

1. Review of Regional Weather Conditions for Second Fortnight of December 2018

1.1 Northeast Monsoon conditions prevailed over the ASEAN region in the second fortnight of December 2018. Dry weather persisted over the Mekong sub-region, and there were occasional dry periods in parts of Sumatra and Peninsular Malaysia. Rainfall was above-average over the Philippines, and below- to near-average in the southern ASEAN region.

1.2 The rainfall distribution and the percent of average rainfall for the second fortnight of December 2018 are shown in Figure 1 and 2.

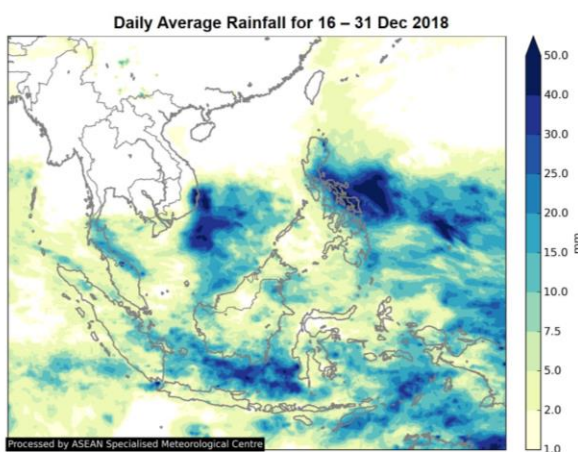


Figure 1: Daily average rainfall for the ASEAN region in the second fortnight of December 2018. (Source: JAXA Global Satellite Mapping of Precipitation)

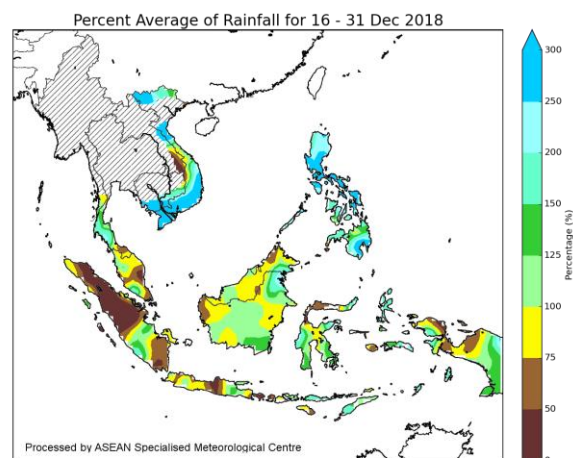


Figure 2: Percent of average rainfall for 16 – 31 December 2018. The rainfall data may be less representative for areas with a less dense rainfall network. Hatched areas indicate climatology dry mask (average daily rainfall below 1 mm). (Source: IRI NOAA/NCEP CPC Unified Precipitation Analyses)

1.3 Moderate to strong north-easterly winds prevailed over the northern ASEAN region while in the southern ASEAN region, winds were generally blowing from the west or north-west. During the period, there were westerly wind anomalies over the equatorial ASEAN region.

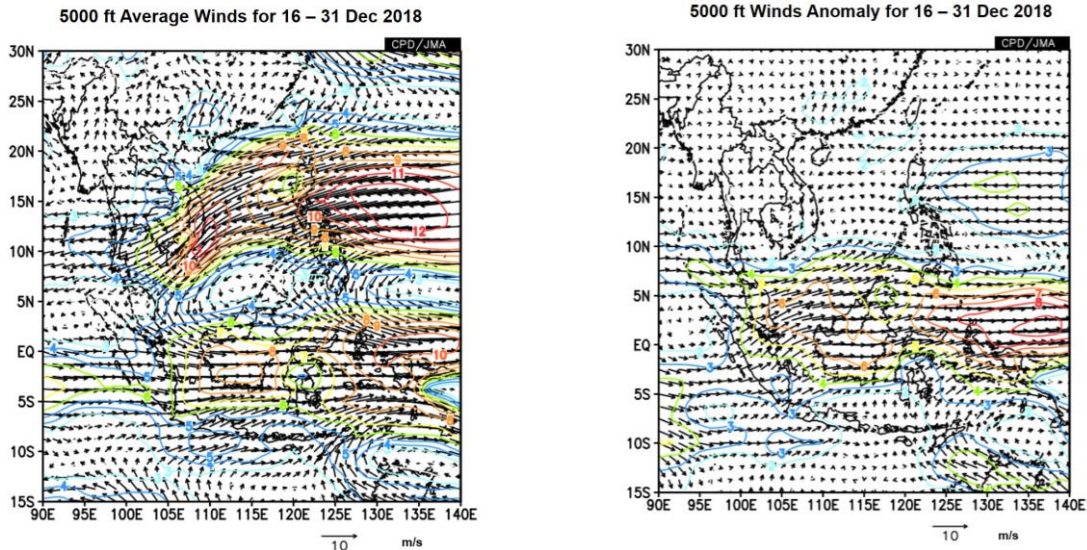


Figure 4: 5000 ft average winds (left) and winds anomaly (right) for 16 - 31 December 2018. (Source: JMA)

1.5 The tropical Pacific Ocean's sea surface temperature (SST) anomalies over the Nino3.4 region continue to be above El Niño threshold. However, most of the atmospheric indicators of El Niño/La Niña over the tropical Pacific remained neutral. Without the atmosphere-ocean coupling, El Niño has yet to be fully establish.

1.6 There were moderate to strong Madden Julian Oscillation (MJO)¹ signals, which propagated through Phase 4 – 5 during the review period. The MJO signals were consistent with the eastward shift of the rainfall pattern and the westerly wind anomalies observed in the 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.

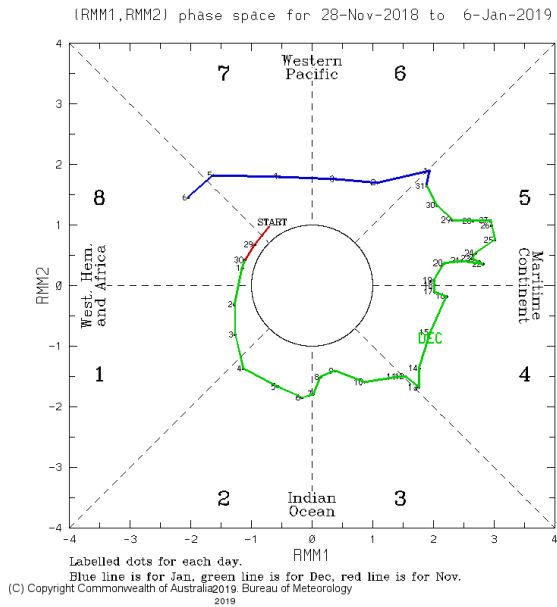


Figure 5: The MJO phase diagram for Dec 2018 (green). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index falls within the circle, the MJO is considered weak or indiscernible. (Source: Bureau of Meteorology)

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

2.1 Hotspot activities in the ASEAN region remained generally subdued except in Cambodia, where there were occasional increases in hotspot activities. Localised smoke plumes were observed in the vicinity of these hotspots.

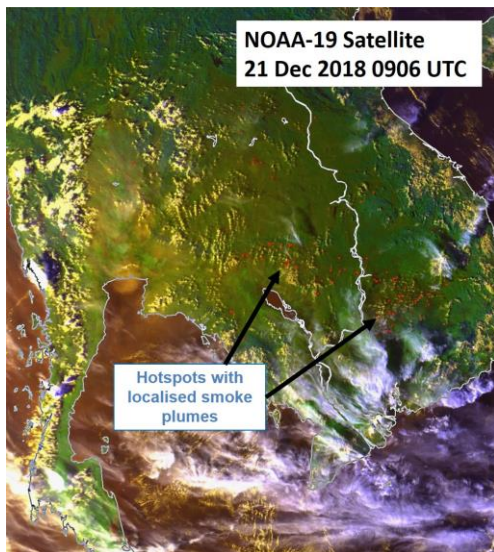


Figure 6: NOAA-19 satellite image on 21 Dec 2018 shows hotspots with localised smoke plumes detected in Cambodia.