

## 1. Review of Regional Weather Conditions for April 2018

1.1 The Northeast Monsoon conditions gave way to the inter-monsoon conditions in April 2018. The inter-monsoon period is characterised by afternoon showers with winds that are generally light and variable in direction. In April 2018, a gradual increase in shower activities was observed over parts of the Mekong sub-region, while in the southern ASEAN region, conditions were generally wet.

1.2 In the northern ASEAN region, most parts of the Mekong sub-region received near-normal to above-normal rainfall, except for parts of Myanmar, eastern Thailand and southern Vietnam.

1.3 In the southern ASEAN region, Peninsula Malaysia and Sumatra received below-normal rainfall. Near normal to below-normal rainfall were received over southern Kalimantan and Java.

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

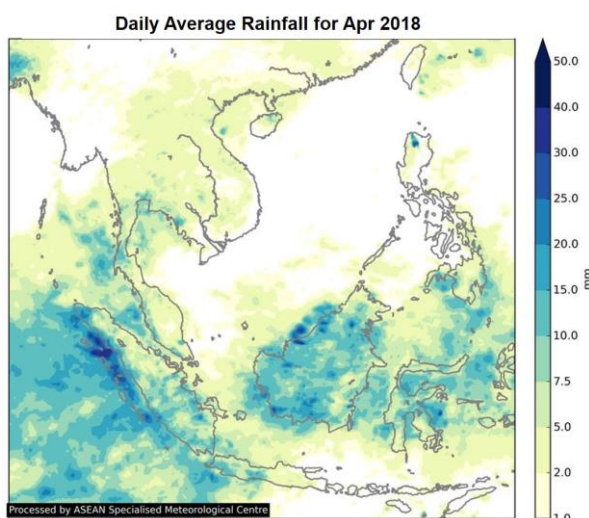


Figure 1: Daily average rainfall for the ASEAN region in April 2018. (Source: JAXA Global Satellite Mapping of Precipitation)

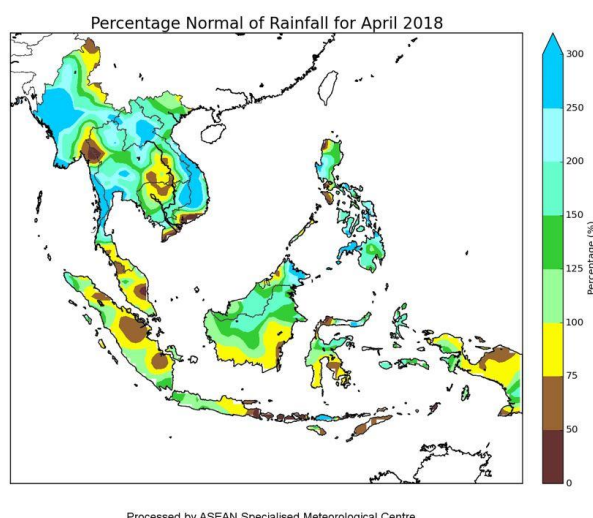


Figure 2: Percentage of Normal Rainfall for April 2018. The rainfall data may be less representative for areas with a less dense rainfall network.

1.5 In April 2018, prevailing winds in the region were predominantly blowing from the northeast or southeast, with comparatively weaker winds within the equatorial belt between 5°N and 5°S. Stronger northeasterly winds were observed over the South China Sea, while anomalously strong westerly winds continued to be observed to the east of Sulawesi since March 2018. Figure 3 shows the average and anomalous winds at 5000 feet.

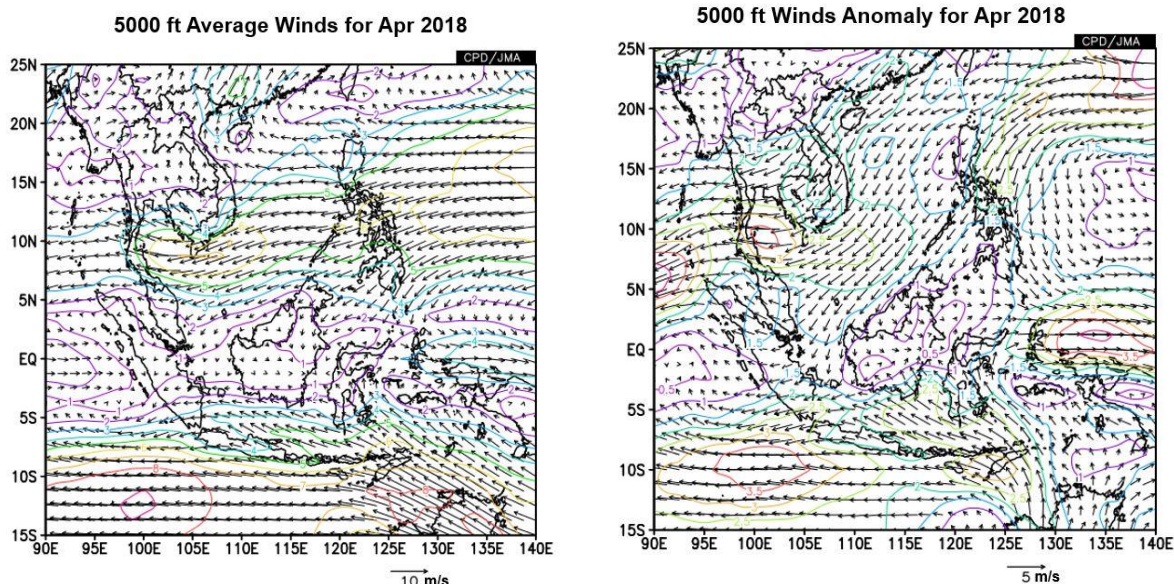


Figure 3: 5000 ft average winds (left) and anomaly (right) for April 2018. (Source: JMA)

1.6 During the month, the El Niño-Southern Oscillation (ENSO) remained at neutral (neither El Niño or La Niña) conditions. The sea surface temperature over the central tropical Pacific Ocean, as well as the cloudiness and trade wind conditions were also indicative of neutral conditions.

1.7 The Madden Julian Oscillation (MJO)<sup>1</sup> progressed from Phase 7 to Phase 2 during the first half of the month before propagating to Phase 3 during the third week of April 2018. The MJO in Phase 2 and 3 typically brings suppressed rainfall over the area around the Philippines, and slightly enhanced rainfall over the southern ASEAN region during this time of the year. However, the MJO event in April 2018 did not have a significant influence on the weather patterns in the ASEAN region. For the rest of the month, the MJO signal remained weak.

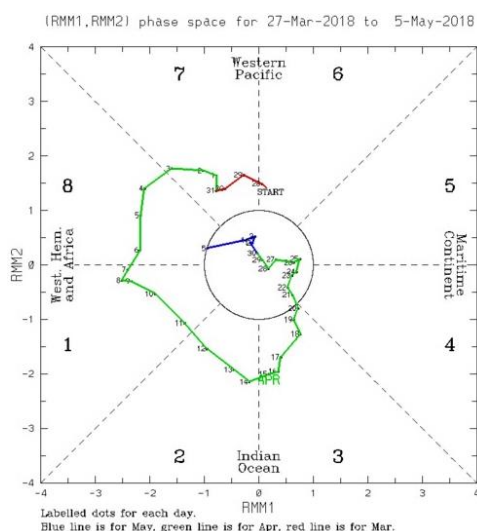


Figure 4: The MJO phase diagram for April 2018 (green). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index falls within the circle, the MJO is considered weak or indiscernible. (Source: Bureau of Meteorology)

<sup>1</sup> 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.

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

2.1 Although the hotspot count in the northern ASEAN region in April 2018 was high with a peak of 622 on 23 April, it was lower compared to March 2018 likely due to an increase in shower activities with the onset of the inter-monsoon period in early April 2018. Smoke haze was observed on occasions in the vicinity of the hotspots. In particular, scattered hotspots with moderate smoke haze were observed over a few days in northern Lao PDR in the second week of April 2018.

2.2 In the southern ASEAN region, hotspot activities were generally subdued due to the occurrence of shower activities in the region.

2.3 Satellite images of hotspots detected in the ASEAN region in April 2018 are shown in 5 to 8.

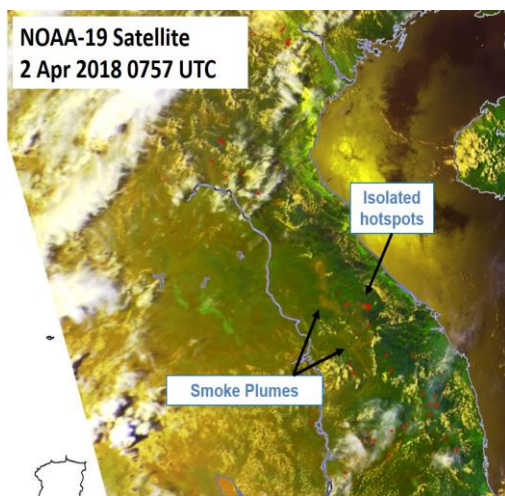


Figure 5: NOAA-19 satellite image on 2 April 2018 shows isolated hotspots with localised smoke plumes over eastern Lao PDR.

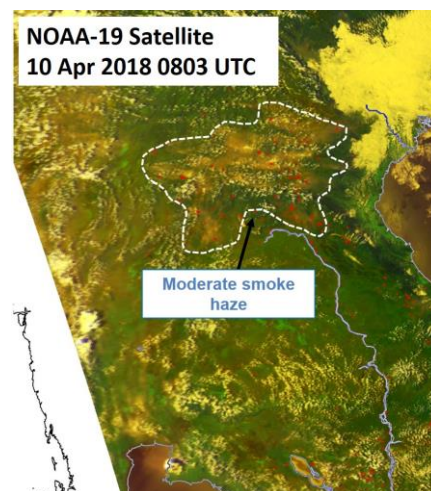


Figure 6: NOAA-19 satellite image on 10 April 2018 shows scattered hotspots over northern Lao PDR. Moderate smoke haze were observed in the vicinity of the hotspots.



Figure 7: NOAA-19 satellite image on 26 April 2018 shows increased shower activities over the Mekong sub-region.

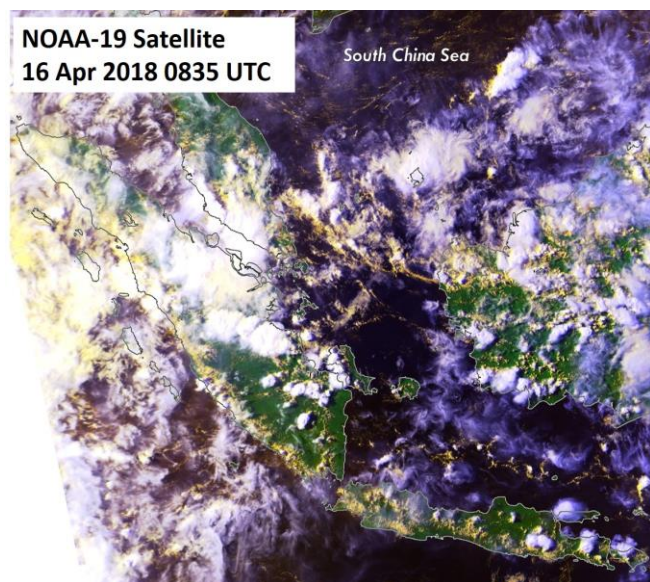


Figure 8: NOAA-19 satellite image on 16 April 2018 shows shower activities affected most parts of the southern ASEAN region.

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

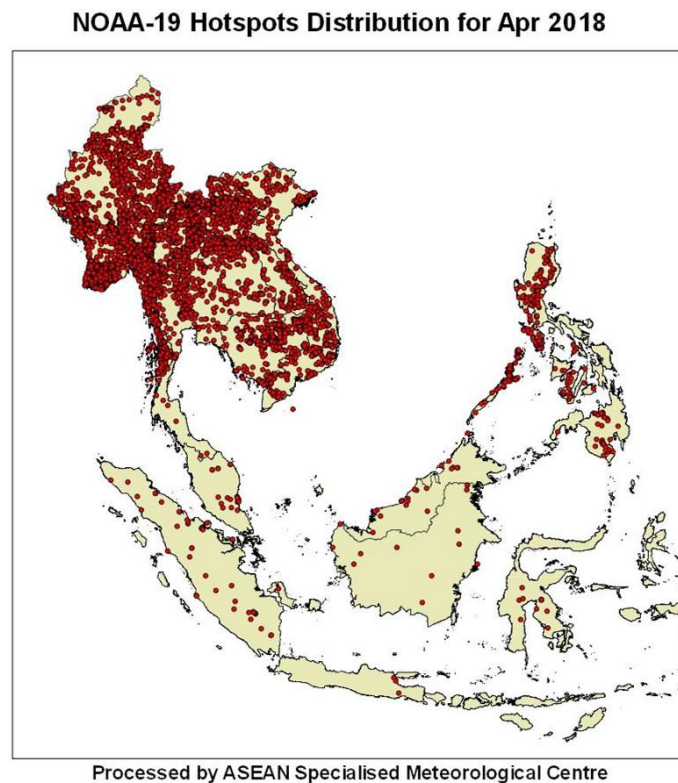


Figure 9: NOAA-19 hotspot distribution map for April 2018.

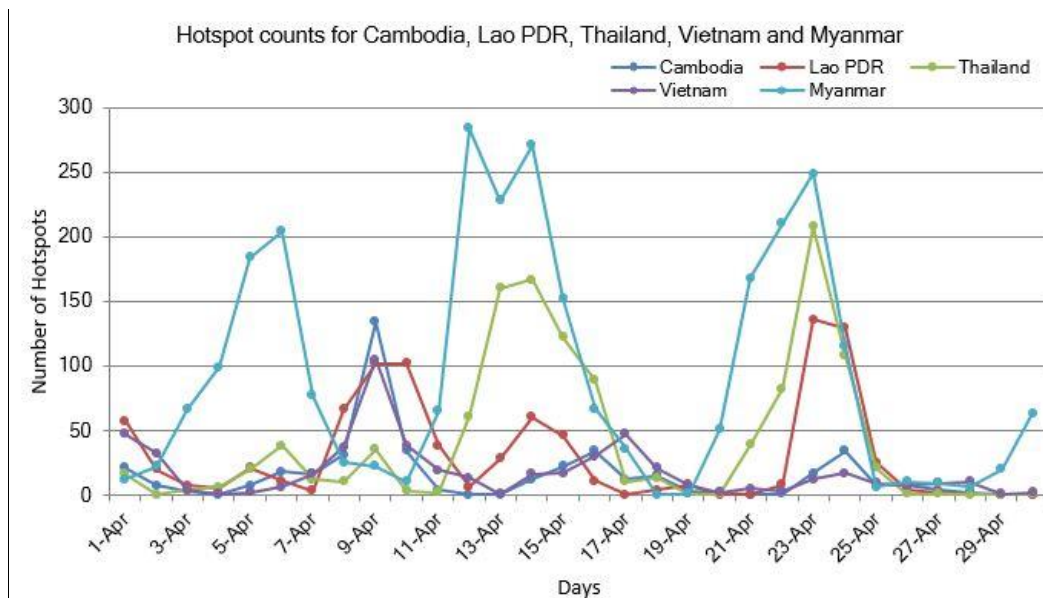


Figure 30: Hotspot Count recorded in Cambodia, Lao PDR, Thailand, Vietnam and Myanmar in April 2018.

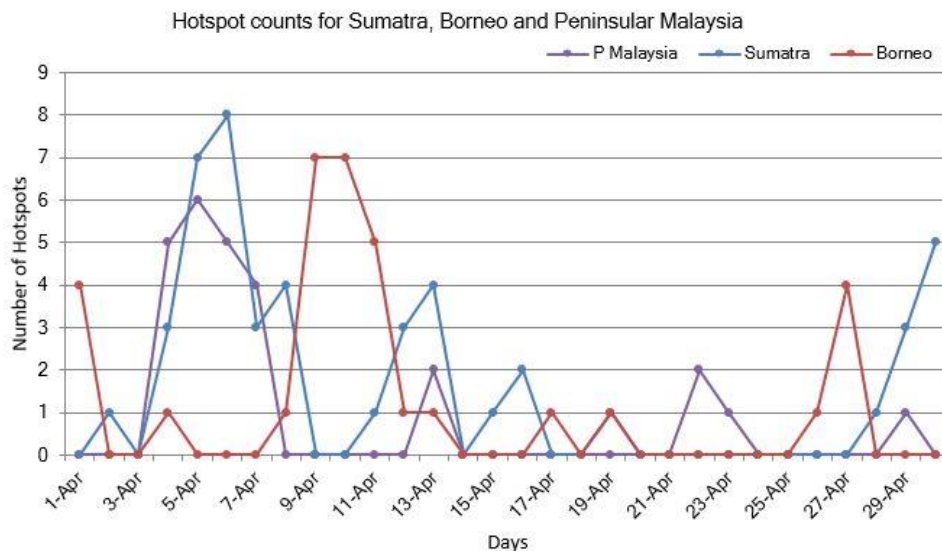


Figure 41: Hotspot Count recorded in Sumatra, Borneo and Peninsular Malaysia in April 2018.

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

3.1 Predictions from international major climate centres have indicated that the current neutral conditions are expected to prevail for the next few months.

3.2 In April 2018, the Indian Ocean Dipole (IOD) index remained at neutral levels (Figure 12). Climate models from major climate centres forecast that the IOD is likely to remain neutral for the coming months, with a slight chance that a negative IOD may develop later in the year. The formation of IOD typically starts around May or June, and peaks between August and October before decaying rapidly between February and April. The IOD is not likely to have a significant influence on the weather over the region.

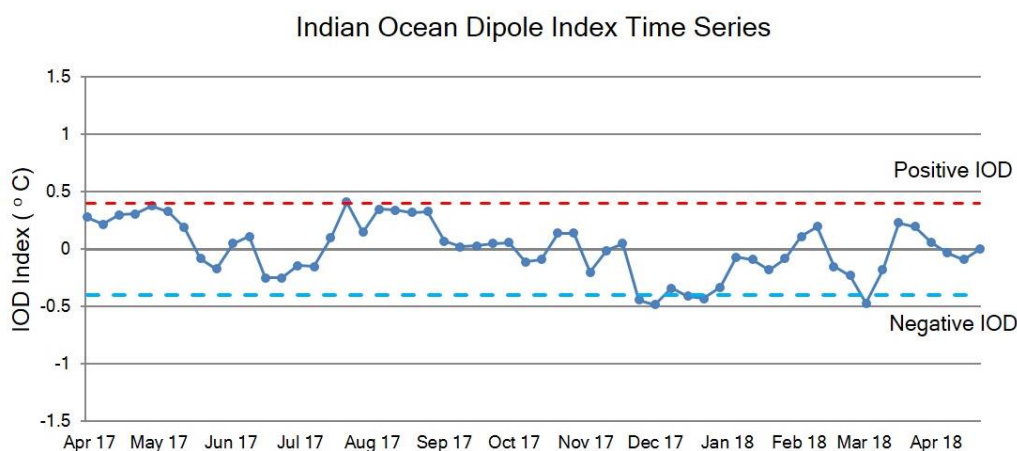


Figure 12: Indian Ocean Dipole (IOD) index time series. The IOD index was at neutral levels in April 2018. (Source: Bureau of Meteorology, Australia)

#### 4. Outlook (May – July 2018)

4.1. A transition to the Southwest Monsoon is expected in June 2018. The prevailing inter-monsoon conditions of light and variable winds and localised but frequent shower activities can be expected in May 2018. The Southwest Monsoon season typically prevails over the region between June and October, and is associated with the traditional dry (rainy) season of the southern (northern) ASEAN region.

4.2. During the Southwest Monsoon season in the northern ASEAN region, rainy conditions can be expected due to the presence of the monsoon rain band over the northern parts of Southeast Asia. For the May-June-July 2018 season, slightly below-normal to near-normal rainfall are forecast for the region.

4.3. Conversely, in the southern ASEAN region, extended periods of dry weather can be expected during the May – July 2018 period. This could lead to an escalation of hotspot activities with smoke plumes, in particular, in parts of Sumatra and Kalimantan. Slightly below-normal to near-normal rainfall are expected over most parts of the region during the May - July 2018 period. In addition, below-normal to slightly below-normal rainfall are expected for Java, Nusa Tenggara and Timor Leste for the early part of the Southwest Monsoon season.

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

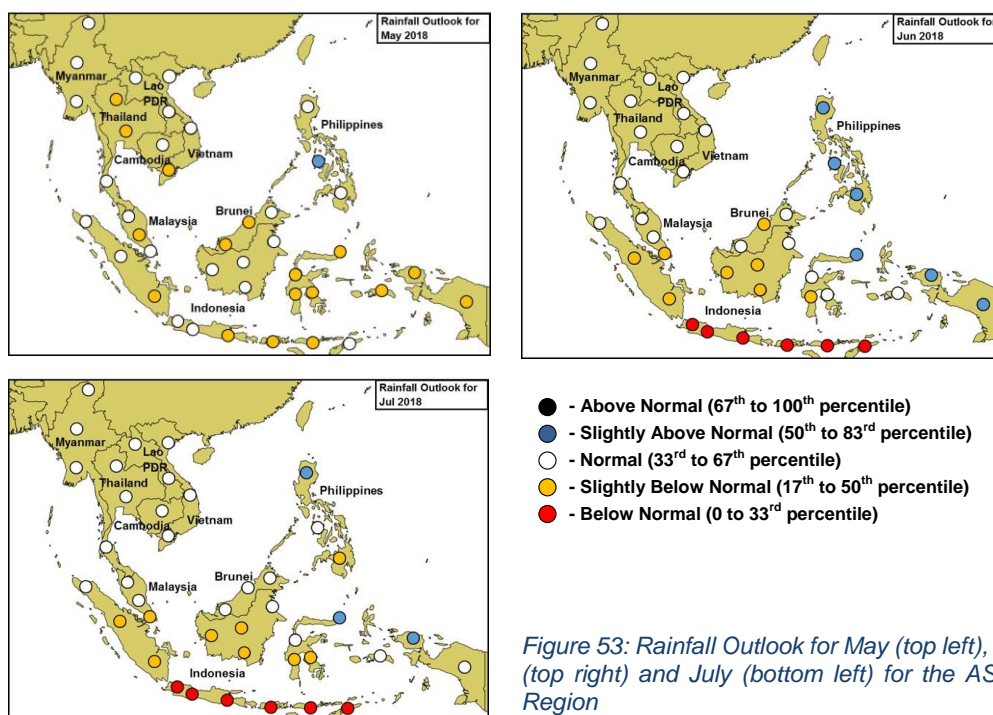


Figure 53: Rainfall Outlook for May (top left), June (top right) and July (bottom left) for the ASEAN Region

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