UPDATE OF REGIONAL WEATHER AND SMOKE HAZE (June 2018)

1. Review of Regional Weather Conditions for May 2018

1.1 Inter-monsoon conditions prevailed in May 2018, and most parts of the ASEAN region experienced an increase in shower activities. The increased shower activities brought an end to the dry season in the northern ASEAN region.

1.2 In May 2018, most parts of the Mekong sub-region received below-normal to near-normal rainfall except for the northern parts of Myanmar, eastern Cambodia and southern Vietnam where above-normal rainfall was recorded.

1.3 In the southern ASEAN region, below-normal rainfall was experienced over the northern parts of Sumatra, eastern Peninsula Malaysia, Java, and parts of Kalimantan. Elsewhere, near-normal to slightly above-normal rainfall were received.

1.4 The rainfall distribution for May 2018 and the percentage of normal rainfall for May 2018 are shown in Figure 1 and 2.

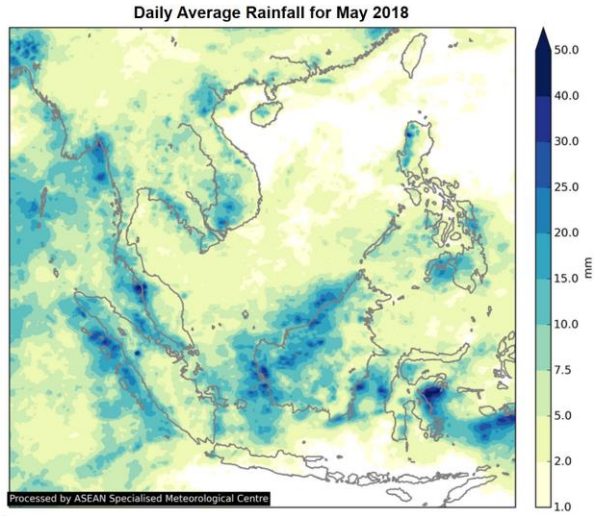

Figure 1: Daily average rainfall for the ASEAN region in May 2018. (Source: JAXA Global Satellite Mapping of Precipitation)

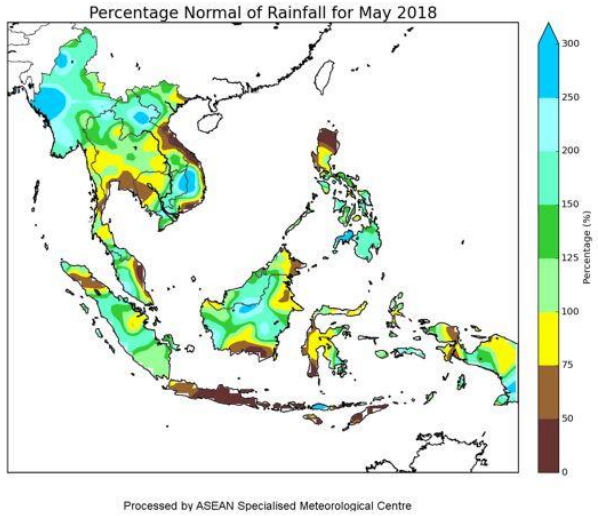

Figure 2: Percentage of Normal Rainfall for May 2018. The rainfall data may be less representative for areas with a less dense rainfall network.

1.5 In the last week of May 2018, a low-pressure system developed over the Bay of Bengal and tracked north to northeast-wards toward Myanmar before making landfall around end May. The rain band associated with the low pressure system brought strong winds and heavy rain over many parts of Myanmar, including Yangon and Mandalay.

1.6 Over the South China Sea and the southern part of the Mekong sub-region, the northeasterly/easterly wind component was anomalously strong. Prevailing winds typically blow from the southwest or west in May, and the wind anomaly in May 2018 could be due to a persistent ridge over the southern coast of China from which there was an outflow of northeasterly and easterly winds. Figure 3 shows the average and anomalous winds at 5000 feet.

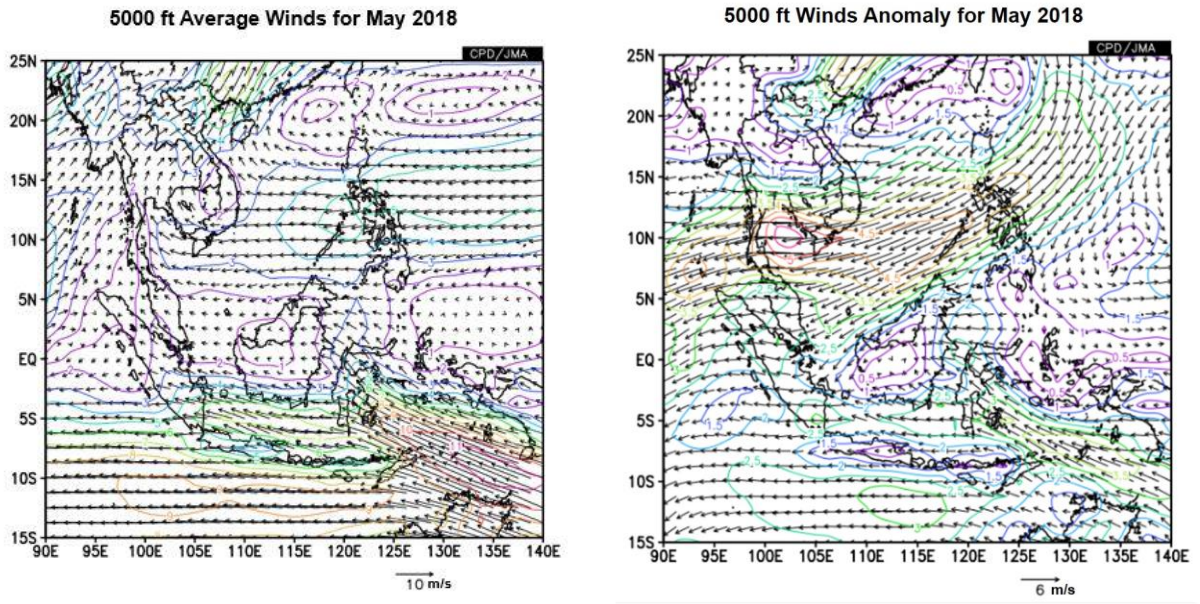

Figure 3: 5000 ft average winds (left) and anomaly (right) for May 2018. (Source: JMA)

1.7 The El Niño-Southern Oscillation (ENSO) remained neutral (neither El Niño or La Niña) in May 2018. The atmospheric and oceanic indicators of ENSO such as sea surface temperature and trade winds were also indicative of neutral conditions.

1.8 In May 2018, the Madden Julian Oscillation (MJO)[1] progressed from Phase 1 to Phase 4 from the second week of the month. The MJO in Phase 3 and 4 typically brings slightly enhanced rainfall over the southern ASEAN region during this time of the year. In the last week of May 2018, an increase in rainfall was observed over parts of the southern ASEAN region.

[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.

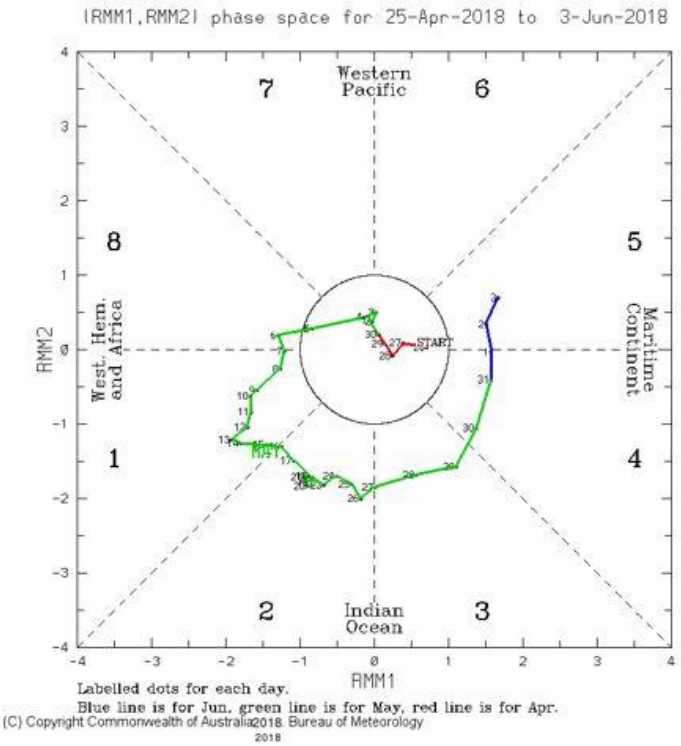

Figure 4: The MJO phase diagram for May 2018 (green). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index falls 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 May 2018, the increase in shower activities in the northern ASEAN region brought an end to the dry season. There was a significant reduction in hotspot activities and isolated hotspots were detected in the Mekong sub-region.

2.2 In the southern ASEAN region, hotspot activities were generally subdued due to the prevailing wet weather conditions in the region. Isolated hotspots were detected in Peninsula Malaysia, Kalimantan, as well as central and southern Sumatra during brief periods of drier weather. On few occasions, localised smoke plumes were observed in the vicinity of some of the hotspots in central and southern Sumatra.

2.3 Satellite images in Figures 5 to 8 show the detected hotspots in the ASEAN region in May 2018.

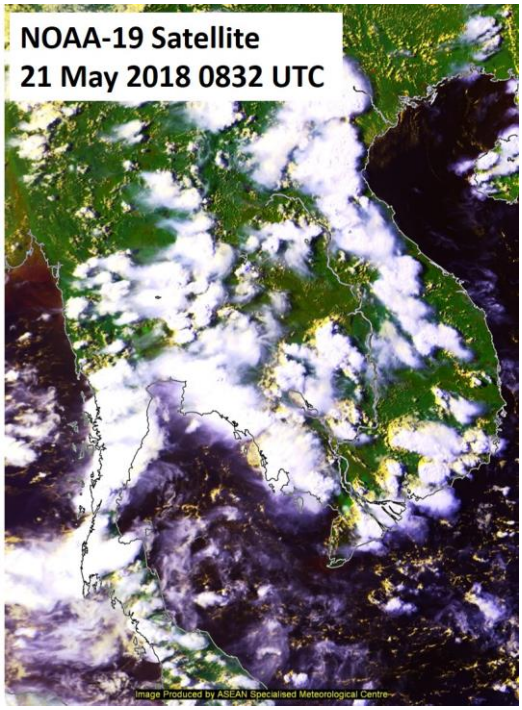

Figure 5: NOAA-19 satellite image on 21 May 2018 shows wet weather conditions over most parts of the northern ASEAN region.

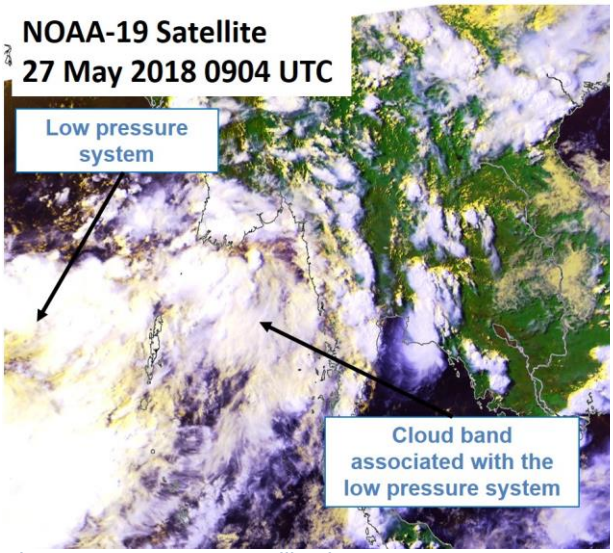

Figure 6: NOAA-19 satellite image on 27 May 2018 shows a low pressure system over Bay of Bengal. The low pressure system affected Myanmar in the last week of May and brought widespread rainfall over most parts of Myanmar.

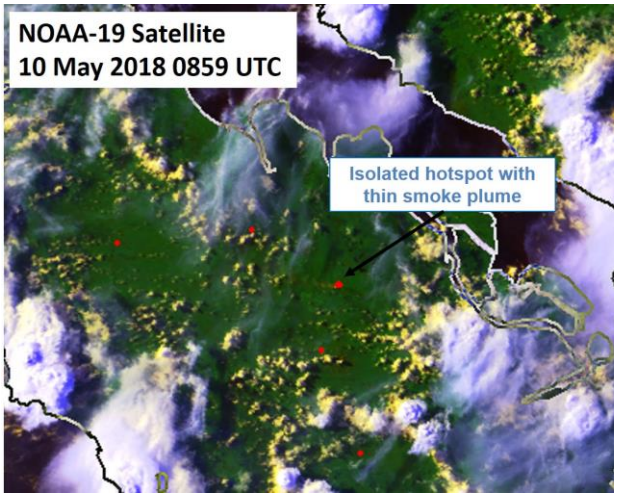

Figure 7: NOAA-19 satellite image on 10 May 2018 shows isolated hotspots in central Sumatra. A thin smoke plume can be observed emanating from one of the hotspot.

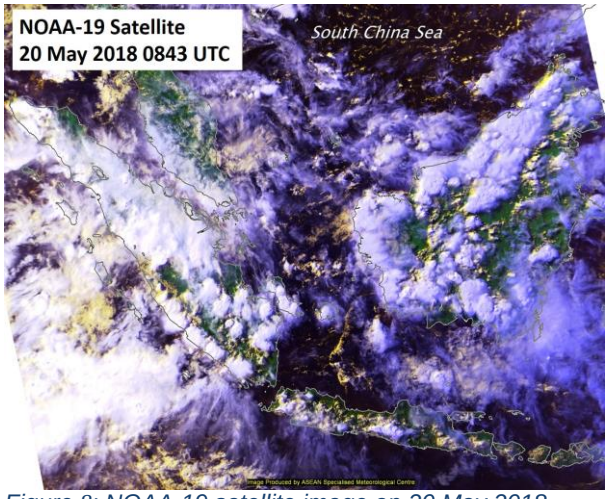

Figure 8: NOAA-19 satellite image on 20 May 2018 shows shower activities affected most parts of the southern ASEAN region.

2.4 The hotspot distribution and daily hotspot charts for May 2018 are shown in Figures 9, 10 and 11.

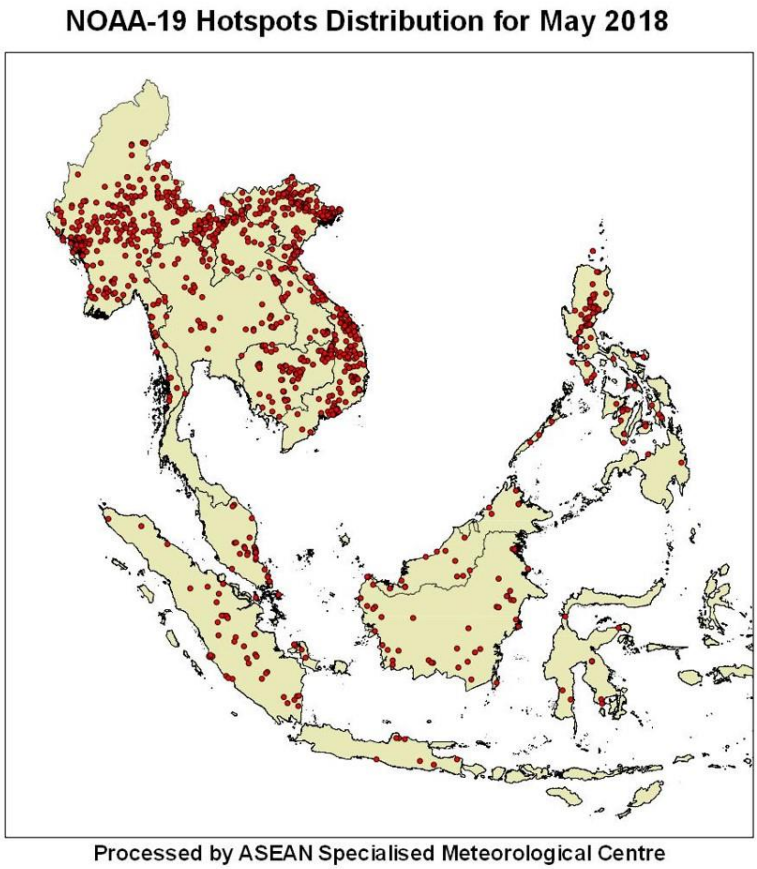

Figure 9: NOAA-19 hotspot distribution map for May 2018.

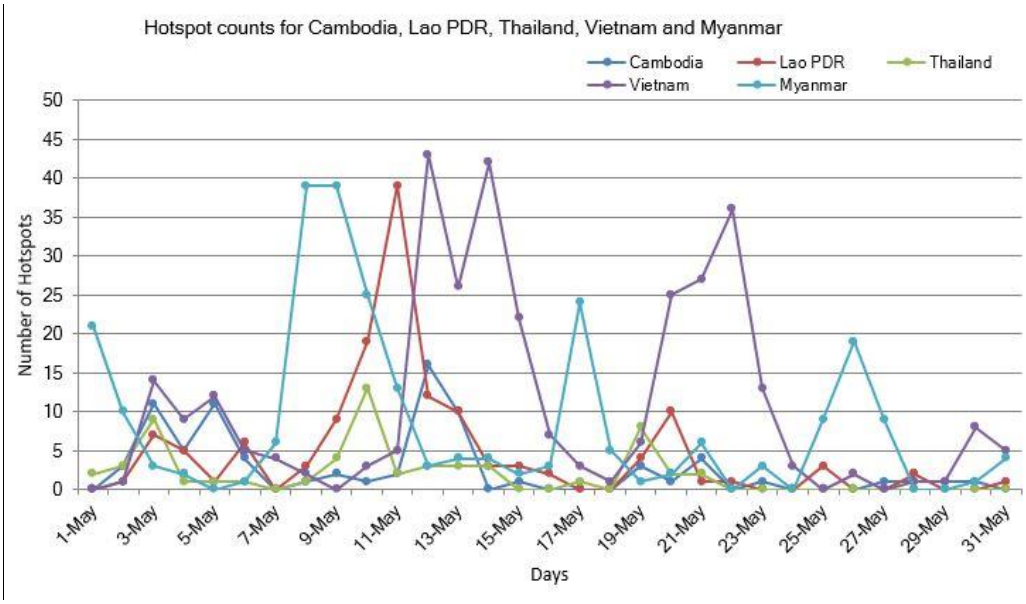

Figure 10: Hotspot Count recorded in Cambodia, Lao PDR, Thailand, Vietnam and Myanmar in May 2018.

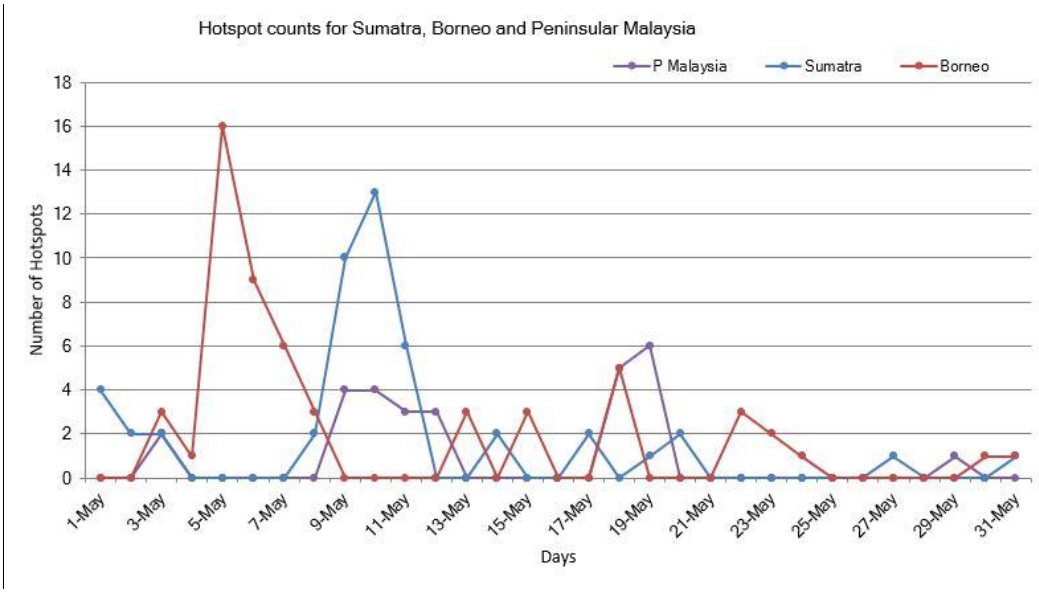

Figure 11: Hotspot Count recorded in Sumatra, Borneo and Peninsular Malaysia in May 2018.

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

3.1 Based on projections from major international climate centres, the prevailing neutral (neither El Niño nor La Niña) conditions are forecast to continue at least until October 2018. Towards the end of the year, some models have indicated that there is a slight chance of a weak El Niño developing. El Niño typically brings drier than normal conditions to Southeast Asia during the Southwest Monsoon season from June to October. However, the impact of El Niño is less obvious when it coincides with the Northeast Monsoon season from November to February.

3.2 In May 2018, the Indian Ocean Dipole (IOD) index remained at neutral levels (Figure 12). The IOD is likely to remain neutral for the next few months according to predictions from major climate centres.

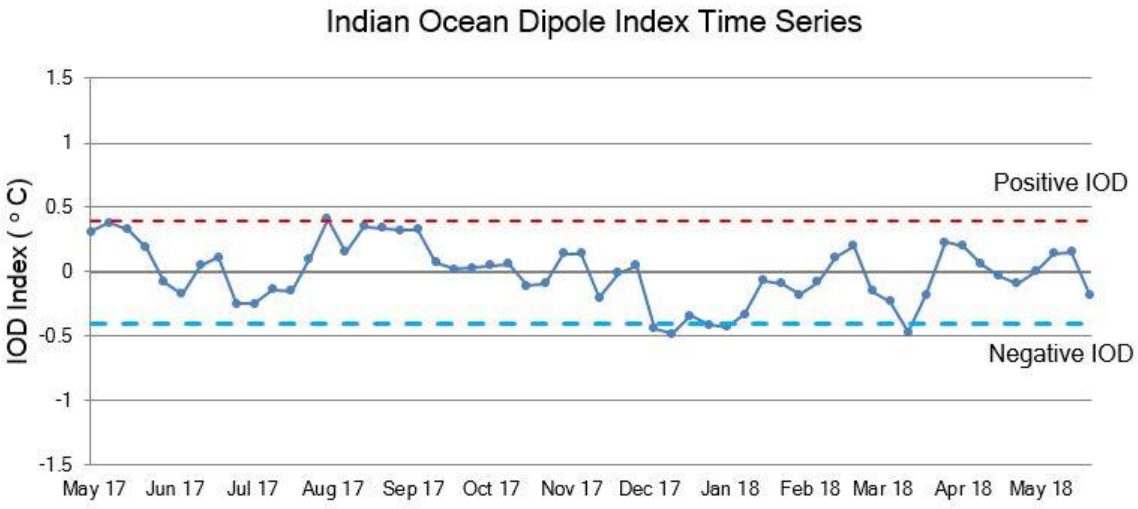

Figure 12: Indian Ocean Dipole (IOD) index time series. The IOD index was at neutral levels in May 2018. (Source: Bureau of Meteorology, Australia)

4. Outlook (June – August 2018)

4.1. In early June 2018, the prevailing winds over Southeast Asia shifted to blow mostly from the southeast or southwest, indicating the onset of the Southwest Monsoon season. This is also the traditional dry season of the southern ASEAN region and the traditional rainy season of the northern ASEAN region. The Southwest Monsoon season is forecast to extend into October 2018.

4.2. During the period from June to August 2018, most of the southern ASEAN region can expect slightly below to near-normal rainfall. However, in northern Sumatra, eastern Kalimantan, parts of Sulawesi, and Papua, slightly above-normal rainfall can be expected in August 2018. During the Southwest Monsoon season, there could be occasional extended periods of drier weather, and this could lead to an increase in hotspot activities. Vigilance should therefore be stepped up for any escalation of fire activities during the dry season.

4.3. In the northern ASEAN region, wet weather conditions are expected to persist for the June to August 2018 period. Most parts of the northern ASEAN region can expect near-normal rainfall during the period but some parts of Cambodia, Thailand, Lao PDR and Vietnam can expect slightly below-normal rainfall in July and August 2018. Hotspot activities for the region are likely to remain subdued.

4.4. The rainfall outlook for June, July and August 2018 are shown in Figure 13.

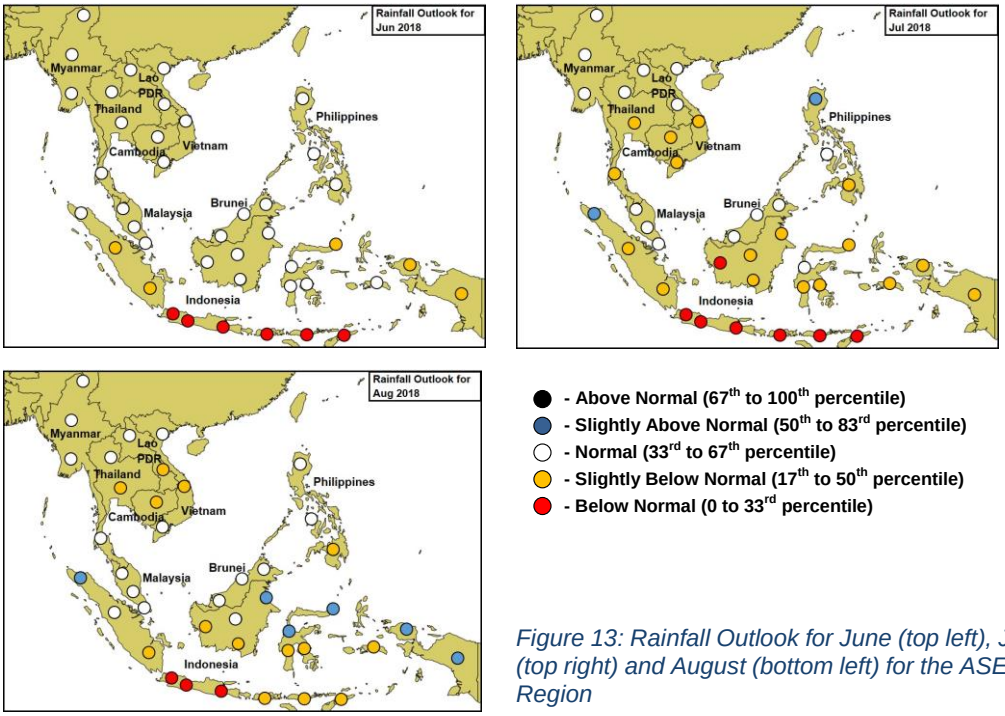

Figure 13: Rainfall Outlook for June (top left), July (top right) and August (bottom left) for the ASEAN Region

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