

1. Review of Regional Weather Conditions in August 2017

1.1 Southwest Monsoon conditions continued to prevail in the region in August 2017. The monsoon rain band was located in the Northern Hemisphere, between latitude 5°N and 20°N, and brought extensive rainfall over the region. Heavy rain fell over the coastal regions of Myanmar and the northern parts of the Philippines. For the southern ASEAN region, dry weather conditions were experienced over parts of southern Sumatra and Java. The rainfall distribution for August 2017 is shown in Figure 1.

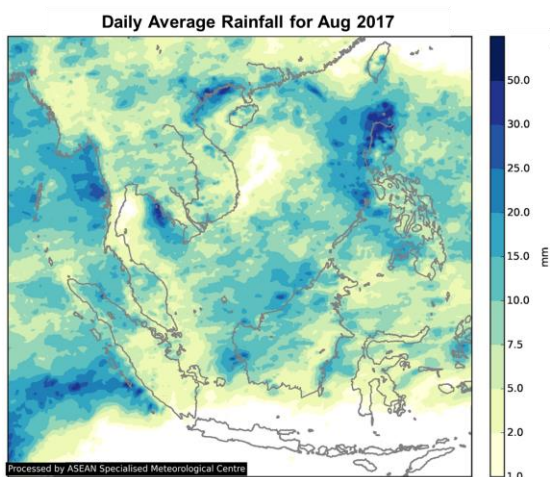


Figure 1: Daily average rainfall for the ASEAN region in August 2017. (Source: JAXA Global Satellite Mapping of Precipitation)

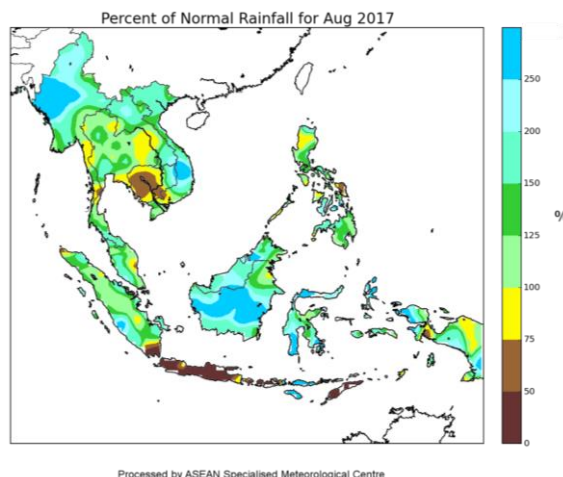
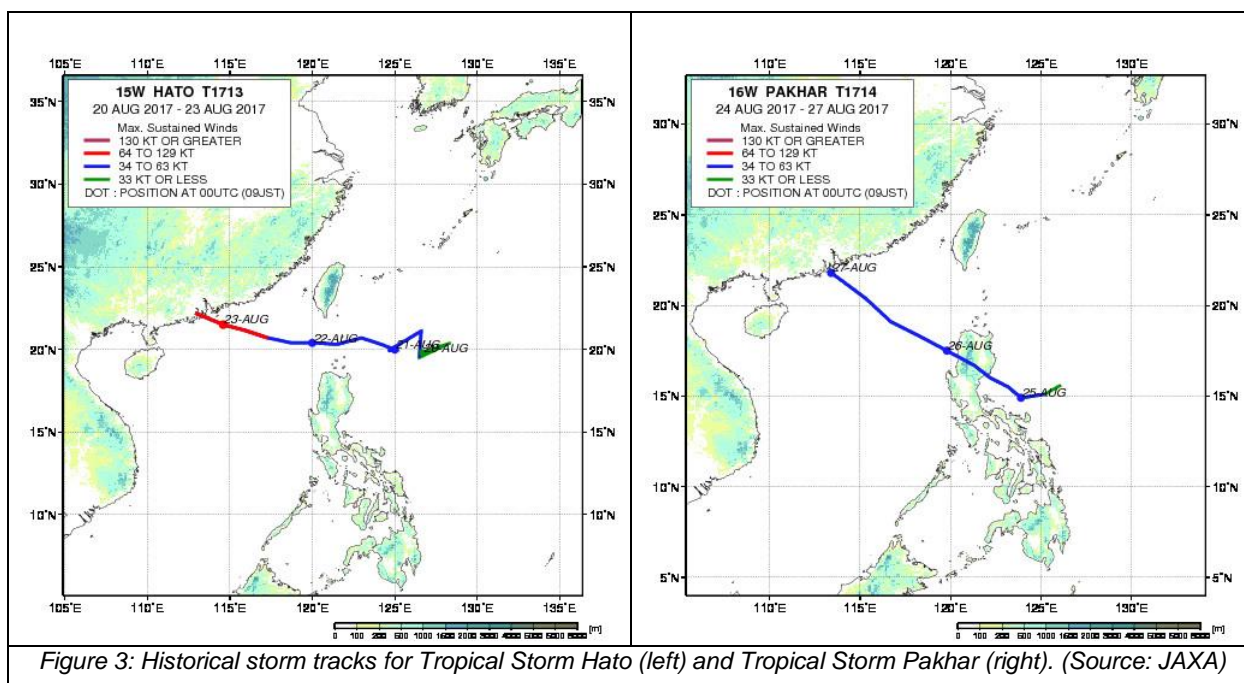


Figure 2: Percent of Normal Rainfall for August 2017. The rainfall data may be less representative for areas with low density of rainfall network.

1.2 In August 2017, rainfall was near-normal to above-normal over the northern ASEAN region except in Cambodia where rainfall was below-normal. In the southern ASEAN region, near-normal to above-normal rainfall prevailed except in southern Sumatra and parts of Java where rainfall was below-normal. Figure 2 shows the percent normal of rainfall for August 2017.



1.3 Two tropical storms – Hato and Pakhar were brewing in August 2017 over the western Pacific Ocean. Tropical Storm Hato developed to the northeast of the Philippines on the 20 August 2017. It tracked westwards and made landfall over the coast of southern China on the 23 August 2017. Tropical Storm Pakhar developed over the sea areas to the east of Luzon, the Philippines, on the 25 August 2017, and tracked north-westwards, crossing over northern Philippines before making landfall over the coast of southern China on the 27 August 2017. Both tropical storms brought heavy rains to Hong Kong and widespread shower activities over the northern ASEAN region.

1.4 The prevailing winds in August 2017 were predominantly from the southwest in the northern ASEAN region, and from the southeast in the southern ASEAN region. Figure 3 shows the average and anomalous winds at 5000 feet. In the month of August 2017, anomalous northeasterly to easterly winds dominated over the South China Sea and the region east of the Philippines. Furthermore, an anomalous cyclonic circulation was observed over the South China Sea, east of Hainan Island, associated with the tropical storms Hato and Pakhar.

¹ The MJO is characterised by an eastward propagation of clouds and rainfall over the tropics with an average cycle of 30 to 60 days. The MJO is more prominent between the Indian and western Pacific Ocean, and consists of two phases – an enhanced rainfall (convection) phase and a suppressed rainfall phase.

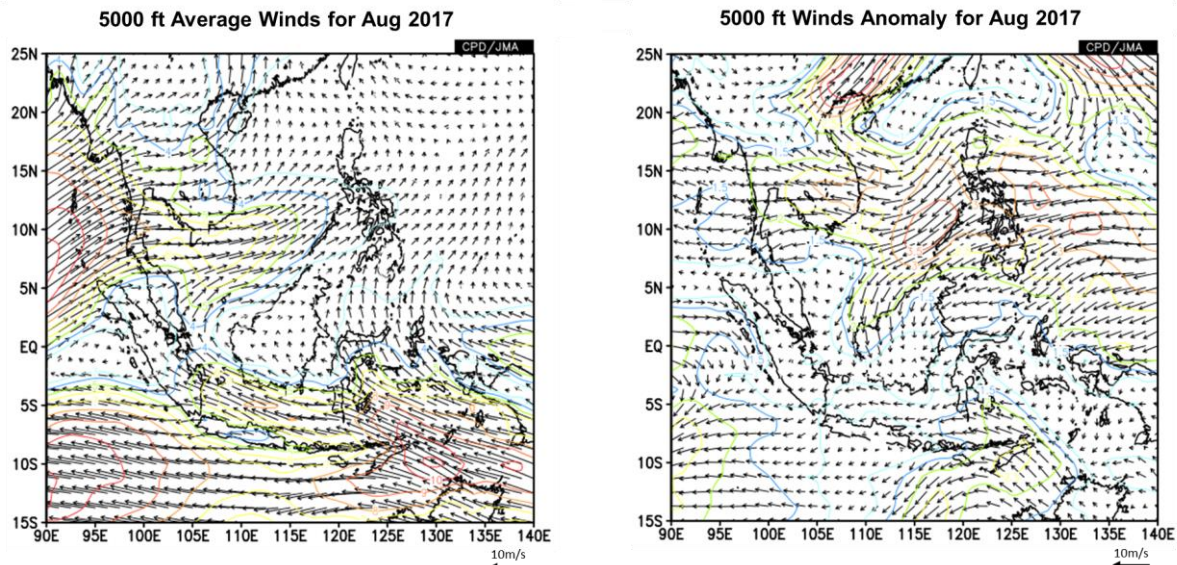


Figure 4: 5000 ft average winds (left) and anomaly (right) for August 2017. (Source: JMA)

1.5 In August 2017, the equatorial Pacific Ocean's sea-surface temperature (SST) over the Nino3.4 region was close to the El Niño Nino 3.4 index threshold. Most of the atmospheric indicators such as wind and cloudiness were fluctuating about the neutral values.

1.6 During the month, the Madden Julian Oscillation (MJO)¹ was generally weak and non-discernible except for a brief period in Phase 2 towards the end of August 2017. Overall, the contribution by the MJO on the weather over the Maritime continent in August 2017 was not significant.

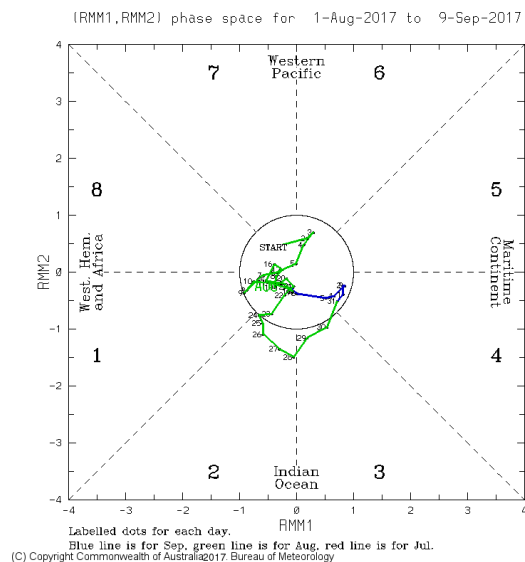


Figure 5: The MJO phase diagram for August 2017 (green). The MJO phase diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index falls within the circle, the MJO is considered weak or indiscernible. (Source: Bureau of Meteorology)

2. Review of Land/Forest Fires and Smoke Haze Situation

2.1 In the first half of August 2017, the dry weather conditions led to an increase in hotspot activities in both the northern and southern ASEAN regions. On the 4 August 2017 and 6 August 2017, there were significant hotspot activities detected over Borneo and Sumatra respectively but no smoke haze was observed.

2.2 In the second half of August 2017, tropical storms Hato and Pakhar brought widespread showers to the region and subdued the hotspot activities in the northern ASEAN region. In contrast, some brief episodes of dry weather conditions over the southern ASEAN region led to an increase in hotspot activities, mostly in southern Sumatra and Borneo. Satellite images depicting some of the hotspot activities over parts of the ASEAN region in August 2017 are shown

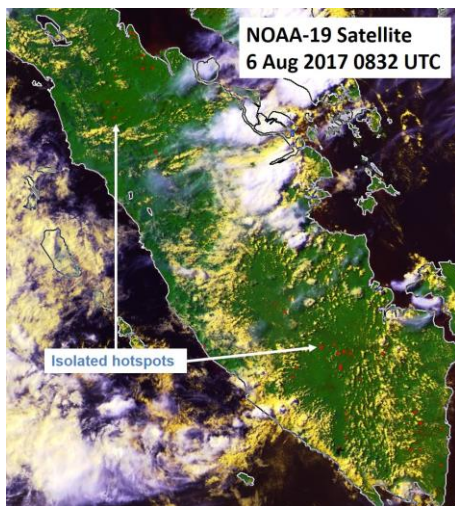


Figure 6: NOAA-19 satellite image on 6 Aug 2017 shows hotspot activities over Sumatra.

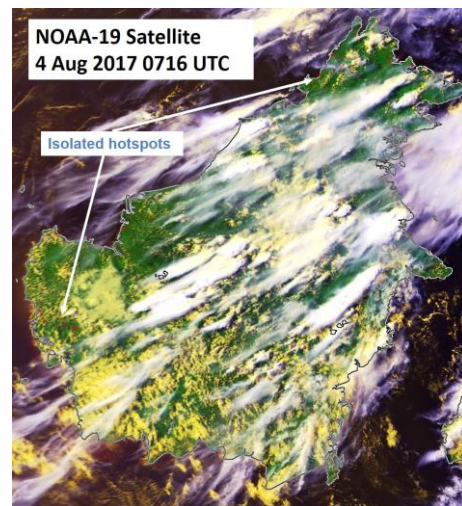


Figure 7: NOAA-19 satellite image on 4 Aug 2017 shows hotspot activities over West Kalimantan.

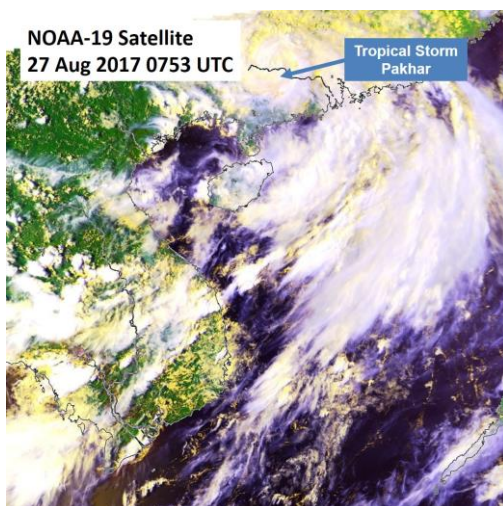


Figure 8: NOAA-19 satellite image on 27 Aug 2017. Tropical Storm Pakhar made landfall over southern China, inducing scattered showers over the Indochina.

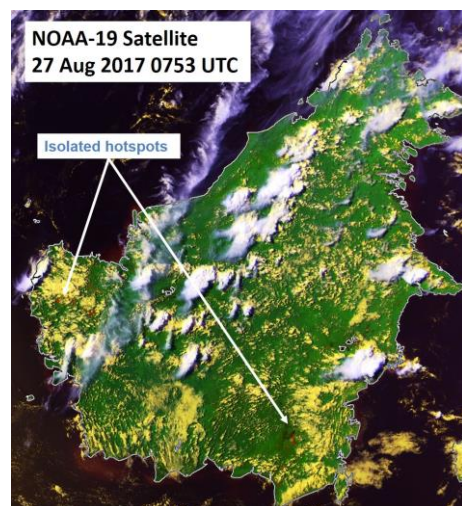
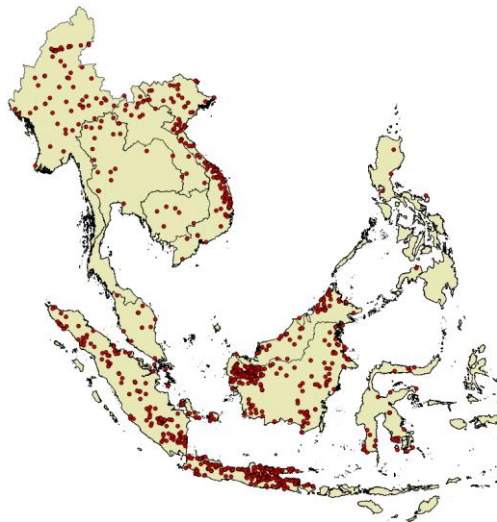


Figure 9: NOAA-19 satellite image on 27 Aug 2017 show hotspots over southern and western Kalimantan.

in Figures 6 – 9.

2.3 The hotspot distribution and daily hotspot charts for August 2017 are shown in Figure 100 and Figure 111 and 12 respectively.

NOAA-19 Hotspots Distribution for Aug 2017



Processed by ASEAN Specialised Meteorological Centre

Figure 10: NOAA-19 hotspots distribution in August 2017.

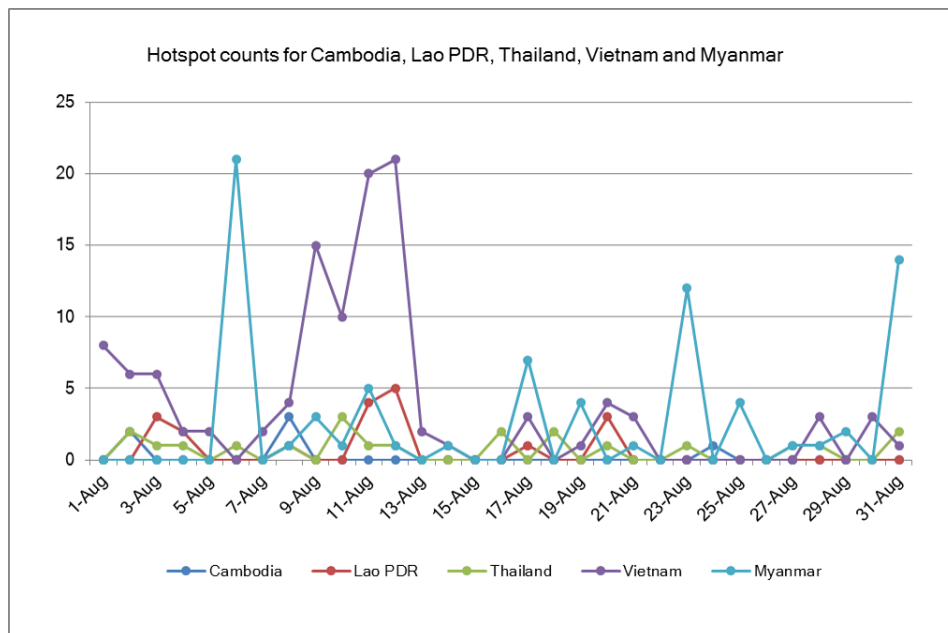


Figure 11: Hotspot Counts in Cambodia, Lao PDR, Thailand, Vietnam and Myanmar in August 2017.

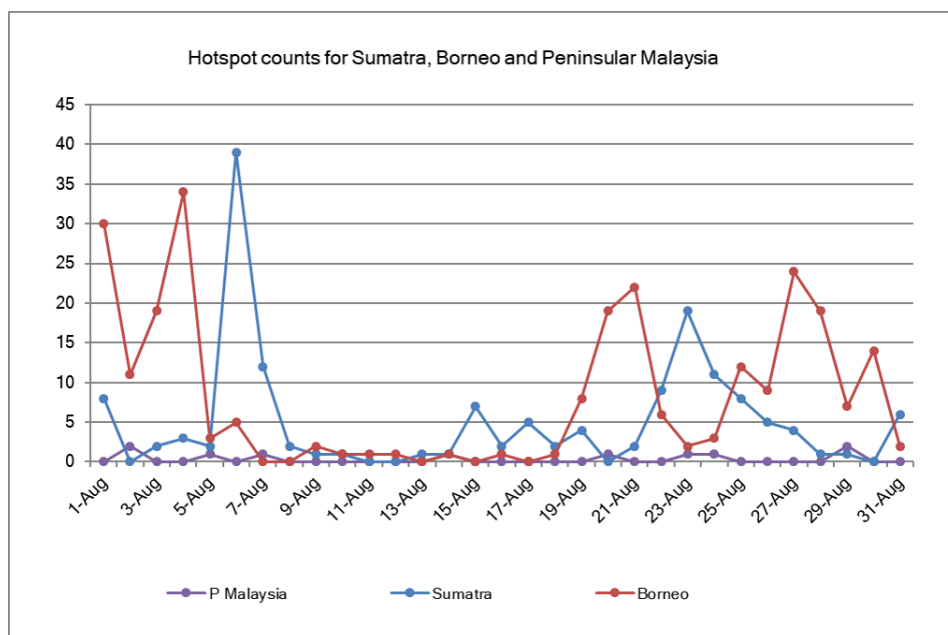


Figure 12: Hotspot Counts in Sumatra, Borneo and Peninsular Malaysia in August 2017.

3. Outlook of El Niño/La Niña and Indian Ocean Dipole

3.1 Climate models from major climate centres indicate that the neutral (neither El Nino nor La Nina), conditions are expected to persist for the rest of 2017.

3.2 Typically, El Niño brings drier-than-normal rainfall conditions to most parts of Southeast Asia during the Southwest Monsoon season. During La Niña events, the opposite, i.e. wetter-than-normal condition, normally occurs. Locally specific impact differs from place to place and for different seasons.

3.3 In the southern ASEAN region, occasional periods of drier weather can still be expected, and could lead to an occurrence of transboundary haze in the region. Hence, vigilance should be maintained for any escalation in hotspot activities in the fire-prone areas in the coming months.

3.4 In August 2017, the Indian Ocean Dipole (IOD) index was neutral (Figure 13). In the next few months, climate models from major climate centres project the IOD to remain neutral, with the possibility that a positive IOD may develop towards the end of 2017.

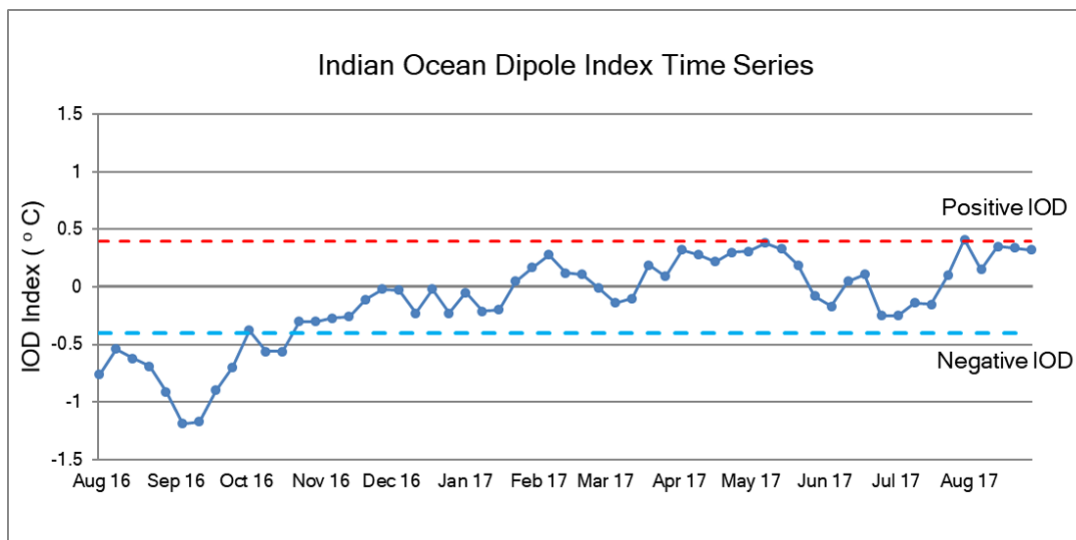


Figure 13: Indian Ocean Dipole (IOD) index time series. The IOD index was at neutral levels in August 2017. (Source: Bureau of Meteorology, Australia)

4. Outlook

4.1. The prevailing Southwest Monsoon conditions are expected to extend into mid-October 2017. During this season, prevailing winds are forecast to blow from the southeast or southwest. The development of tropical cyclones in the Western Pacific Ocean and/or the South China could bring heavy rainfall to parts of the ASEAN region, particularly over the Philippines and Vietnam.

4.2. For the southern ASEAN region, occasional periods of dry weather conditions may prevail, and could lead to an escalation in hotspot activities in the fire-prone provinces of Sumatra and Kalimantan. Hence vigilance should be stepped up for any escalation of fire activities during periods of drier weather

4.3. Towards the end of September 2017, the monsoon rain band is forecast to lie between latitudes 5°N and 20°N, and this could bring above-normal rainfall to parts of the northern ASEAN region and drier than usual conditions over the southern ASEAN region

4.4. For the September-October-November season, near-normal rainfall is forecast for most parts of the northern ASEAN region. In the southern ASEAN region, near-normal rainfall is forecast for most parts of the region, except for South Sumatra where slightly below-normal rainfall is expected. The rainfall outlook for the September to November 2017 season is shown in Figure 14.

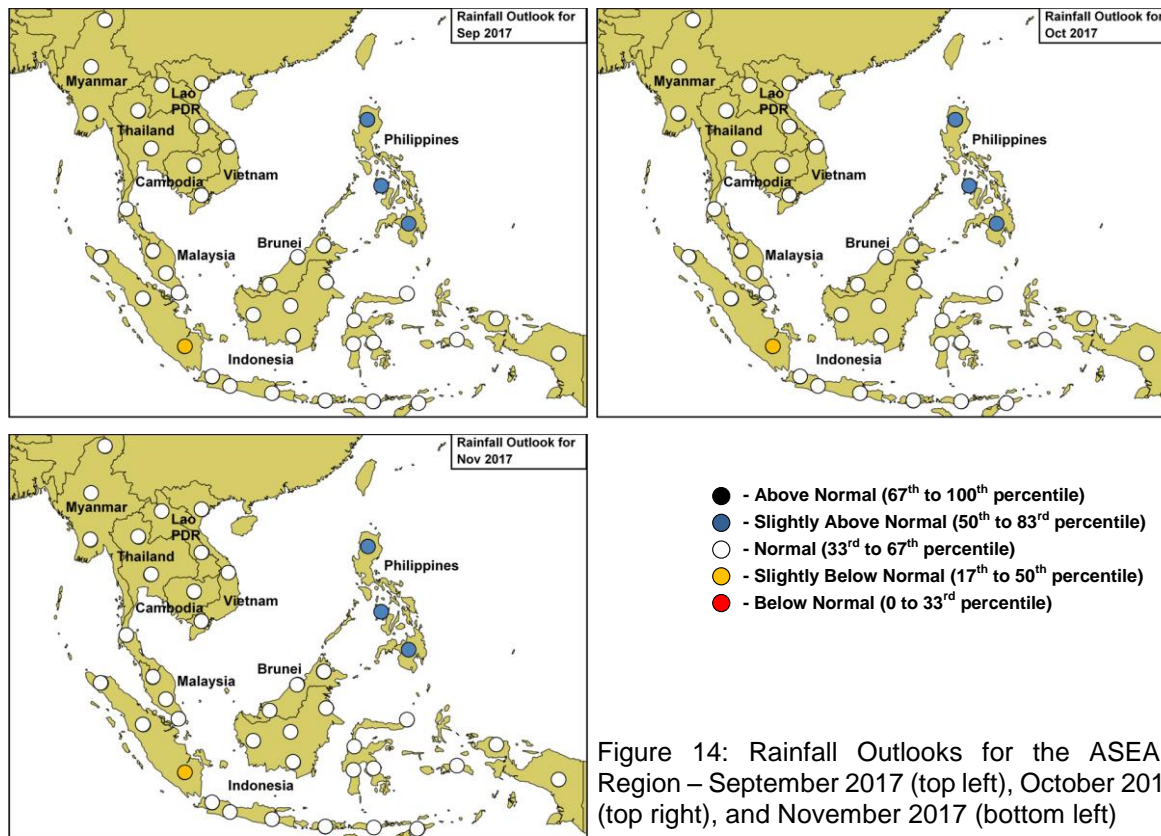


Figure 14: Rainfall Outlooks for the ASEAN Region – September 2017 (top left), October 2017 (top right), and November 2017 (bottom left)

4.5. In the second half of October 2017, the Southwest Monsoon season is expected to transit into the inter-monsoon season. During this period, the prevailing winds in the region are forecast to become light and variable in direction, and an increase in shower activities is expected. Hotspot activities in the southern ASEAN region are likely to be subdued with the expected occurrence of more shower activities in the region during the Southwest Monsoon season.

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