

An extremely wet October

Due to the heavy rain induced by tropical cyclones Lionrock and Kompasu, October 2021 was much wetter than usual in Hong Kong. The monthly rainfall of 631.1 millimetres was more than five times of the normal figure of 120.3mm (or more than six times of the 1981-2010 normal of 100.9mm), making it the second highest on record for October. The accumulated rainfall recorded in the first 10 months of the year was 2 281.8mm, about 3 per cent below the normal figure of 2 363.1mm for the same period (or about 2 per cent below the 1981-2010 normal of 2 334.0mm). The first week of October 2021 was also much warmer than usual, but it was relatively cooler in the latter part of the month. The monthly mean temperature of 26.0 degrees was slightly higher than the normal figure of 25.7 degrees (or 0.5 degrees above the 1981-2010 normal figure).

Under light wind conditions, apart from some isolated showers, the weather was very hot with sunny periods on the first two days of the month. With plenty of sunshine, the temperature recorded at the Hong Kong Observatory soared to 33.1 degrees on October 1, the highest of the month. The daily minimum temperature of 28.8 degrees on October 1 was the highest on record for October and the National Day. The daily mean temperature of 30.3 degrees on that day was the joint highest on record for October. High temperatures also triggered localised thundery showers in some areas on that day. A dust devil was reported near the third runway construction site of Hong Kong International Airport on the next day.

With the settling in of a fresh to strong easterly airstream, there were sunny intervals and a few thundery showers on October 3. The showers were particularly heavy in some areas with more than 50mm of rainfall recorded over Tai O. Affected by a relatively dry easterly airstream, the local weather was generally fine and hot apart from some isolated showers on the next two days. Under the influence of a strong northeast monsoon, it was sunny and dry with winds strengthening from the east on October 6.

An area of low pressure over the central part of the South China Sea intensified into a tropical depression on the afternoon of October 7 and was later named as Lionrock. It moved generally northwestwards towards Hainan Island from October 7 to 8. Lionrock slowly moved across Hainan Island on October 9 and entered Beibu Wan that night. It made landfall over the northern part of Vietnam and weakened into an area of low pressure on October 11. Concurrently, a broad area of low pressure to the east of the Philippines intensified into a tropical depression and was named Kompasu on October 8. It developed progressively into a severe tropical storm and moved across the Luzon Strait on October 11. Kompasu moved westwards across the northern part of the South China Sea and further developed into a typhoon on the morning of October 13. After moving across Hainan Island and Beibu Wan, Kompasu made landfall over the northern part of Vietnam and weakened into an area of low pressure on October 14.

Under the combined effect of Lionrock and the northeast monsoon, it was windy with squally heavy showers and thunderstorms in Hong Kong from October 7 to 8. The rain was particularly heavy and persistent on October 8 with more than 200mm of rainfall generally recorded over Hong Kong, necessitating the issuance of the second Black Rainstorm Warning in the year. The rainfall recorded at the Hong Kong Observatory on that day reached 329.7mm, more than two times of October's monthly total normal figure of 120.3mm, making it the highest daily rainfall on record for October. With Lionrock edging closer to the coast of Guangdong and winds over Hong Kong further strengthening on October 9, the No. 8 Gale or Storm Signal was issued early that morning. Under the inclement weather, a catamaran was overturned by huge waves over the waters near Po Toi Island on October 7. Two people on board fell into the sea and one of them was drowned. The scaffolding of a residential building in Happy Valley collapsed on the morning of October 8, resulting in one death and one injury. The heavy downpour on that day also caused serious flooding to some roads.

When Lionrock moved away from Hong Kong, showers eased off and winds subsided gradually during the day on October 10. Affected by the dry northeast monsoon, local weather was mainly fine on October 11. With the approach of Kompasu and under the combined effect of the northeast monsoon, local winds strengthened again on October 12, reaching strong to gale force that night. The No. 8 Gale or Storm Signal was issued again on the afternoon of October 12 with only a break time of 60 hours and 40 minutes after the cancellation of the No. 8 Gale or Storm Signal for Lionrock. This was the shortest record of break time between two No. 8 Gale or Storm signals for two different tropical cyclones since 1946. For most of the time on October 13, winds over Hong Kong were generally strong to gale force, with winds reaching storm force offshore and on high ground. The outer rainbands of Kompasu brought heavy showers to Hong Kong from October 12 to 13 with over 100mm of rainfall recorded in some parts of the territory on October 13. Moreover, the storm surge induced by Kompasu raised the water level in Hong Kong, making it over 1 metre higher than the normal tide levels on the morning of October 13. Coinciding with the astronomical high tide, the aggregated effect resulted in the inundation of some low-lying areas in Hong Kong, including Tai O, Shing Mun River and Lei Yue Mun. With Kompasu moving away from the territory, local winds moderated gradually with less rain on October 14.

A rain area brought mainly cloudy weather and a few rain patches to Hong Kong on October 15. A surge of the dry northeast monsoon reached the coast of Guangdong on October 16, the local weather of the following few days became generally fine and dry during the day with slightly cooler mornings. Affected by an easterly airstream, apart from a few light rain patches in the morning, the weather remained mainly fine during the day on October 20.

A cold front moved across the coast of Guangdong on the morning of October 21. Locally, there were a few rain patches with winds strengthening from the north in the afternoon and temperatures falling significantly. The associated northeast monsoon brought relatively cool weather and a few light rain patches to Hong Kong on the next two days. The temperature recorded at the Hong Kong Observatory dropped to 18.2 degrees on the morning of October

22, the lowest of the month. Dominated by the northeast monsoon, it was sunny and dry during the day from October 24 to 26. With a cloud band covering the coastal areas of Guangdong, apart from mainly fine weather during the day in Hong Kong on October 29, it was mainly cloudy with a few morning rain patches from October 27 to 30. With the clouds thinning out, there were sunny periods on the afternoon of the last day of the month.

Six tropical cyclones occurred over the South China Sea and the western North Pacific in October 2021.

Details of issuance and cancellation of various warnings/signals in October are summarised in Table 1. Monthly meteorological figures and departures from normal for October are tabulated in Table 2.