

1. Review of Regional Weather Conditions for First Fortnight of October 2018

1.1 The Southwest Monsoon season transitioned into the inter-monsoon period around mid-October 2018. During the first half of October 2018, the monsoon rainband shifted southward to the equatorial ASEAN region. This southward shift was driven by stronger-than-usual northeasterly and easterly winds over the South China Sea, due to an outflow of dry air from a high pressure system over north Asia. As a result, most parts of the northern ASEAN region received below normal rainfall, except for Myanmar where above normal rainfall was contributed by rain associated with a low pressure weather system that developed over the Andaman Sea and Bay of Bengal.

1.2 The monsoon rainband brought above-normal rainfall to the equatorial ASEAN region, viz northern half of Sumatra, Indonesia, Peninsular Malaysia, and parts of Kalimantan. Below normal rainfall was received in southern Sumatra and Java due to the incursion of dry air from the southern hemisphere.

1.3 The rainfall distribution and the percentage of average rainfall for the first fortnight of October 2018 are shown in Figure 1 and 2, respectively.

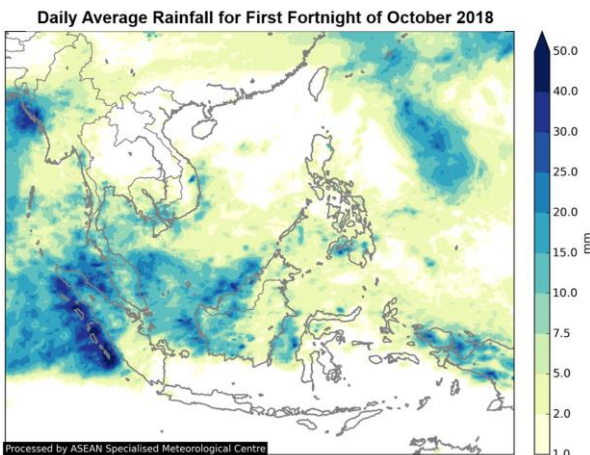


Figure 1: Daily average rainfall for the ASEAN region in the first fortnight of October 2018. (Source: JAXA Global Satellite Mapping of Precipitation)

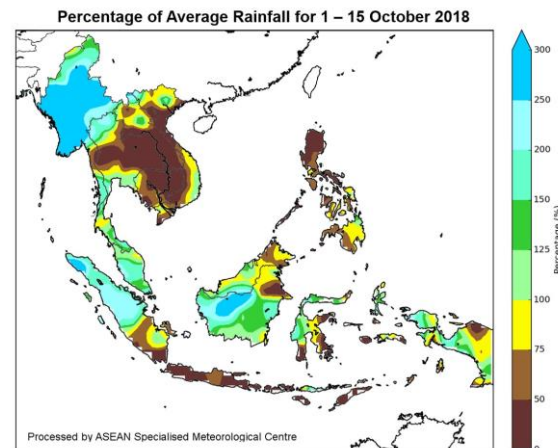


Figure 2: Percentage of Average Rainfall for 1 – 15 October 2018. The rainfall data may be less representative for areas with a less dense rainfall network. (Source: IRI NOAA/NCEP CPC Unified Precipitation Analyses)

1.4 Under the influence of an intense high pressure system over north Asia, there were anomalous easterly winds over the northern ASEAN region and the South China Sea. Elsewhere in the region, winds were close to near normal conditions.

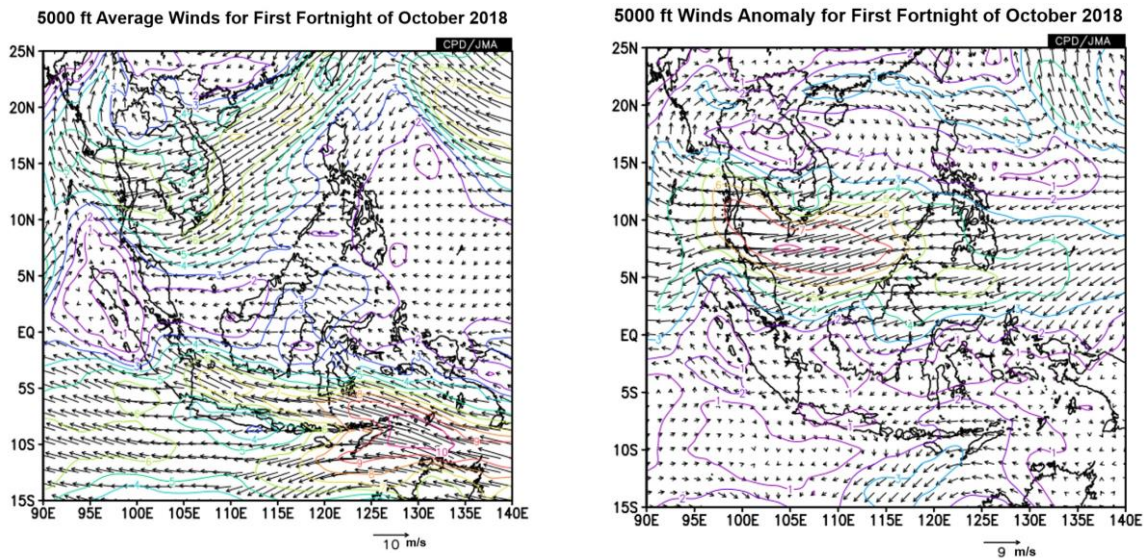


Figure 3: 5000 ft average winds (left) and anomaly (right) for 1 - 15 October 2018. (Source: JMA)

1.5 In the first fortnight of October 2018, there are indications of El Niño conditions developing in the tropical Pacific Ocean. For instance, the sea surface temperatures were observed to be warmer than average along the equator in the Pacific Ocean, and trade winds were also observed to have weakened. Over the Indian Ocean, sea surface temperatures were observed to be cooler than usual in the eastern Indian Ocean – signs of a nascent positive Indian Ocean Dipole (IOD) event.

1.6 The Madden Julian Oscillation (MJO)¹ which was active and propagated through Phases 1 and 2 during the first fortnight of October 2018, significantly influenced the weather in the region. The drier than usual conditions over parts of the northern ASEAN region and around the Java Sea area, as well as the anomalous easterly winds over the South China Sea were characteristic of the MJO signal in Phases 1 and 2 over the 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.

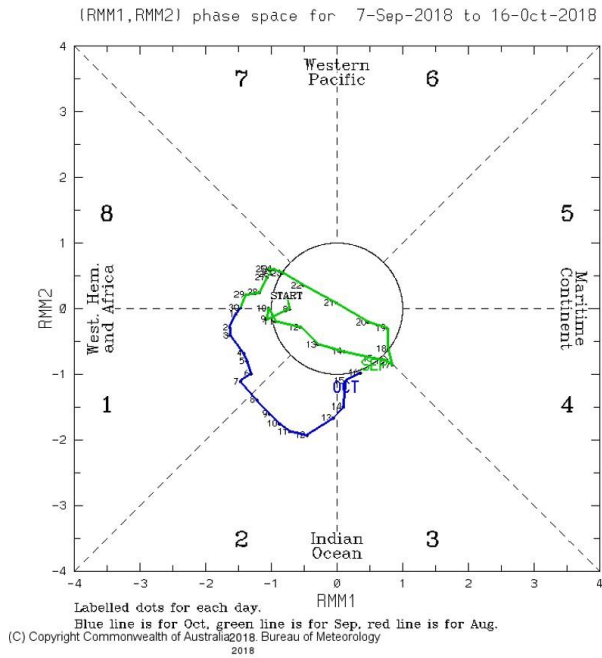


Figure 4: The MJO phase diagram for Oct 2018 (blue). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index falls 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 During the first half of October 2018, hotspot activities in the northern ASEAN region were subdued. While there were hotspots with smoke haze observed in the southern parts of Sumatra and Kalimantan in early October, the hotspot activities were generally subdued due to an increase in rain showers with the transition to inter-monsoon conditions and the southward migration of monsoon rainband.

2.2 Figures 5 and 6 show the satellite images over the ASEAN region in the first fortnight of October 2018.

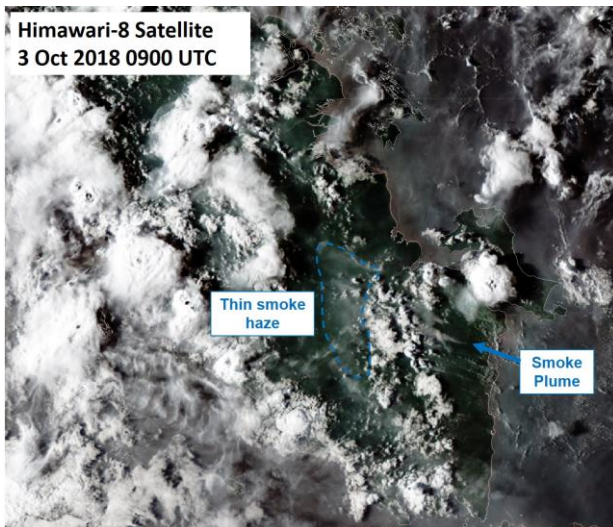


Figure 5: Himawari-8 satellite image on 3 Oct 2018 shows smoke haze from hotspots in southern Sumatra.

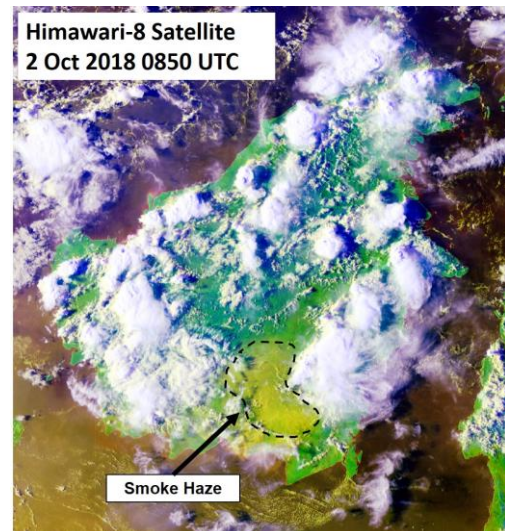


Figure 6: Moderate smoke haze over Kalimantan as shown in the Himawari-8 satellite image on 2 Oct 2018

