

1. Review of Regional Weather Conditions for First Fortnight of June 2019

1.1 In the first fortnight of June 2019, strong southwesterly winds prevailed over the northern parts of Lao PDR and Vietnam while anomalous easterly winds or southeasterly winds were observed elsewhere in the northern ASEAN region. In the southern ASEAN region, southeasterly winds prevailed (Figure 1).

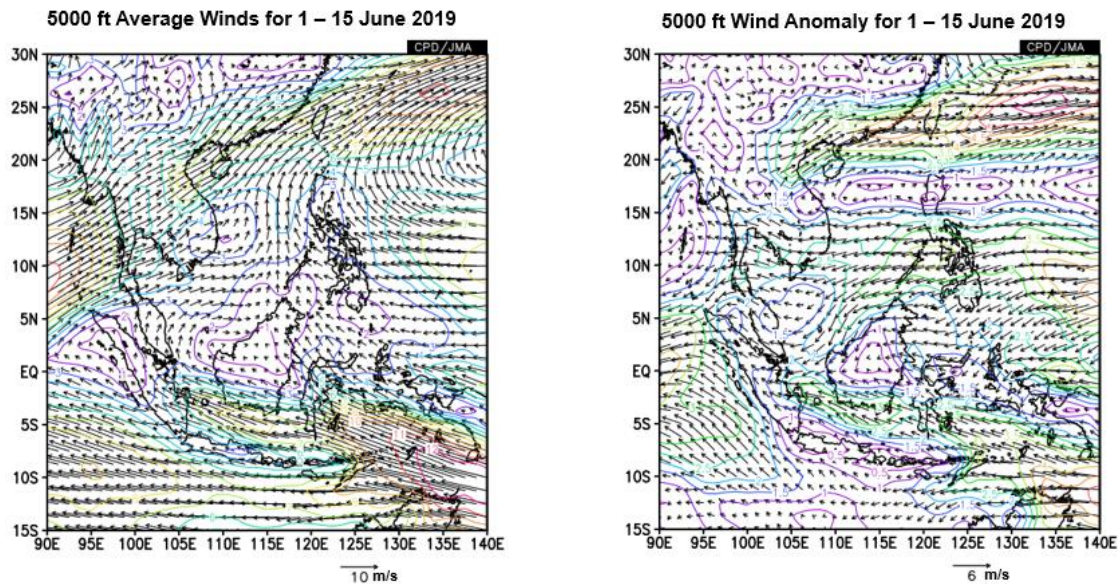


Figure 1: 5000 ft average winds (left) and winds anomaly (right) for 1 - 15 June 2019. (Source: JMA)

1.2 There were isolated showers over many parts of the northern ASEAN region, while scattered showers fell over coastal Myanmar. Above-average rainfall was received in northern and southern Viet Nam, eastern half of Cambodia, and parts of northern Lao PDR. Below-average to near-average rainfall was received elsewhere in the northern ASEAN region. In the southern ASEAN region, above-average rainfall was received near the equator, in particular over Malaysia, Sulawesi, central Sumatra, and most parts of Kalimantan. Below-average rainfall was recorded mainly around Java and the Timor Sea regions.

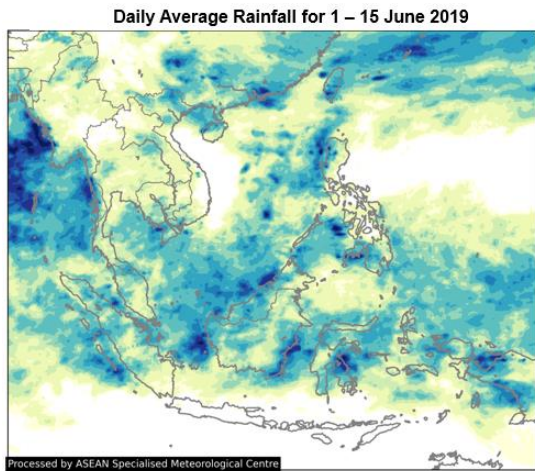


Figure 2: Daily average rainfall for the ASEAN region in the first fortnight of June 2019. (Source: JAXA Global Satellite Mapping of Precipitation)

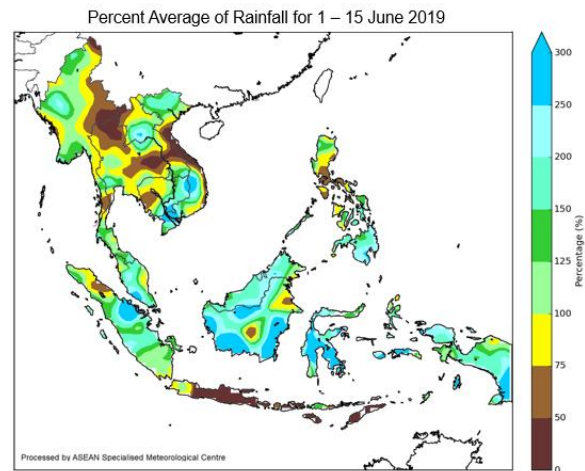


Figure 3: Percent of average rainfall for 1 – 15 June 2019. The rainfall data may be less representative for areas with a less dense rainfall network. (Source: IRI NOAA/NCEP CPC Unified Precipitation Analyses)

1.3 During the first week of June 2019, the Madden-Julian Oscillation¹ (MJO) propagated through Phases 2 and 3². The MJO signal weakened briefly before strengthening again and propagating through Phase 4. The MJO signal in these phases typically bring wetter conditions over the equatorial parts of the ASEAN region, and its influence in early June 2019 may have been a contributing factor to the wetter-than-usual conditions experienced in the equatorial southern ASEAN region.

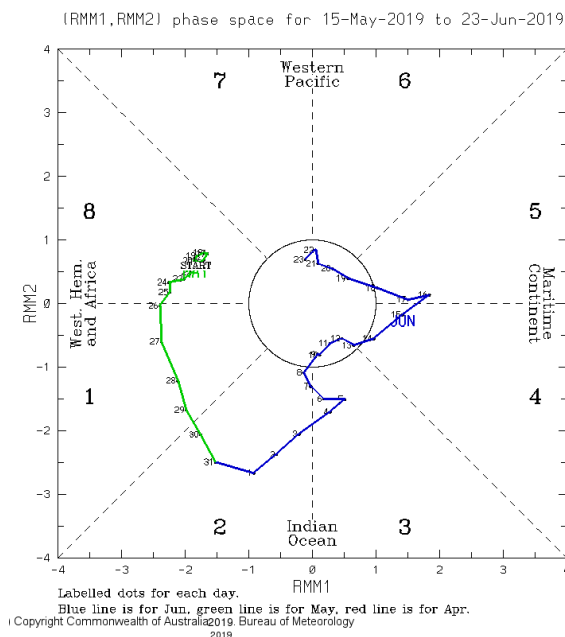


Figure 4: The MJO phase diagram for June 2019 (blue). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index falls within the circle, the MJO is generally considered weak or indiscernible. (Source: Bureau of Meteorology)

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 Based on the Average Outgoing Longwave Radiation (OLR) information by the Bureau of Meteorology, Australia.

1.4 The sea-surface temperatures (SST) were warmer than average over the Nino3.4 Region during the first fortnight of June 2019. However, trade winds were close to normal over the equatorial Pacific Ocean. Neither El Nino nor La Nina conditions prevailed during the period.

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

2.1 Hotspot activities in the ASEAN region were generally subdued. On occasions, isolated hotspots were detected in a few parts of the region.

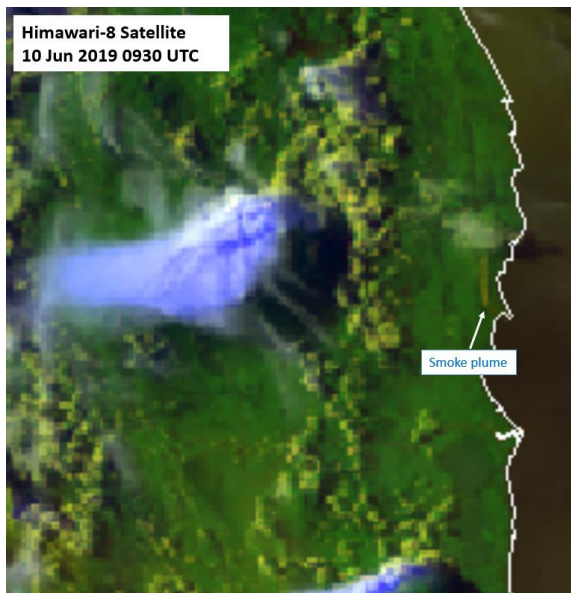


Figure 5: Himawari-8 satellite image on 10 June 2019 shows a localised smoke plume in Pahang, Peninsular Malaysia.