

UPDATE OF REGIONAL WEATHER AND SMOKE HAZE (April 2018)

1. Review of Regional Weather Conditions for March 2018

1.1 The Northeast Monsoon conditions continued to prevail in Southeast Asia in March 2018. Dry air from the northern Asian landmass brought dry conditions to many parts of Southeast Asia, extending as far south as over Peninsular Malaysia. The northern ASEAN region remained in the midst of the traditional dry season, while wetter conditions were experienced in the south with the monsoon trough and its associated rain band lying close to the Equator.

1.2 In the northern ASEAN region, drier conditions were observed over Myanmar, northern Thailand and parts of Cambodia and Thailand while near to above-normal rainfall was felt over other parts of the region.

1.3 In the southern ASEAN region, parts of Peninsula Malaysia and northern Sumatra experienced below-normal rainfall.

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



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





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

1.5 In March 2018, winds north of the Equator were predominantly from the east or southeast, while at and south of the Equator, the winds were generally from the west or north. During the month, strong anomalous northerly winds were observed over the Philippines. Stronger westerly winds were also observed between latitudes 8°N and 8°S, and longitudes 125°E and 140°E. Figure 3 shows the average and anomalous winds at 5000 feet.



1.6 During the month, the cool anomalies of the equatorial Pacific Ocean's sea surface temperature (SST) over the Niño 3.4 region indicated neutral conditions (neither El Niño or La Niña) values. Trade winds and cloudiness over the equatorial Pacific Ocean has returned to near-average levels, which is also consistent with a neutral state.

1.7 During the first half of March 2018, the Madden Julian Oscillation (MJO)¹ progressed through Phase 3, before gradually weakening towards the end of week 2. The MJO in Phase 3 typically brings slightly enhanced rainfall over the equatorial Southeast Asia region during this period of the year. However, the MJO event did not bring significant rainfall anomaly to the region in March 2018. For the rest of the month, the MJO signal remained weak.

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.





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

2.1 In March 2018, the hotspot counts in the northern ASEAN region remained elevated as dry weather conditions prevailed. In particular, the number of hotspots observed over Myanmar had increased compared to early 2018. Persistent haze was observed over parts of Myanmar on many days. Elsewhere, scattered hotspots with localised smoke plumes were observed on occasions.

2.2 In the southern ASEAN region, hotspot conditions were generally subdued due to prevailing wet conditions.

2.3 Satellite images showing the hotspots detected in the ASEAN region in March 2018 are given in Figure 5 to Figure 8.



Figure 5: NOAA-19 satellite image on 11 March 2018 shows scattered hotspots over Cambodia. A thin smoke plume was observed in the vicinity of a hotspot.



Figure 6: NOAA-19 satellite image on 20 March 2018 shows scattered hotspots with smoke plumes near the border between Myanmar and Thailand.



Figure 7: NOAA-19 satellite image on 23 March 2018 shows cluster of hotspots with smoke haze in southern part of Lao PDR.



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

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

NOAA-19 Hotspots Distribution for Mar 2018



Processed by ASEAN Specialised Meteorological Centre

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







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

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

3.1 Based on experts' assessments from international climate centres, the prevailing La Niña conditions weakened and transitioned to neutral (neither El Niño nor La Niña) conditions in March 2018. The neutral conditions are expected to last until the third quarter of 2018.

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



Indian Ocean Dipole Index Time Series

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

4. Outlook (April – June 2018)

4.1. The region is expected to gradually transition from the current Northeast Monsoon conditions to the inter-monsoon conditions in April 2018. The inter-monsoon period (April and May) is a transition period where the low level winds in the region are generally light and variable in direction and an increase in shower activities can be expected.

4.2. Some parts of the northern ASEAN region may continue to experience dry conditions in April 2018. During this period, hotspots with smoke plumes and haze may continue but are likely to ease off with an increase in shower activities as the inter-monsoon period is established.

4.3. For the southern ASEAN region, shower activities are expected over most parts of the region. Although there could be brief periods of drier conditions, hotspot activities are likely to be kept subdued.

4.4. For the April-May-June 2018 season, the northern ASEAN region is most likely to have near normal rainfall, apart from coastal areas of the Andaman Sea and the Philippines where there is an increased chance of above normal rainfall. In the southern ASEAN region, slightly below-normal to near-normal rainfall is forecasted. The rainfall outlook for April, May and June 2018 are shown in Figure 13.

