

## 1. Review of Regional Weather Conditions for Second Fortnight of February 2019

1.1 Northeast Monsoon conditions persisted over the ASEAN region in the second half of February 2019. Northeasterly or easterly winds prevailed over the Philippines, southern Thailand and most parts of the southern ASEAN region. Over the Mekong sub-region, prevailing winds were generally blowing from the southeast or southwest, with confluence of winds over parts of the Mekong sub-region.

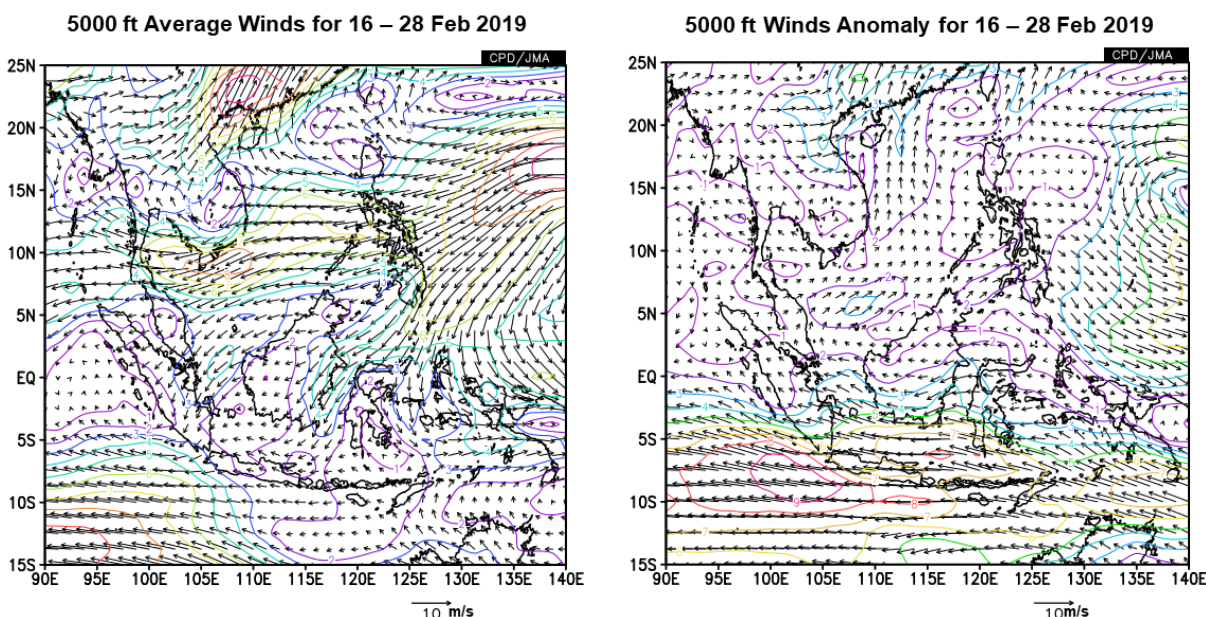


Figure 1: 5000 ft average winds (left) and anomalies (right) for 16 – 28 December 2019 (Source: JMA)

1.2 A confluence of winds typically favours shower activity development, but weather over the Mekong sub-region remained dry mainly due to the presence of dry air mass that has extended from the Pacific Ocean over the Southeast Asia region. Elsewhere in the ASEAN region, rainfall distribution over the fortnight was also likely associated with the Madden – Julian Oscillation (MJO)<sup>1</sup> which transitioned from phase 8 to phase 2<sup>2</sup>. Well below-average rainfall was recorded in the Philippines, Peninsular Malaysia, Sabah, western Kalimantan and parts of Java, while above-average rainfall was received in other parts of the southern ASEAN region.

<sup>1</sup> 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.

<sup>2</sup> Based on the Average Outgoing Longwave Radiation (OLR) information by the Bureau of Meteorology, Australia.

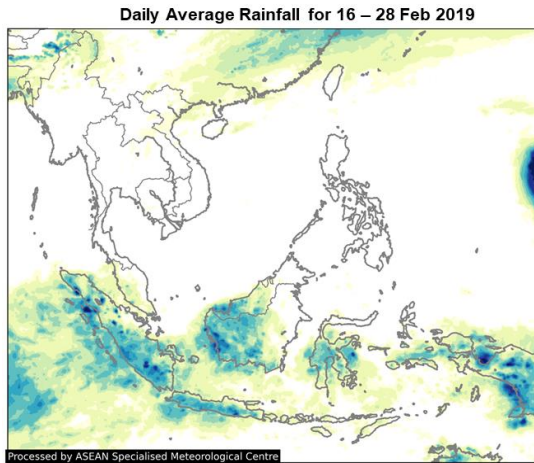


Figure 2: Daily average rainfall for the ASEAN region in the second fortnight of February 2019. (Source: JAXA Global Satellite Mapping of Precipitation)

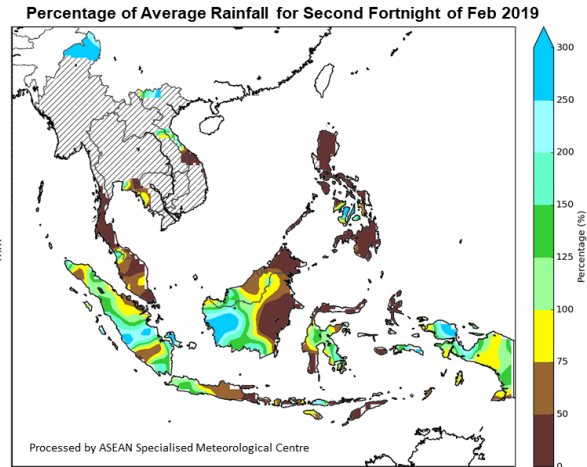


Figure 3: Percentage of average rainfall for 15 – 28 February 2019. The rainfall data may be less representative for areas with a less dense rainfall network. (Source: IRI NOAA/NCEP CPC Unified Precipitation Analyses)

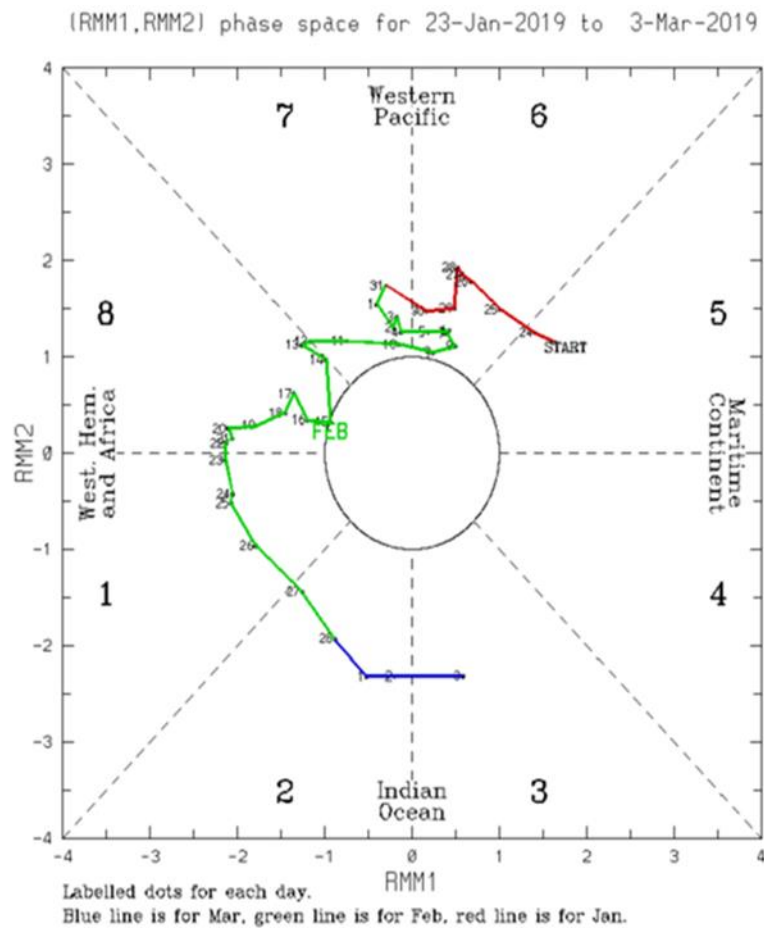
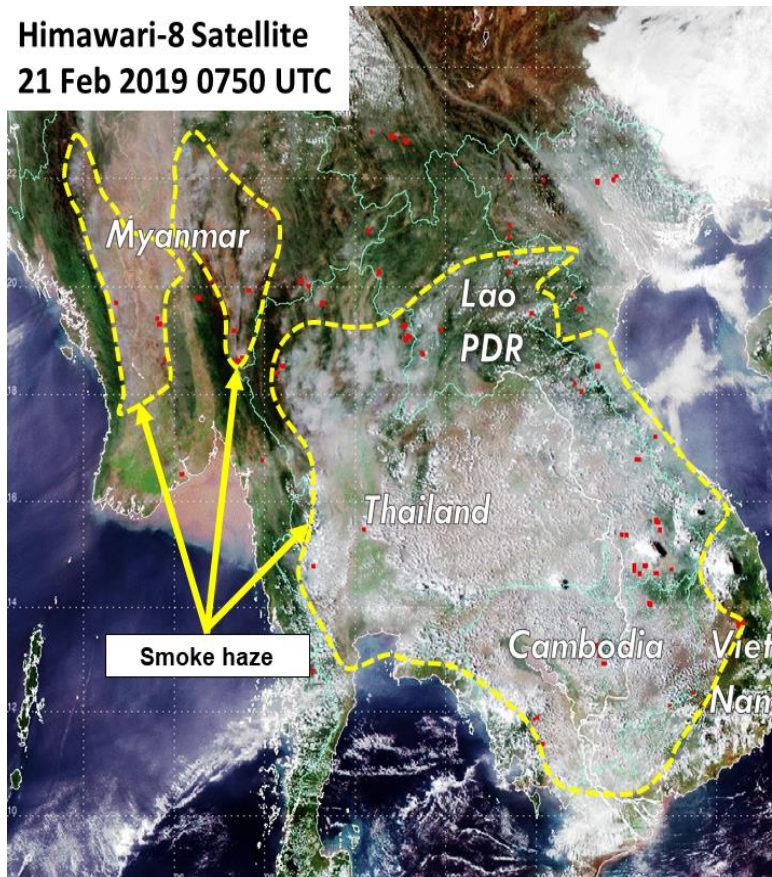


Figure 4: The MJO phase diagram (green for February 2019). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index 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

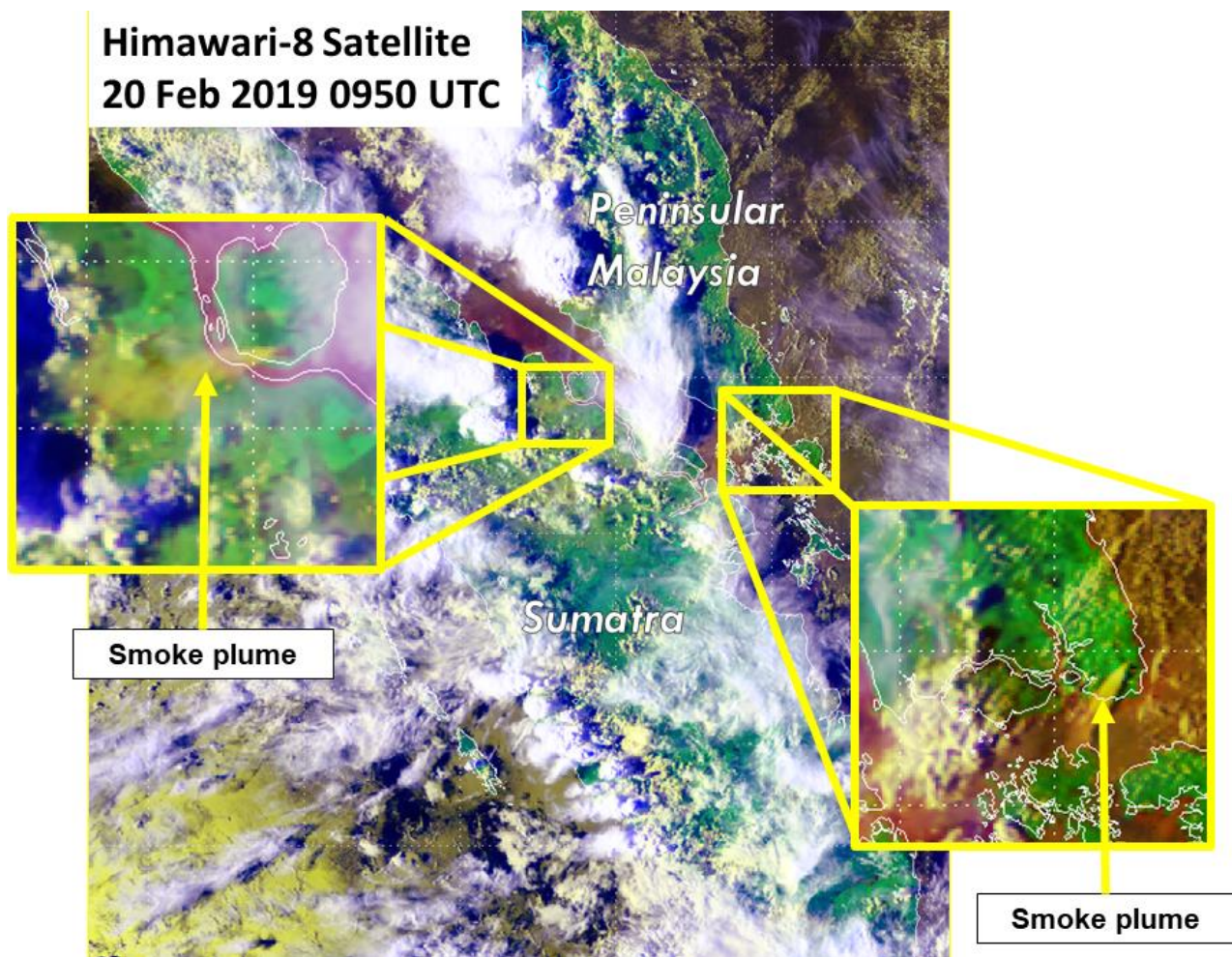
2.1 The prolonged dry conditions in the northern ASEAN region contributed to the widespread smoke haze that continued enveloping most parts of the Mekong sub-region. Dense smoke haze was observed over parts of Cambodia, Lao PDR and Thailand during the first half of February 2019. There were also occurrences of transboundary haze as some smoke haze was blown towards Lao PDR and Viet Nam from the neighbouring countries during this period.



*Figure 5: Widespread smoke haze over the Mekong sub-region*

2.2 In the southern ASEAN region, localised smoke plumes were observed from isolated hotspots in Riau, Sumatra and in Johor, Peninsular Malaysia. Otherwise, hotspot activities remained generally subdued.





*Figure 6: Smoke plumes from isolated hotspots in Riau, Sumatra and Johor, Malaysia*