

1. Review of Regional Weather Conditions for January 2018

1.1 The prevailing Northeast monsoon conditions over Southeast Asia strengthened in January 2018. Wet weather conditions were mostly over the Philippines and the southern ASEAN region, while drier weather conditions were experienced over the northern ASEAN region, particularly over Lao PDR and Cambodia. The rainfall distribution for January 2018 is shown in Figure 1.

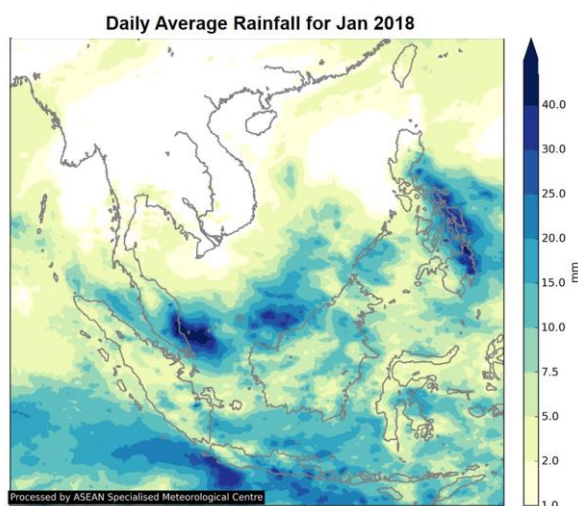


Figure 1: Daily average rainfall for the ASEAN region in January 2018. (Source: JAXA Global Satellite Mapping of Precipitation)

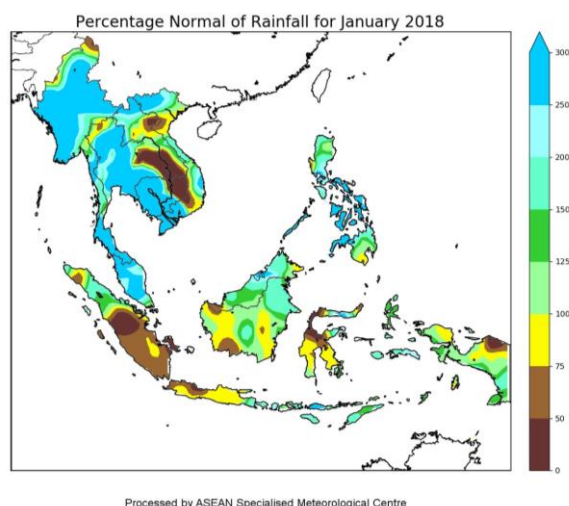


Figure 2: Percent of Normal Rainfall for January 2018. The rainfall data may be less representative for areas with a less dense rainfall network.

1.2 In January 2018, there were two occurrences of monsoon surges¹ which brought strong winds and moderate to heavy rainfall over the equatorial region, in particular over Borneo, Peninsular Malaysia and Singapore.

1.3 Southern ASEAN region received near to above-normal rainfall, except for the southern half of Sumatra, southwest parts of Borneo, parts of Sulawesi and Java, where below-normal rainfall were received. In the northern ASEAN region, below-normal rainfall was received over parts of Cambodia, Thailand, Laos PDR and Vietnam. Figure 2 shows the percent of normal rainfall for January 2018.

¹ A monsoon surge refers to the strengthening of northeasterly winds blowing from a strong high-pressure system over the northern Asian continent toward the South China Sea, bringing periods of prolonged widespread rain and windy conditions to the surrounding region

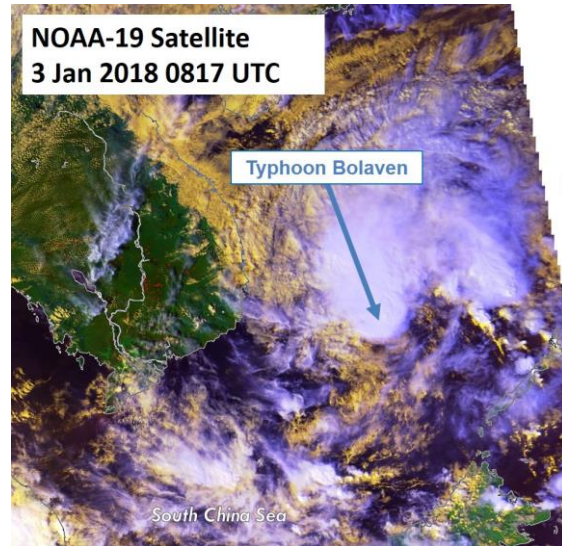
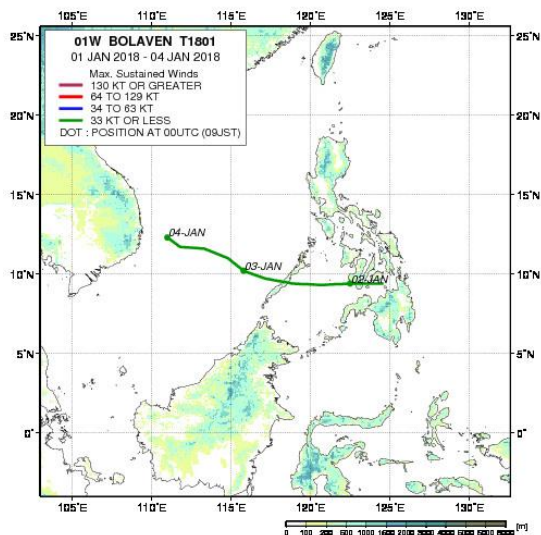


Figure 3: (Left) Historical storm track for Typhoon Bolaven. (Source: JAXA); (Right) NOAA-19 satellite image on 3 January 2018 shows Typhoon Bolaven, located over the South China Sea.

1.4 On 2 January 2018, Typhoon “Bolaven” (Figure 3) developed over the southern part of the Philippines and tracked westwards bringing heavy rainfall over the southern Philippines and the South China Sea. Typhoon “Bolaven” moved into the South China Sea on 3 January 2018 and dissipated over the sea before it reached the eastern coast of Vietnam.

1.5 The prevailing winds in January 2018 were mainly from the northeast or east over the northern ASEAN region and the South China Sea while, westerly and northwesterly winds were observed over the southern ASEAN region. In addition, strong anomalous westerly winds were recorded between latitudes 5° N and 10° S, extending from the Indian Ocean to 125° E. Figure 4 Figure 5 shows the average and anomalous winds at 5000 feet. The convergence between the northeast winds over the northern ASEAN region and the westerly winds over the southern ASEAN region contributed to the observed above-normal rainfall around the equatorial region.

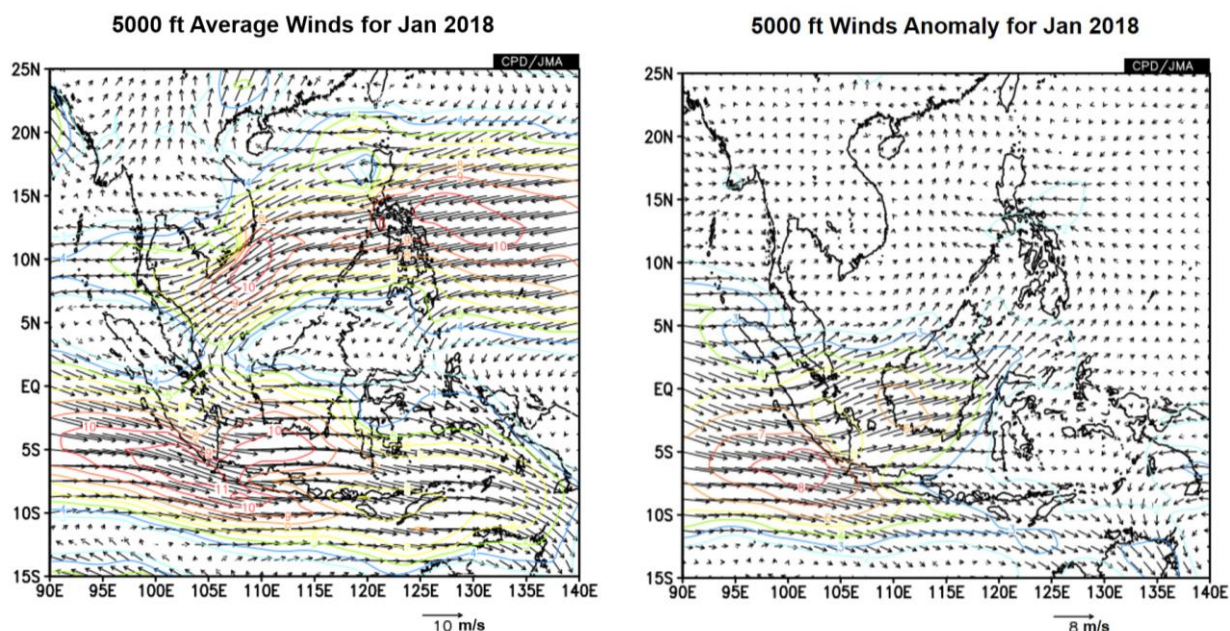


Figure 4: 5000 ft average winds (left) and anomaly (right) for January 2018. (Source: JMA)

1.6 The sea surface temperatures (SSTs) over the Niño 3.4 region in the equatorial Pacific Ocean remained at La Niña values, with stronger than average trade winds and below-average cloudiness over the equatorial Pacific Ocean, indicative of La Niña conditions. Typically, La Niña brings wetter-than-normal rainfall conditions to most parts of Southeast Asia, and has a less pronounced impact on the weather over the near-equatorial region during the Northeast Monsoon season.

1.7 The Madden Julian Oscillation (MJO)² was active throughout most of January 2018, propagating from a start phase of Phase 2 and ending in Phase 6 towards the end of the month. The monsoon surges that affected the region in the first half of the month coincided with MJO phases 2 and 3. This brought heavy rainfall over the southern parts of the South China Sea. As the MJO shifted to phases 5 and 6, the rainfall conditions over most parts of ASEAN were suppressed.

² 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.

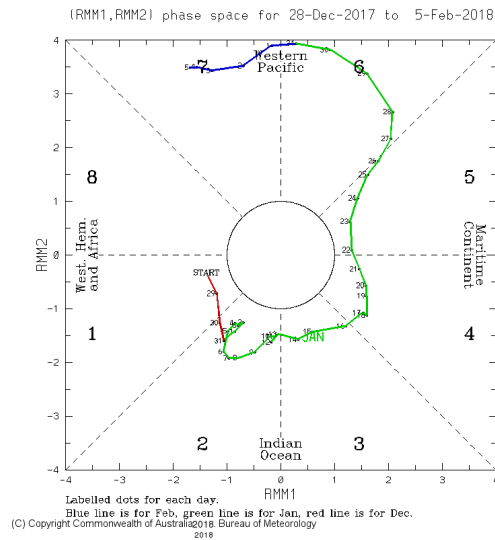


Figure 5: The MJO phase diagram for January 2018 (green). The MJO phase diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When 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 The dry weather conditions that prevailed in the northern ASEAN region in December 2017 continued into January 2018. This led to an increase in hotspot activities in the northern ASEAN region. In parts of Cambodia, Thailand and Lao PDR, isolated to scattered hotspots with occasional smoke plumes and haze were observed.

2.2 Wet weather conditions persisted in the southern ASEAN region during the first half of the month, which helped to subdue hotspot activities there. However, in the second half of the month, dry weather conditions in the region which coincided with the suppressed MJO phases 5 and 6, contributed to the emergence of some hotspots observed in parts of Sumatra, Borneo and Sulawesi. Satellite images of hotspots detected in the ASEAN region in January 2018 are shown in Figure 6 to Figure 9.

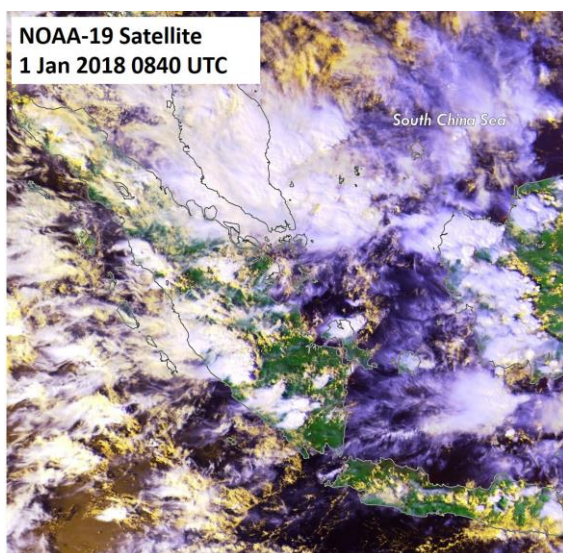


Figure 6: NOAA-19 satellite image on 1 January shows wet weather conditions prevailed over most parts of the southern ASEAN region.

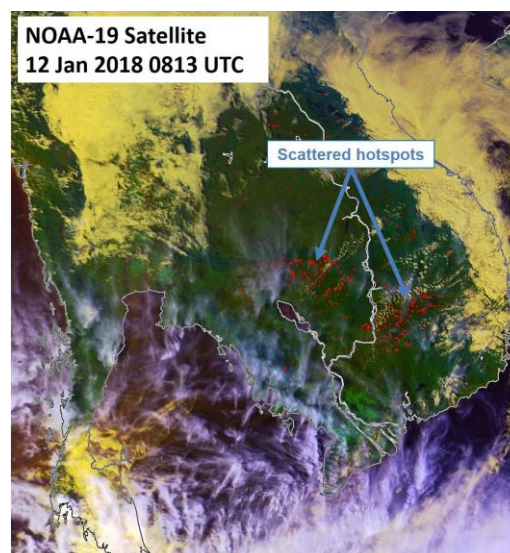


Figure 7: NOAA-19 satellite image on 12 January 2018 shows dry condition and scattered hotspots detected over Sub-Mekong region

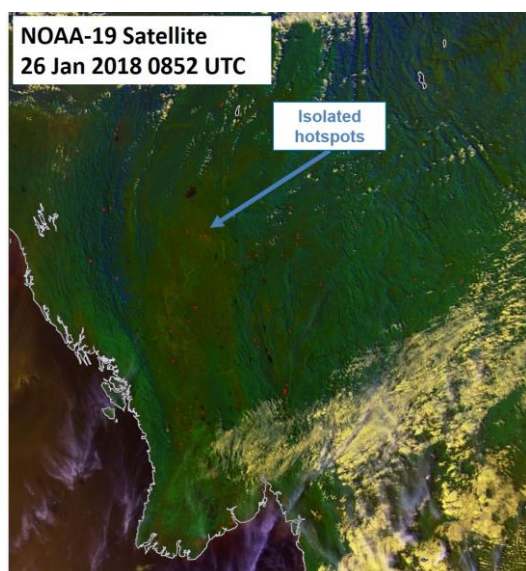


Figure 8: NOAA-19 satellite image on 26 January 2018 shows isolated hotspots over parts of Myanmar.

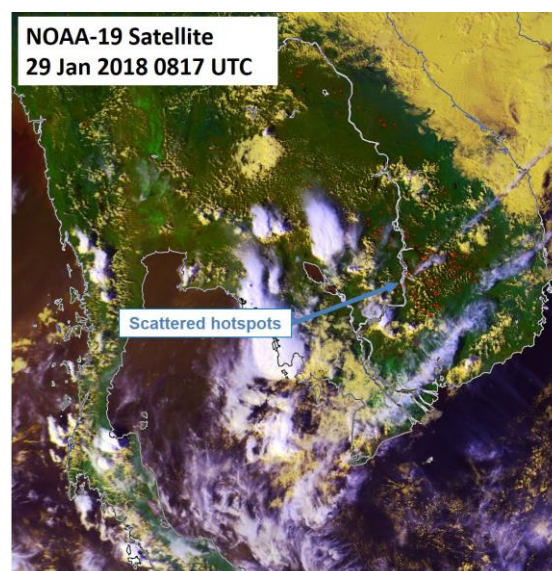
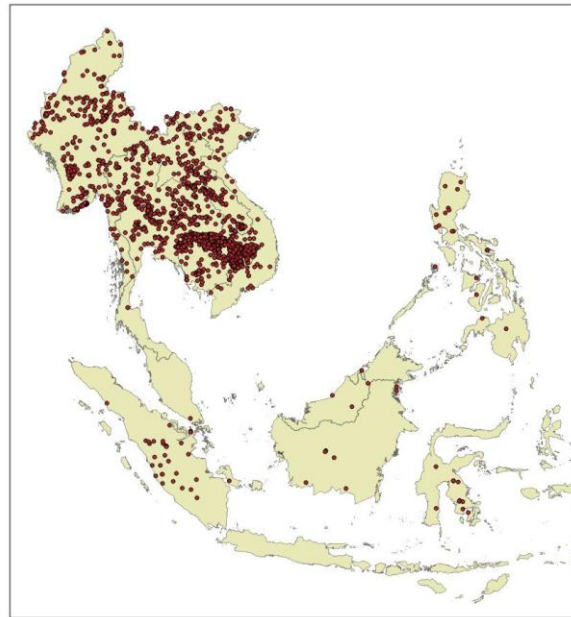


Figure 9: NOAA-19 satellite image on 29 January 2018 shows scattered hotspots over the Sub-Mekong region.

2.3 The hotspot distribution and daily hotspot charts for January 2018 are shown in Figure 10, Figure 11 and Figure 12.

NOAA-19 Hotspots Distribution for Jan 2018



Processed by ASEAN Specialised Meteorological Centre

Figure 10: NOAA-19 hotspots distribution in January 2018.

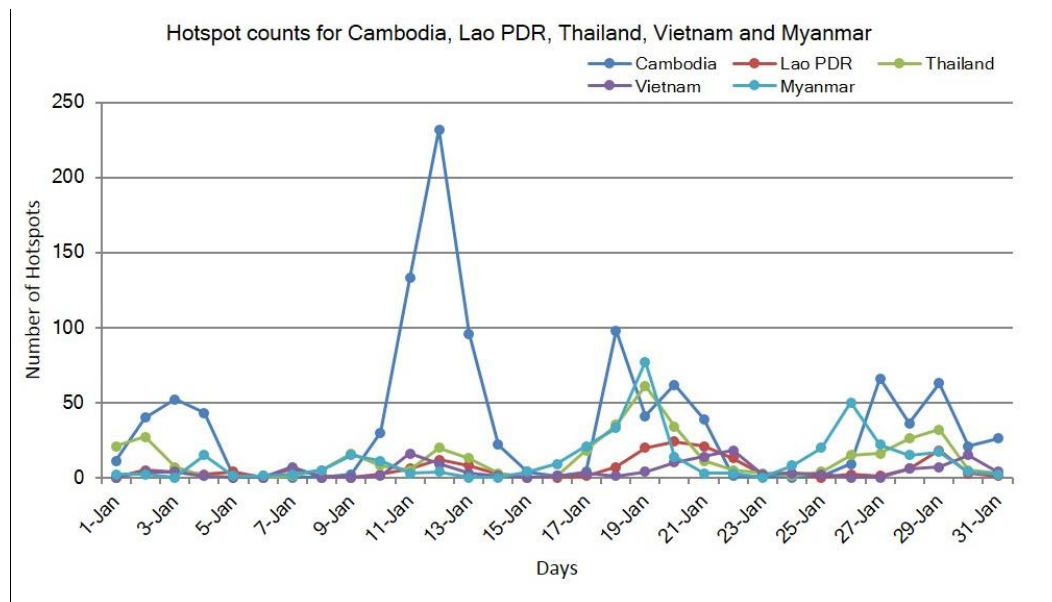


Figure 11: Hotspot Counts in Cambodia, Lao PDR, Thailand, Vietnam and Myanmar in January 2018.

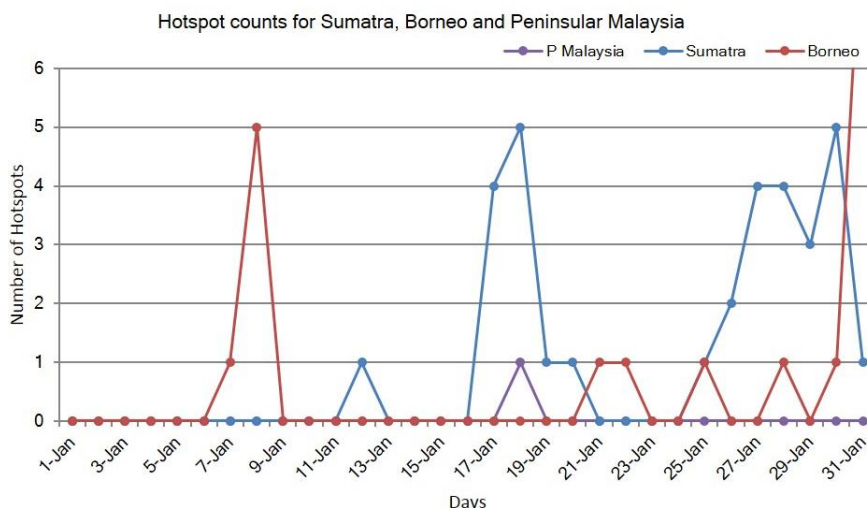


Figure 12: Hotspot Counts in Sumatra, Borneo and Peninsular Malaysia in January 2018.

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

3.1 Experts from International climate centers assessed that the tropical Pacific Ocean will continue to be cool and La Niña conditions would prevail until about April 2018.

3.2 The region is currently experiencing Northeast Monsoon conditions. Typically, for Southeast Asia, the impact from La Niña is wetter-than-normal rainfall conditions. For the weather over the near-equatorial region, the impact of La Niña is usually less pronounced during the Northeast Monsoon season (Dec – Mar) as compared to the Southwest Monsoon season (Jun – Sep).

3.3 In January 2018, the Indian Ocean Dipole (IOD) index remained at neutral levels (Figure 13). In the coming months, international climate models forecast the IOD to remain neutral and it 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 January and April.

Indian Ocean Dipole Index Time Series

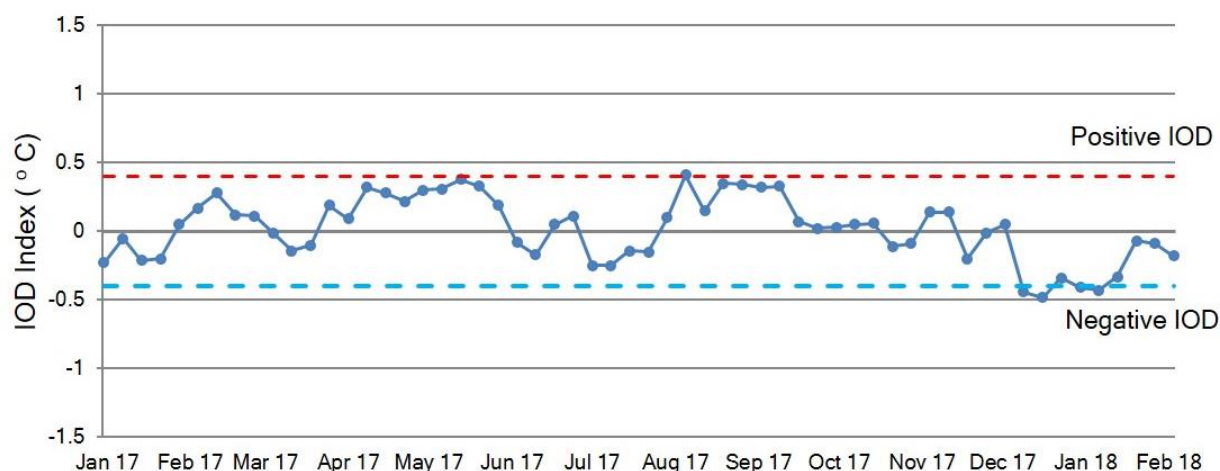


Figure 13: Indian Ocean Dipole (IOD) index time series. The IOD index was at neutral levels in January 2018. (Source: Bureau of Meteorology, Australia)

4. Outlook (February – April 2018)

4.1. The Northeast Monsoon Season is forecast to extend into March, with prevailing winds in the region blowing from the northwest or northeast. As the traditional dry season is established in the Mekong sub-region, high hotspot activities can still be expected in the region. Vigilance should therefore be maintained for any escalation in hotspot activities in the fire-prone areas during this period. In late March or early April, the Northeast Monsoon is expected to gradually give way to Inter-monsoon conditions, which is typically accompanied by an increase of shower activities.

4.2. In the southern ASEAN region, shower activities can still be expected for the next few months over most parts of the region. This would help subdue hotspot activities, especially in the fire-prone areas in the southern ASEAN region.

4.3. In the second fortnight of February, near to below-normal rainfall conditions is expected over parts of the Philippines, the Mekong sub-region, Peninsula Malaysia and Borneo while near to slightly above-normal rainfall conditions are expected over parts of Sumatra, Java and the Lesser Sunda Islands.

4.4. For the February-March-April season, near- to slightly above-normal rainfall is expected for the Philippines. In February, near- to slightly above-normal rainfall is expected over most parts of ASEAN, except for Peninsula Malaysia, Singapore and parts of Thailand and Borneo, expect slightly below-normal rainfall is expected. In March and April 2018, drier conditions are expected over the southern ASEAN region, with slightly below-normal rainfall expected over parts of Sumatra and Borneo. The rainfall outlook for February, March and April 2018 are shown in Figure 16.

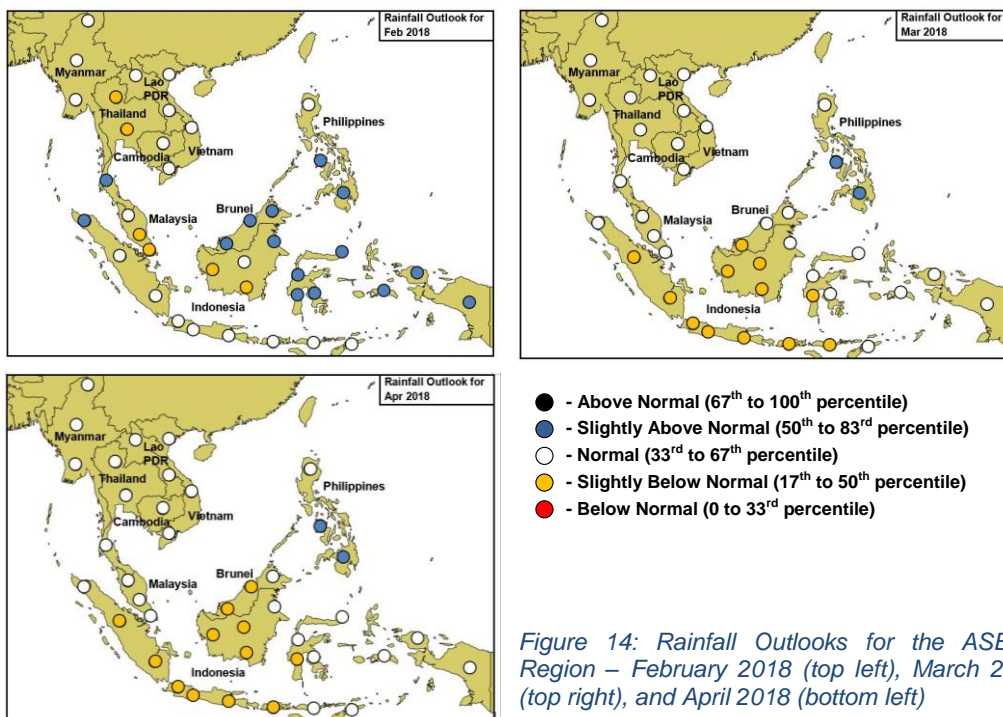


Figure 14: Rainfall Outlooks for the ASEAN Region – February 2018 (top left), March 2018 (top right), and April 2018 (bottom left)