

1. Review of Regional Weather Conditions for Second Fortnight of September 2019

1.1 In the second half of September 2019, the prevailing winds over the southern ASEAN region were from the east or southeast, with weaker winds over the equatorial areas. In contrast, over the Mekong sub-region, the prevailing winds were generally from the northeast or east. During the period, anomalous westerly or northwesterly winds prevailed over the northern Philippines. This was influenced by the presence of Tropical Storms Tapah and Mitag over the western Pacific Ocean.

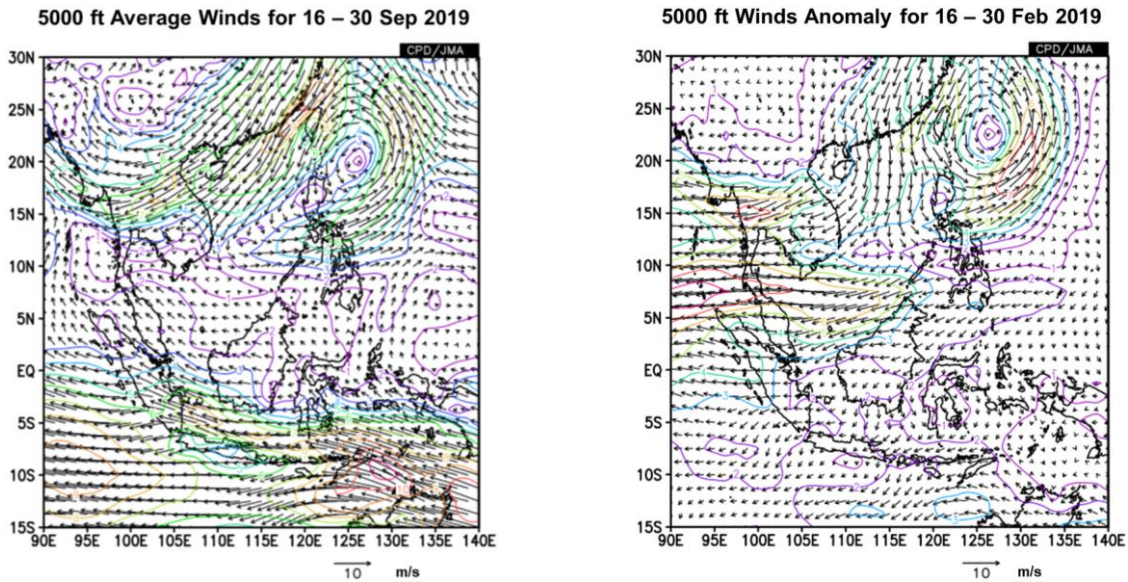


Figure 1 5000 ft average winds (left) and anomalies (right) for 16 – 30 Sep 2019 (Source: JMA)

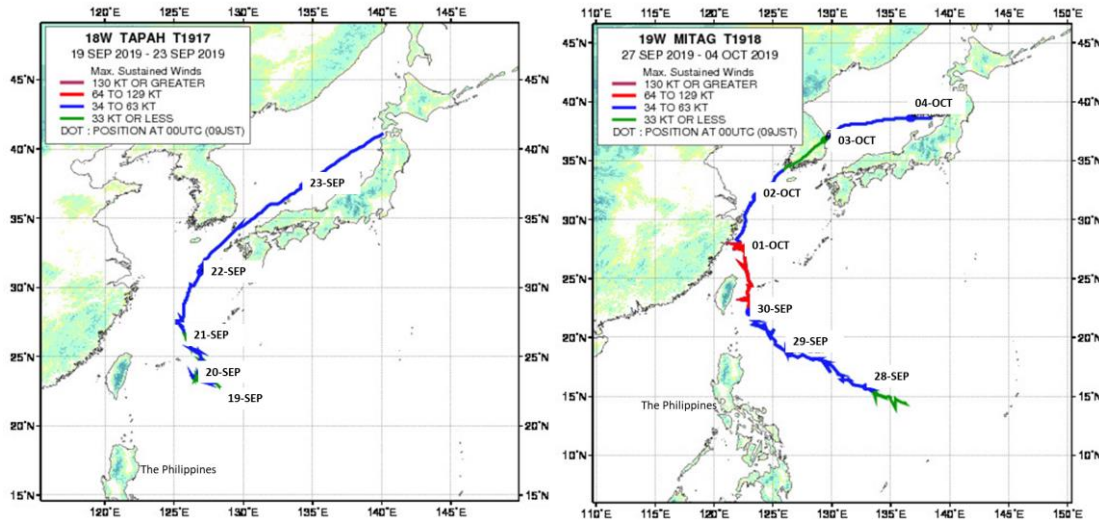


Figure 2 Tracks of Tropical Storm Tapah (19 Sep - 23 Sep, 2019) and Tropical Storm Mitag (28 Sep – 4 Oct, 2019) (Source: JAXA)

1.2 The influence of these tropical storms also contributed to the above-average rainfall over northern Philippines in the second half of the month. Wetter-than-normal conditions prevailed over the Mekong sub-region except for parts of Thailand, northern Lao PDR and western Cambodia, where below-average rainfall was recorded. In the southern ASEAN region, the drier-than-normal conditions persisted into the second half of the month. Toward the end of September 2019, a shift in the monsoon rain band over the equatorial ASEAN region brought showers over northern Sumatra, Malaysia, Singapore and parts of Kalimantan. During the fortnight, the Madden-Julian Oscillation (MJO) was in Phases 8 and 1, and could have also contributed to the increased shower activities in the last week of the month.

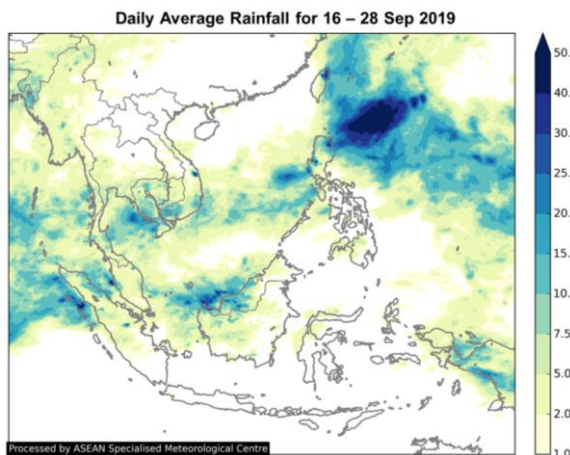


Figure 3 Daily average rainfall for the ASEAN region in the second fortnight of September 2019. (Source: JAXA Global Satellite Mapping of Precipitation)

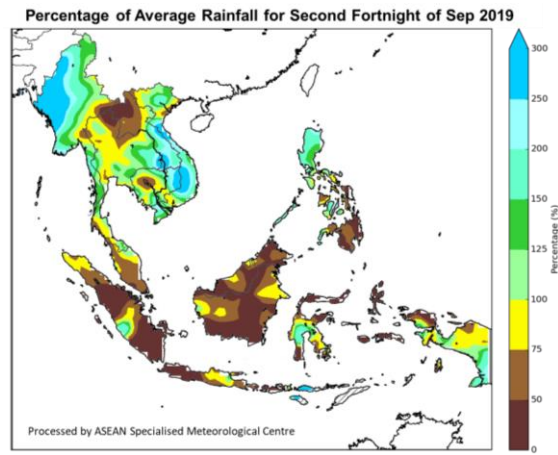


Figure 4 Percentage of average rainfall for 16 – 30 September 2019. The rainfall data may be less representative for areas with a less dense rainfall network. (Source: IRI NOAA/NCEP CPC Unified Precipitation Analyses)

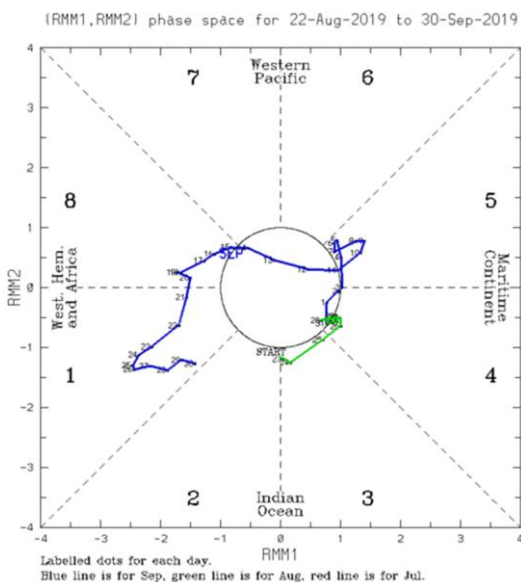


Figure 5 The MJO phase diagram (blue for September 2019). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index falls within the circle, the MJO is considered weak or indiscernible. (Source: Bureau of Meteorology)

1.3 Over the tropical Pacific Ocean, El Niño – Southern Oscillation (ENSO) remained neutral. In the Indian Ocean, the positive Indian Ocean Dipole (IOD) strengthened in the second half of September 2019. A positive IOD is typically associated with drier weather over the southern ASEAN region.

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

2.1 In the first half of the fortnight, persistent hotspots with moderate to dense smoke haze continued to be detected in Sumatra (mainly in the provinces of Jambi, South Sumatra and Lampung), and in Kalimantan (mostly in South, Central and West Kalimantan). Extensive smoke haze from these hotspots was also blown by the prevailing winds to affect parts of Peninsular Malaysia, Singapore and western Sarawak.

2.2 With increased showers over parts of Sumatra and Kalimantan in the last week of the month, there was a significant improvement in the hazy conditions in the southern ASEAN region. Smoke haze from hotspots continued to be observed in the southern ASEAN region but was mainly detected in the southern parts of Sumatra and Kalimantan.

2.3 In the northern ASEAN region, hotspot activities remained generally subdued during the fortnight.

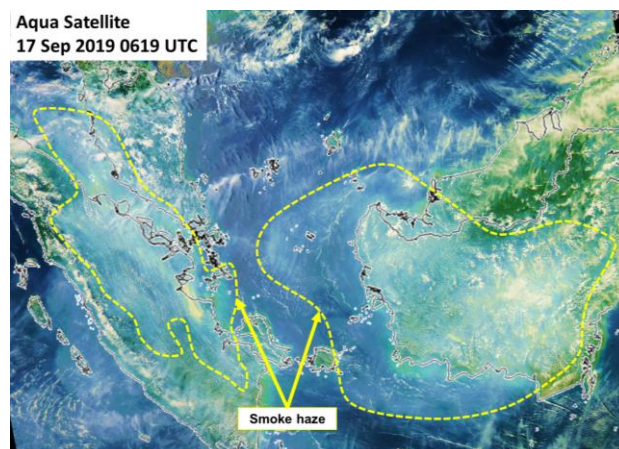


Figure 6 Smoke haze from hotspots in Sumatra and Kalimantan spread to neighbouring areas including parts of Peninsular Malaysia and western Sarawak.

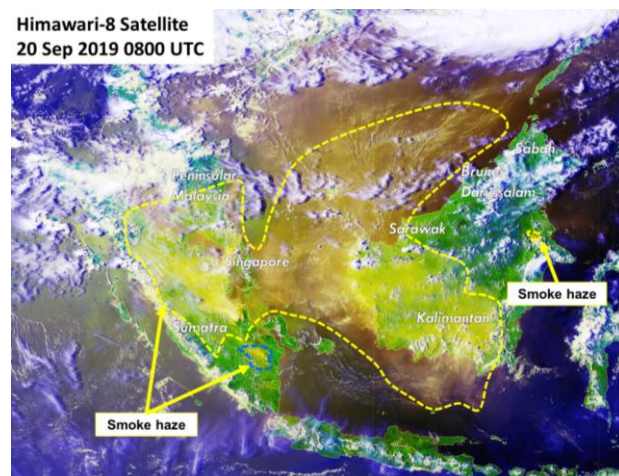


Figure 7 Moderate to dense smoke haze from persistent hotspots in Sumatra and Kalimantan was blown by prevailing winds to affect parts of Peninsular Malaysia, Singapore and western Sarawak

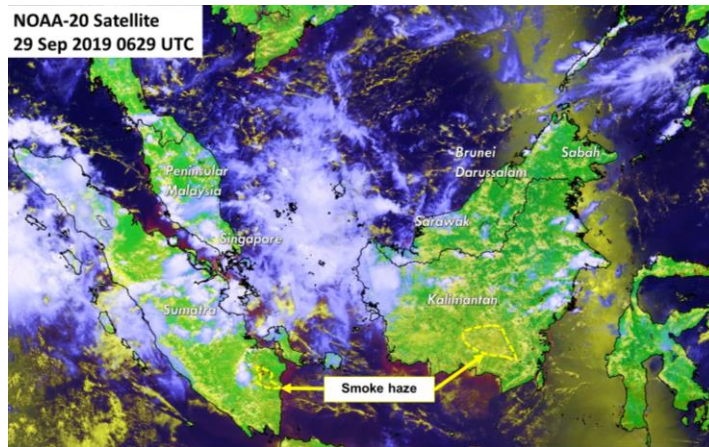


Figure 8 Increased showers over equatorial region in the last week of September 2019 helped subdue the smoke haze situation; Smoke haze from hotspots was confined to the southern parts of Sumatra and Kalimantan

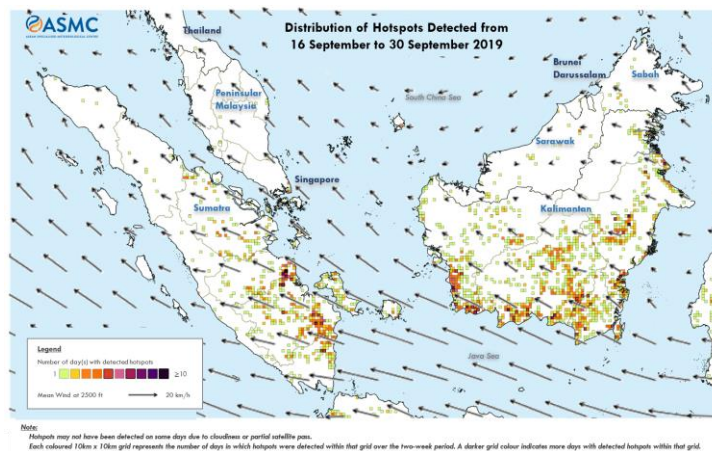


Figure 8 Distribution of hotspots detected based on NOAA-20 satellite surveillance and prevailing winds in the second half of September 2019 (Source of prevailing winds: JMA)