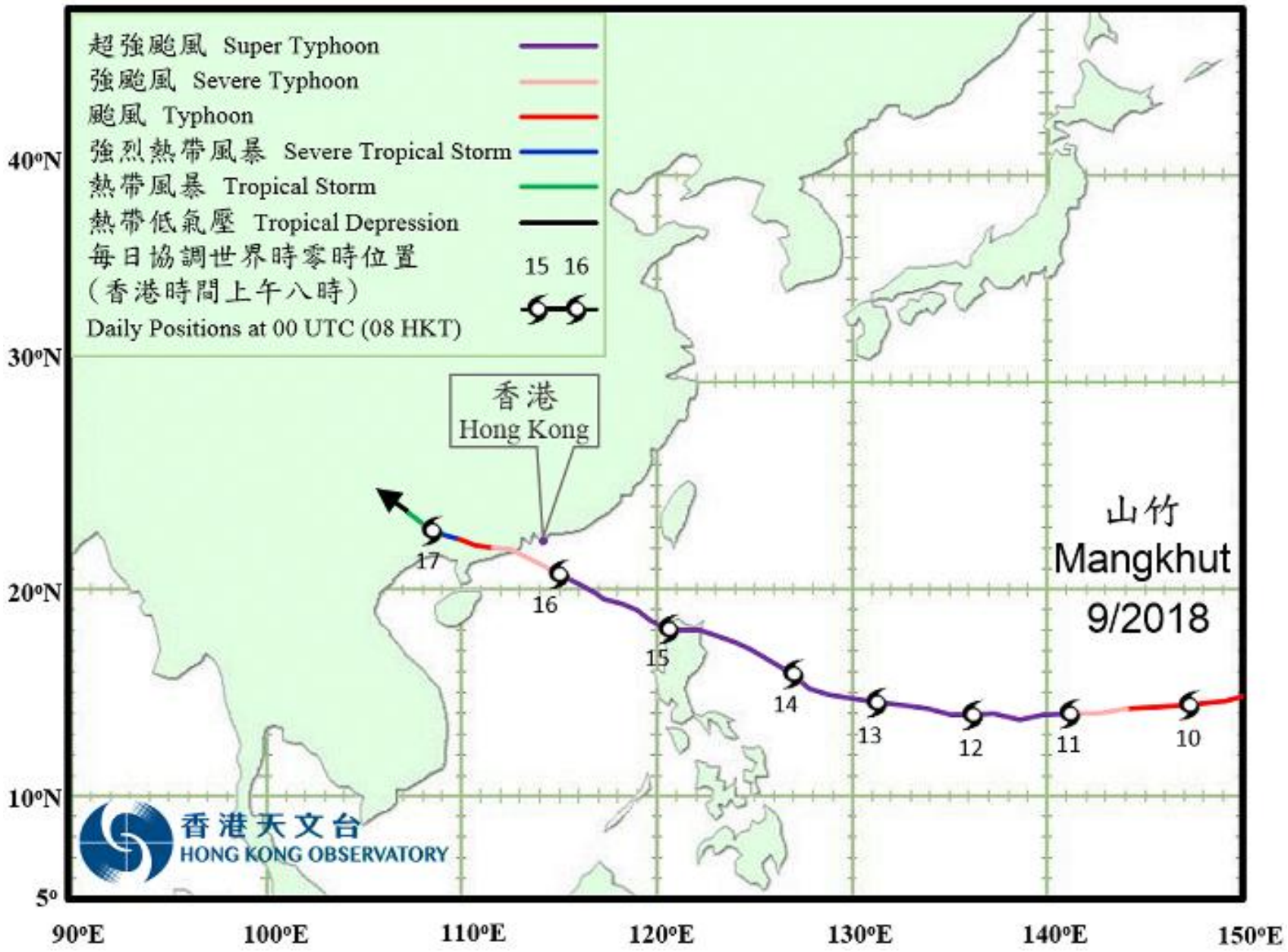
Sandy Song
Senior Scientific Officer

香港天文台
Hong Kong Observatory

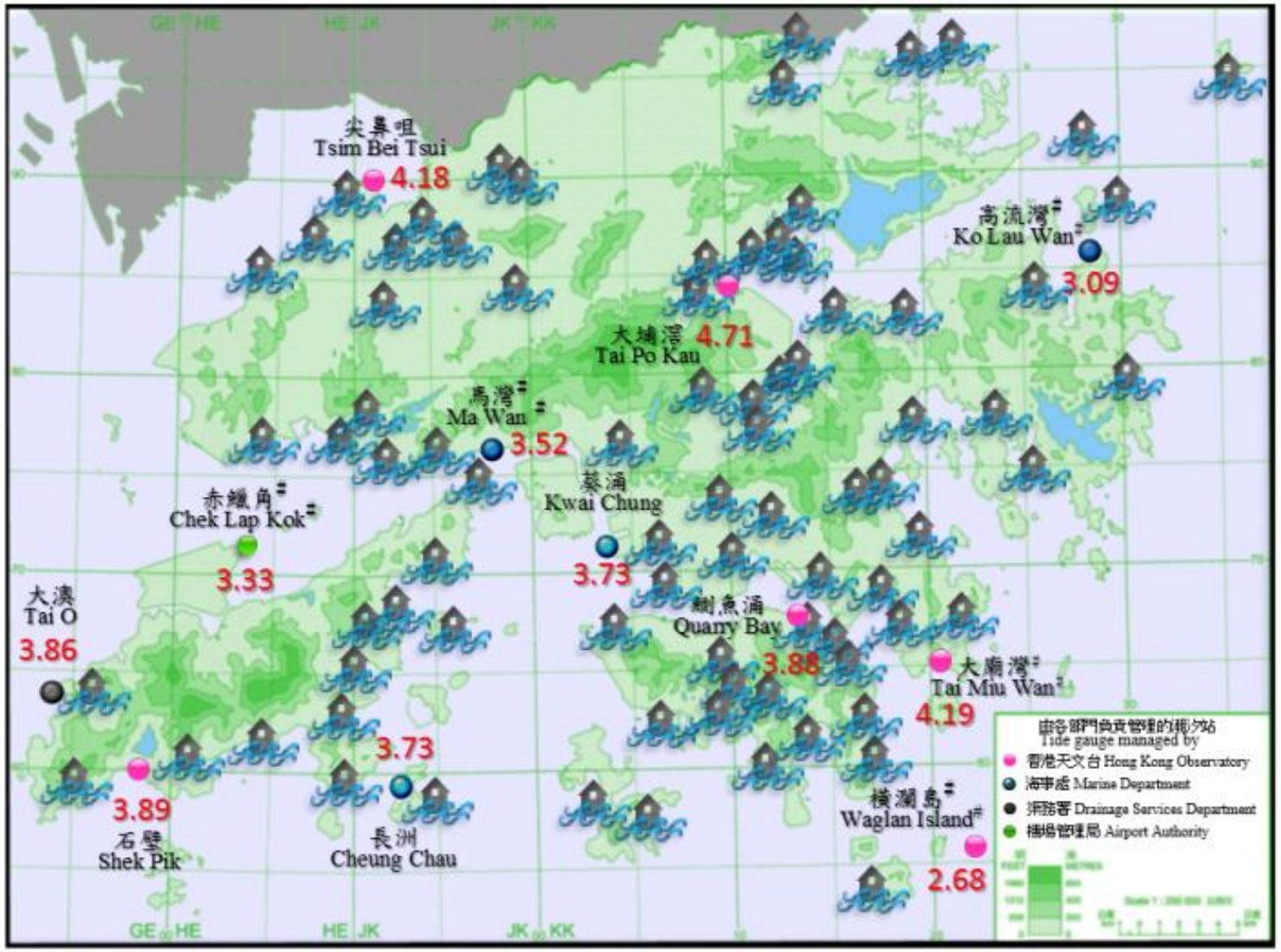
Mangkhut



Mangkhut

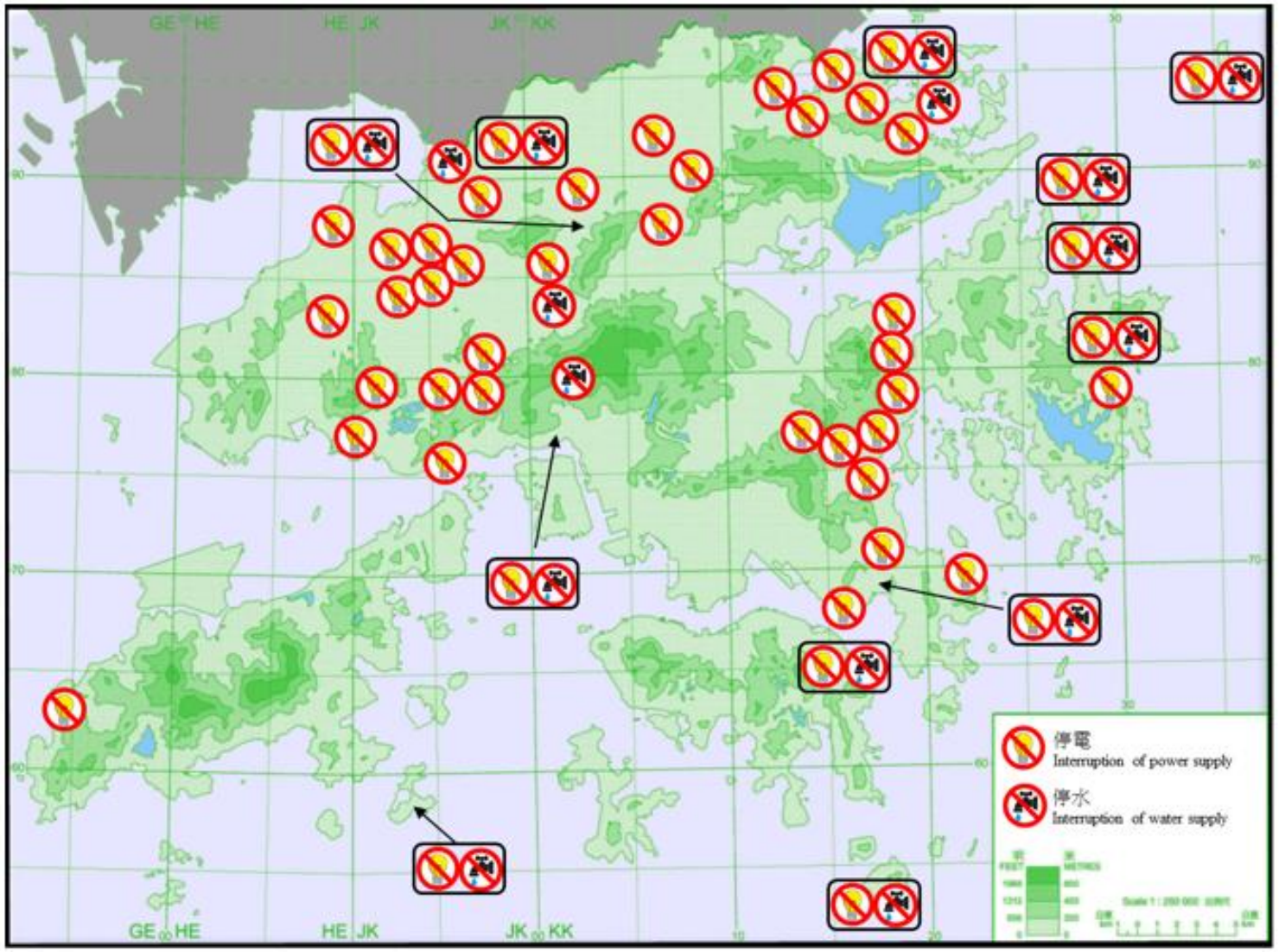

超強颱風 Super Typhoon
強颱風 Severe Typhoon
颱風 Typhoon
強烈熱帶風暴 Severe Tropical Storm
熱帶風暴 Tropical Storm
熱帶低氣壓 Tropical Depression
每日協調世界時零時位置
(香港時間上午八時)
Daily Positions at 00 UTC (08 HKT)
15 16
香港
Hong Kong
山竹
Mangkhut
9/2018
17
16
15
14
13
12
11
10
40°N
30°N
20°N
10°N
5°
90°E
100°E
110°E
120°E
130°E
140°E
150°E
香港天文台
HONG KONG OBSERVATORY

Mangkhut



Maximum sea level (metres above Chart Datum of Hong Kong) recorded at various tide gauges in Hong Kong and flood reports from government departments, news and social media on 16 September 2018 (Mangkhut). The flood reports are not exhaustive.

Mangkhut

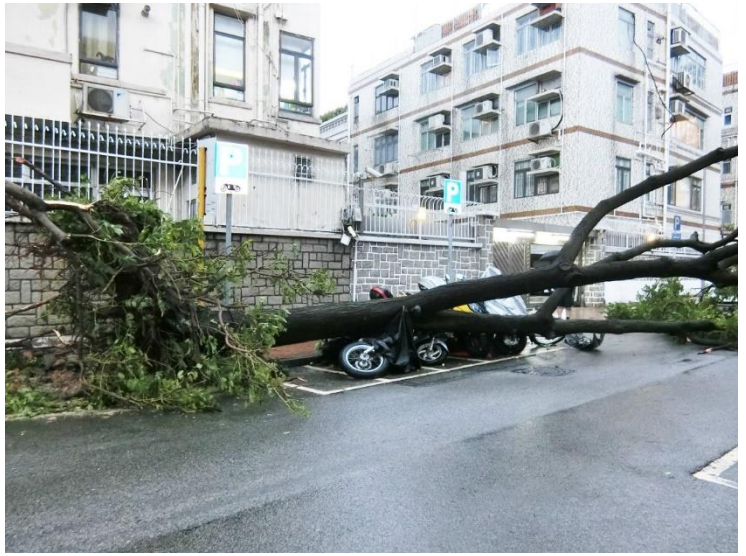


Reports of interruption of power and water supply under the influence of Mangkhut based on information from government departments, news and social media. The incident reports are not exhaustive.

Impacts – Storm surge

Impacts – overtopping waves

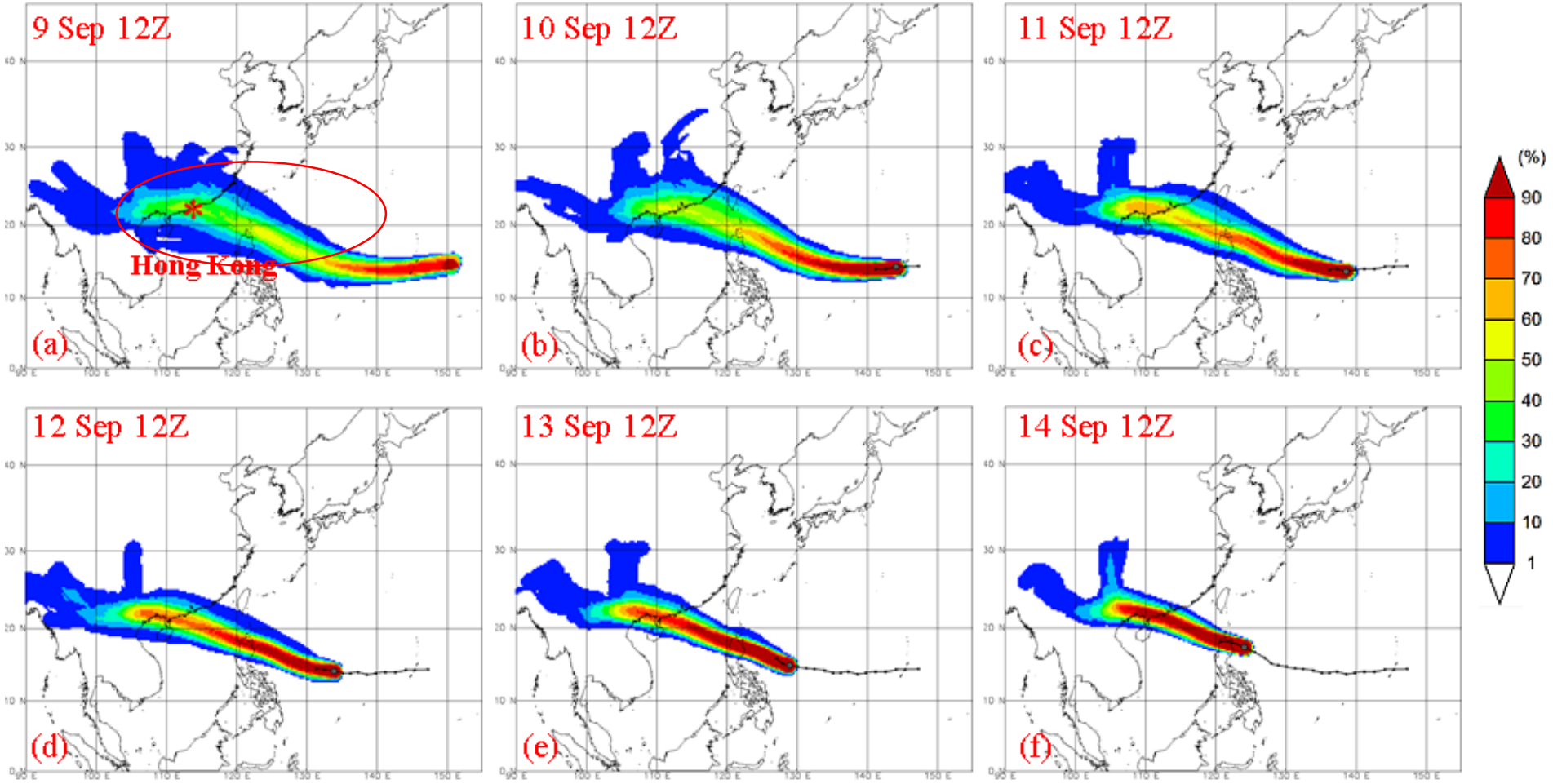
Impacts - trees



Impacts - buildings

Impacts - others

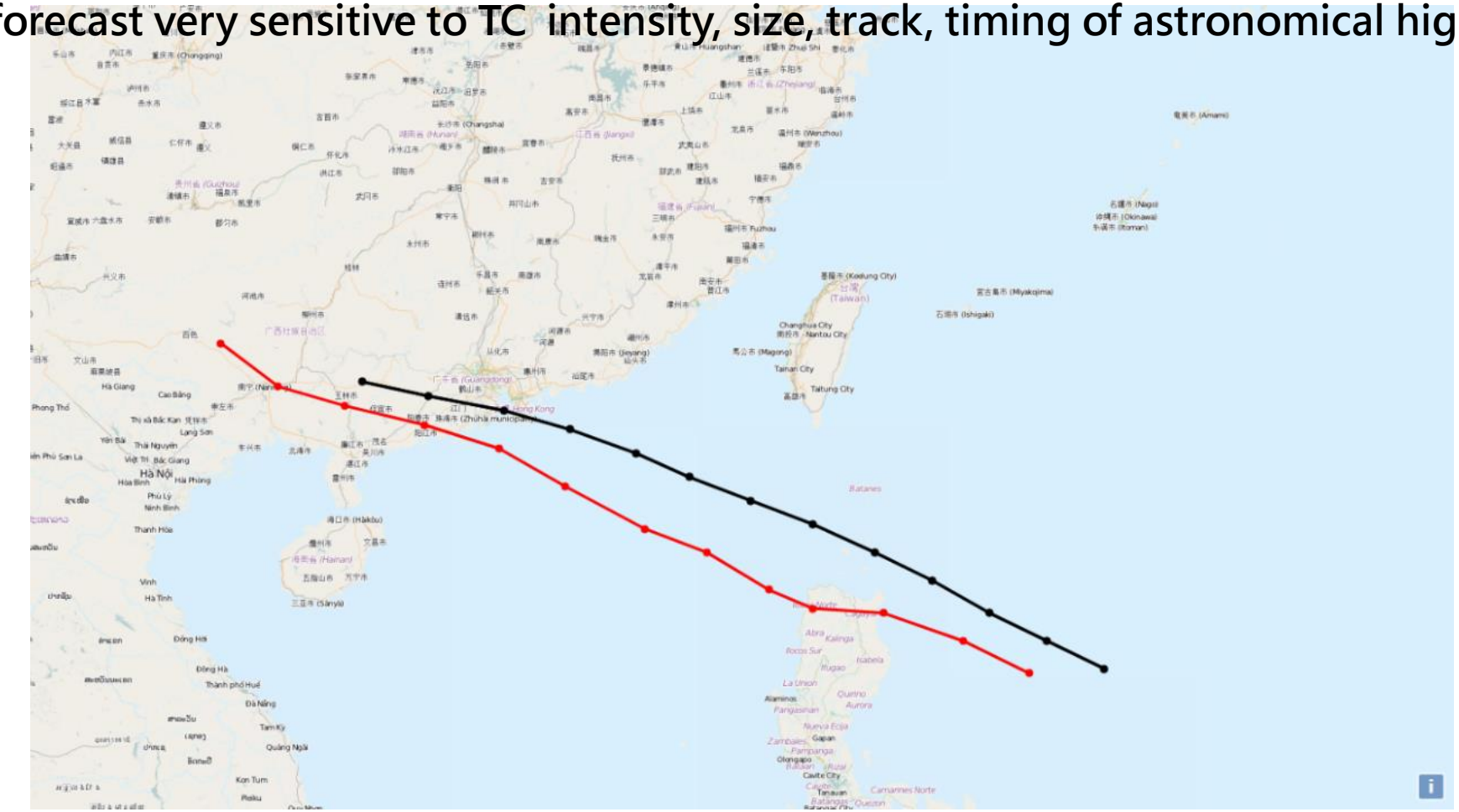
Challenges



EPS strike probability maps of Mangkhut based on the ensembles of ECMWF, EGRR and NCEP from 12UTC runs on 9 September 2018 to 14 September 2018.

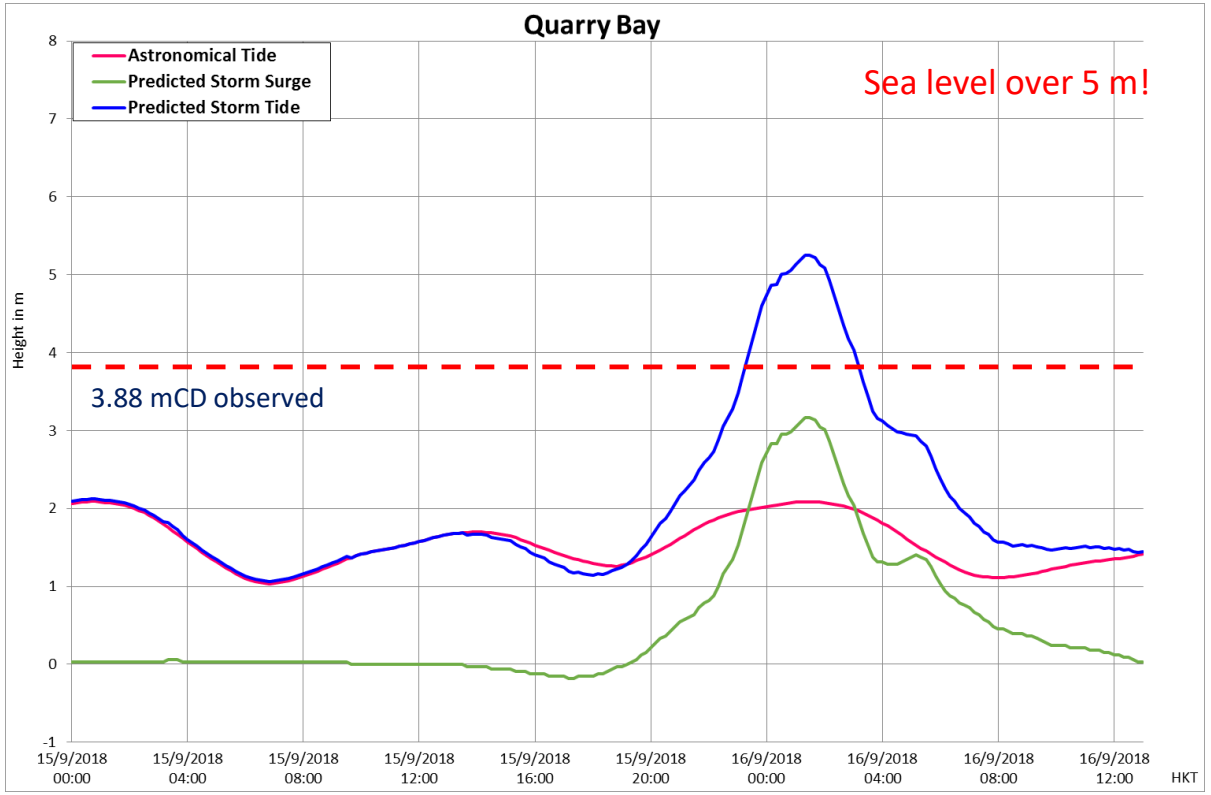
Challenges

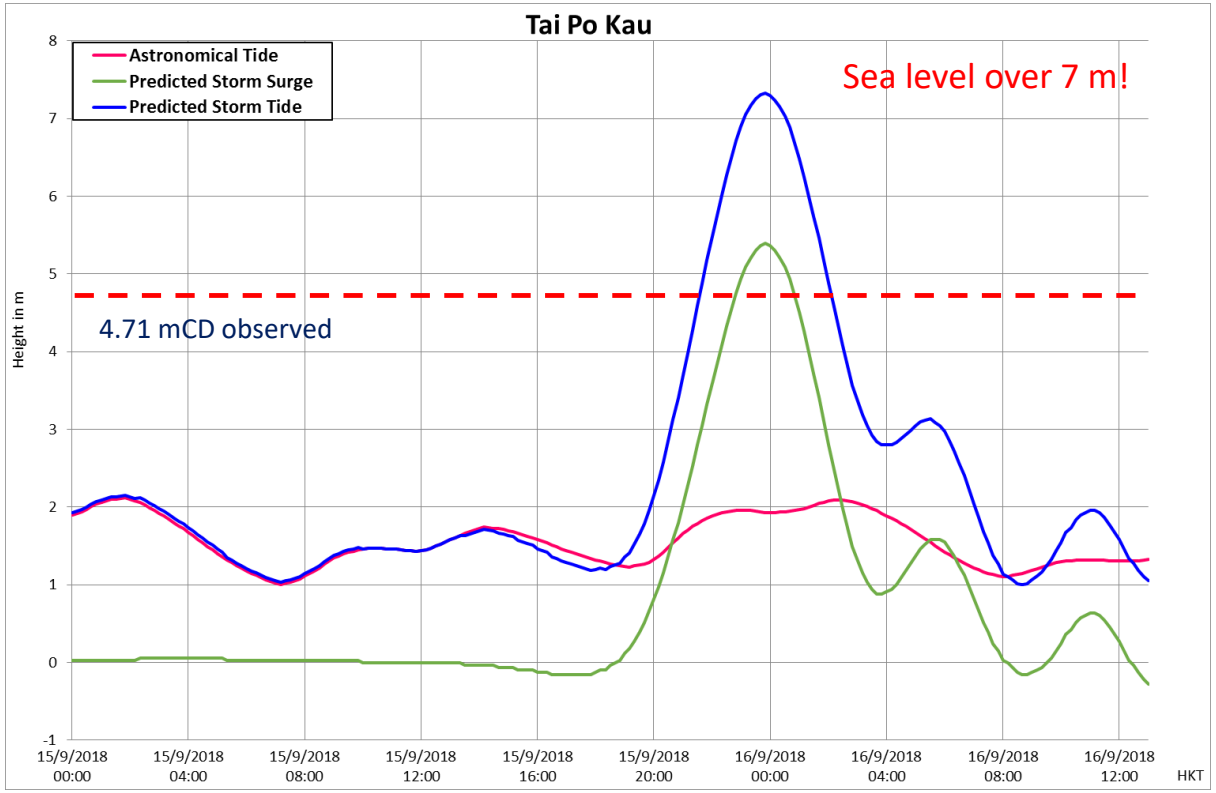
storm surge forecast very sensitive to TC intensity, size, track, timing of astronomical high tide



Forecast track of Mangkhut issued on 11 September 2018 (Black). Actual track of Mangkhut (Red).

Challenges

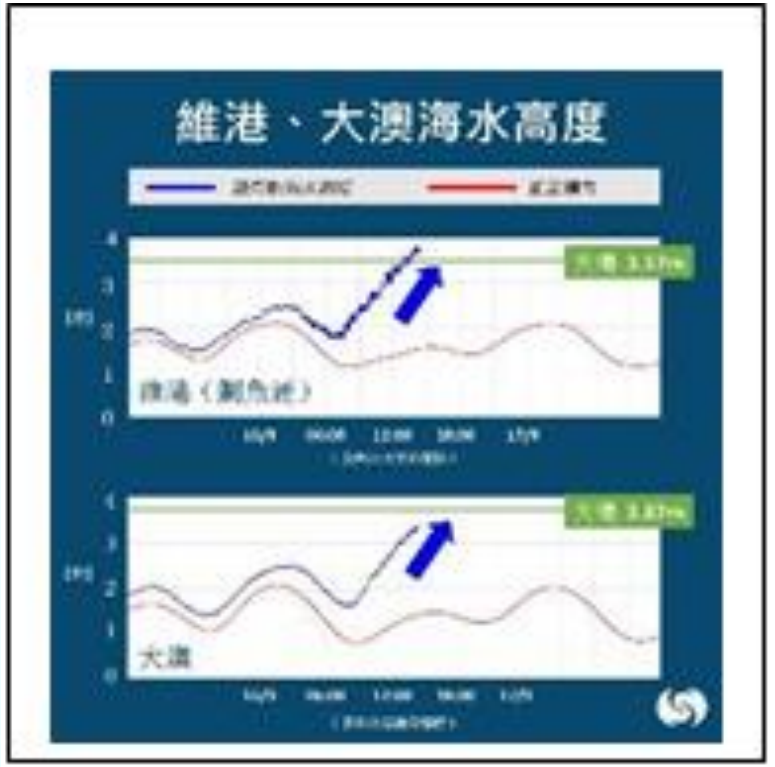




Time series of predicted storm surge and storm tide at (a) QUB and (b) TPK based on the official forecast track on 11 September 2018 for Mangkhut not crossing Luzon and peak storm surge of Quarry Bay occurring at the astronomical high tide on 16 September 2018.

Opportunities –disaster risk reduction

Opportunities – awareness on storm surge threat

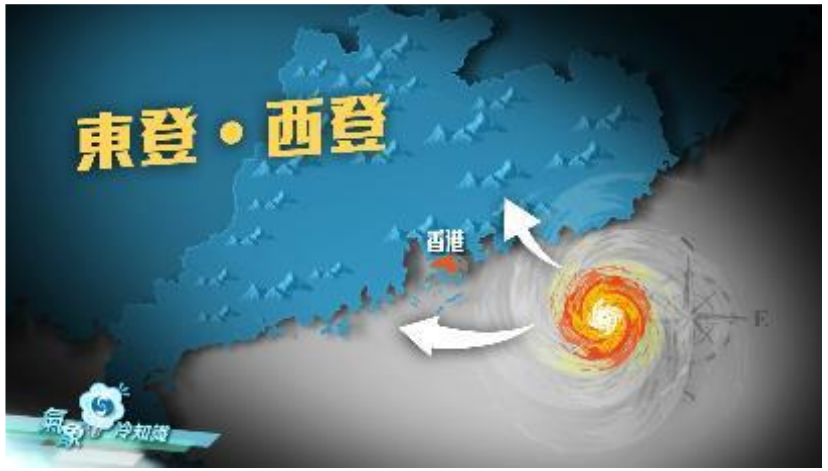


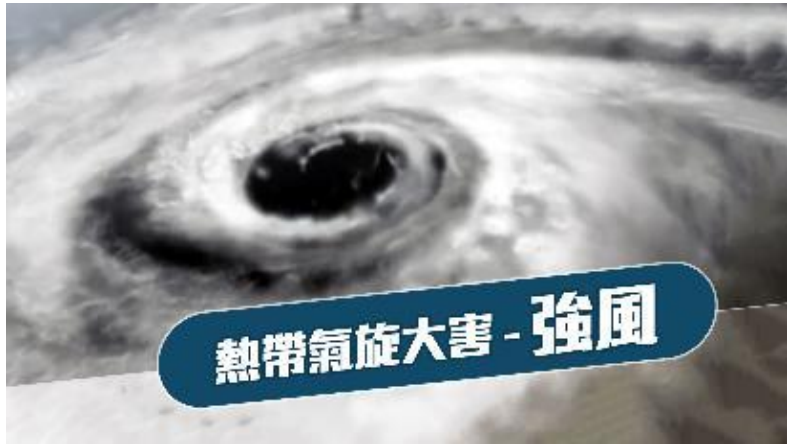
actual and predicted increase in local water level induced by storm surge (right)

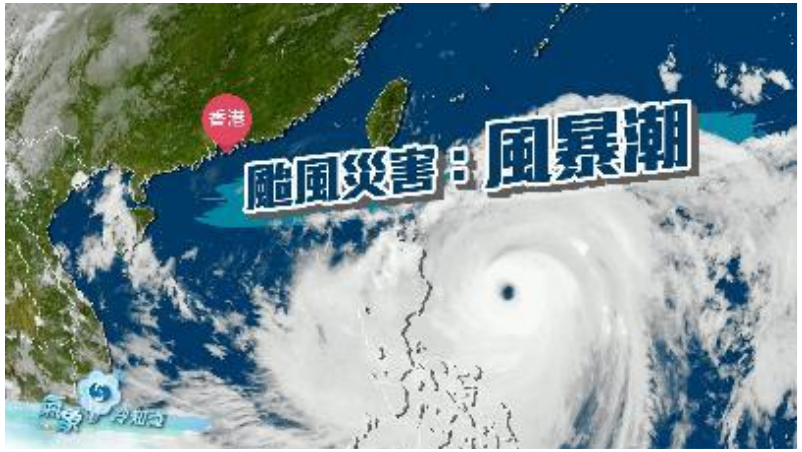
Opportunities – Crowdsourcing

- Crowd sourcing through
  - FB
  - MyObservatory app (upcoming)
- Interactive Map of Storm Damage by Mangkhut
- Cool Met Stuff series on Mangkhut

Opportunities - Public Education

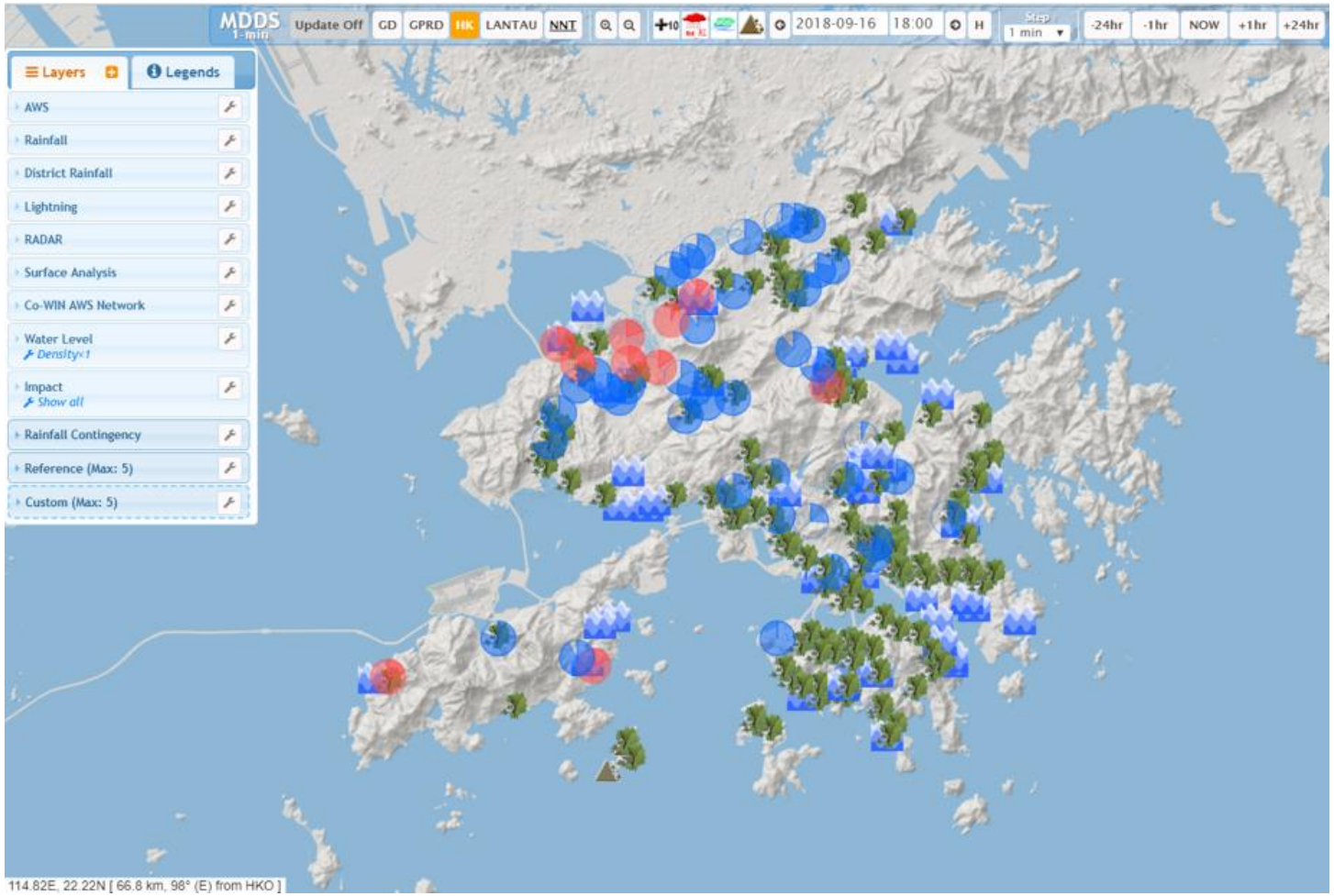






Educational videos with topics on typhoon related hazards (storm surge, high winds and waves) had been posted on HKO FB before the passage of typhoons so as to remind the public on the potential threats from typhoon

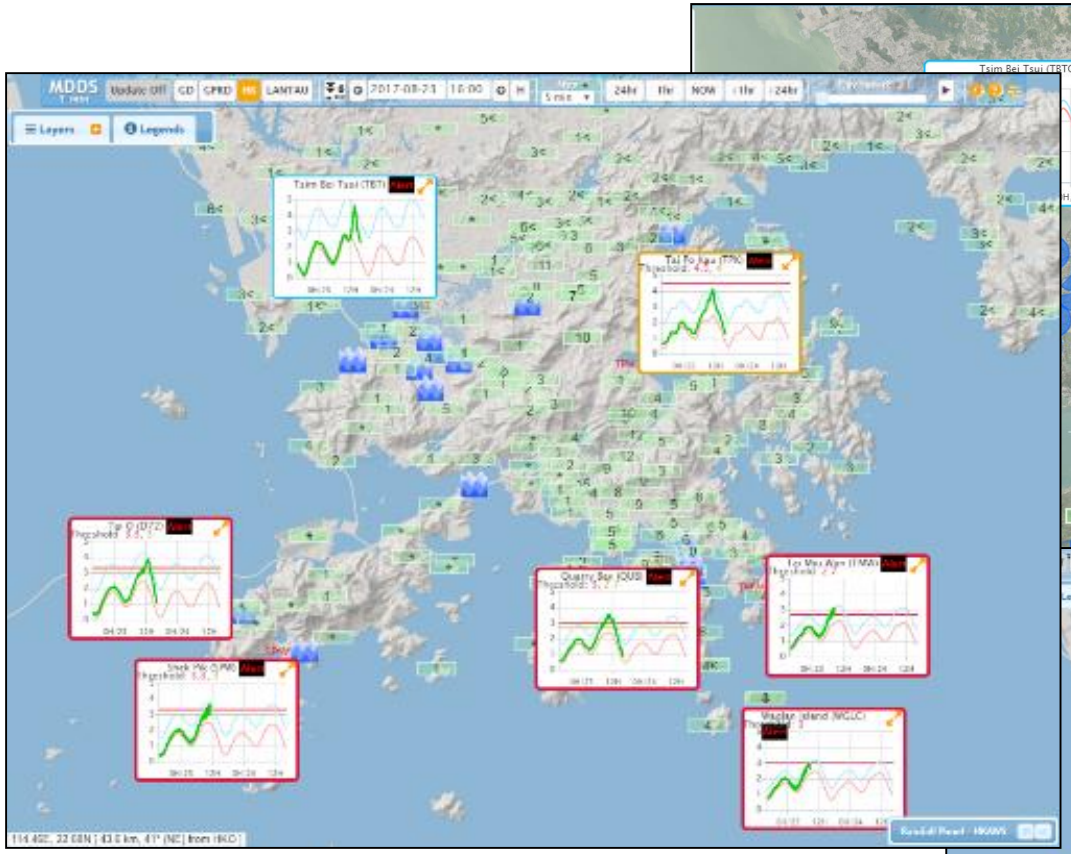
Opportunities – Impact analysis

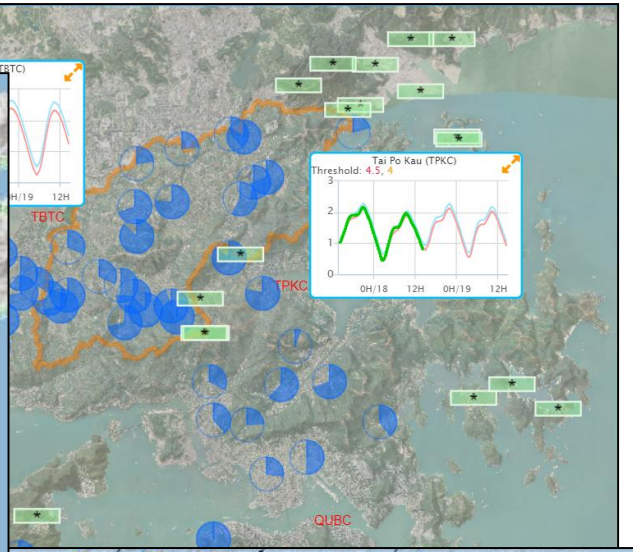


Display of hydrological information (as pie charts: red/blue colour refers to water level above/below alert thresholds), fallen tree ( ), landslide ( ) and flood ( ) reports (not exhaustive) in Hong Kong during the passage of Mangkhut on 16 September 2018.

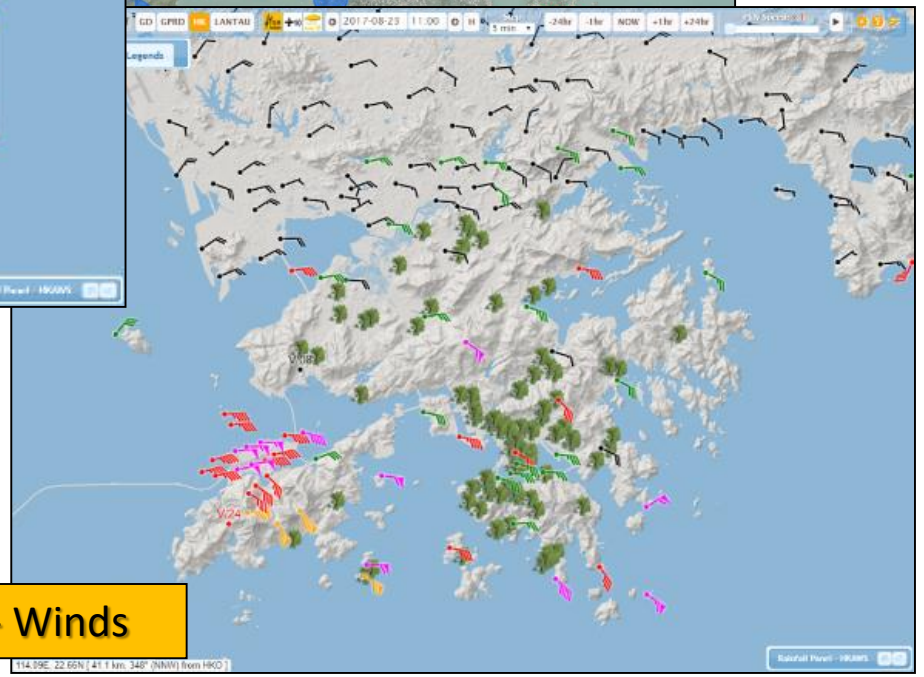
Impact Analysis

Rainfall – Flooding





Storm surge - Flooding



Tree damage - Winds