UPDATE OF REGIONAL WEATHER AND SMOKE HAZE (Second Fortnight of November 2019)

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

1.1 Northeast Monsoon conditions began to set in over the northern ASEAN region in mid November. Persistent north-easterly winds prevailed over the northern ASEAN region and the South China Sea. Winds to the south of the equator were light and blew mainly from the southeast.

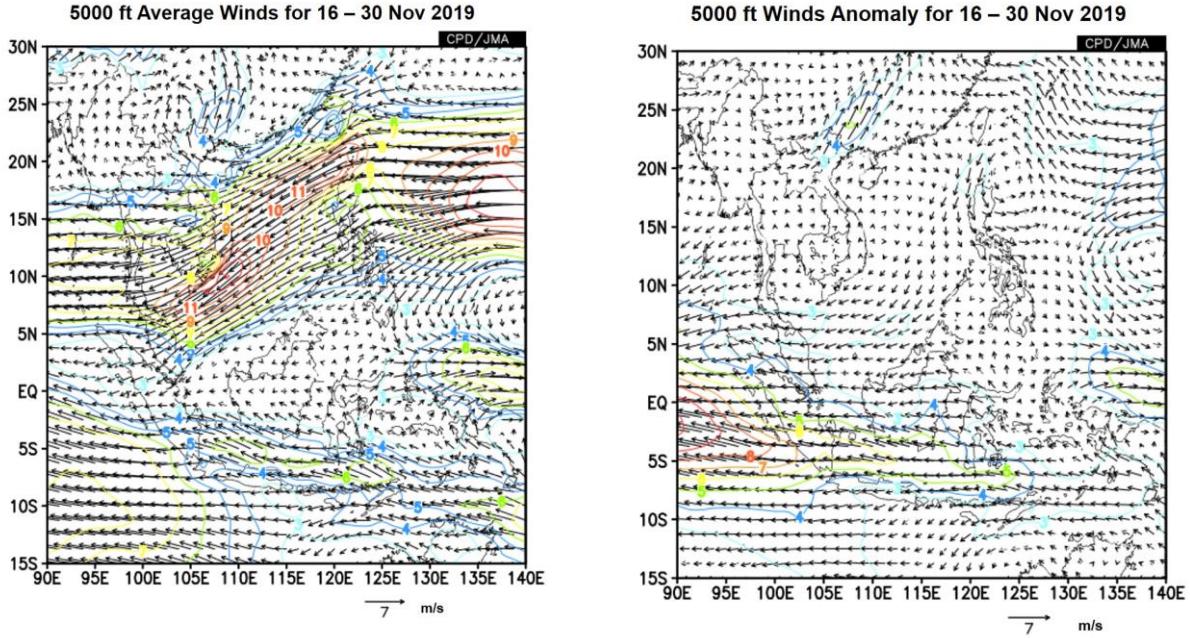


Figure 1: 5000 ft average winds (left) and winds anomaly (right) for 16 - 30 November 2019. (Source: JMA)

1.2 Most of the rainfall fell over the equatorial region, including Brunei, Malaysia, Singapore, Sumatra and Kalimantan. Typhoon Kalmaegi, which developed over the sea areas east of the Philippines, brought heavy showers to the northern parts of Luzon between 18 – 20 November 2019. Dry weather prevailed over most parts of the Mekong sub-region during the review period.

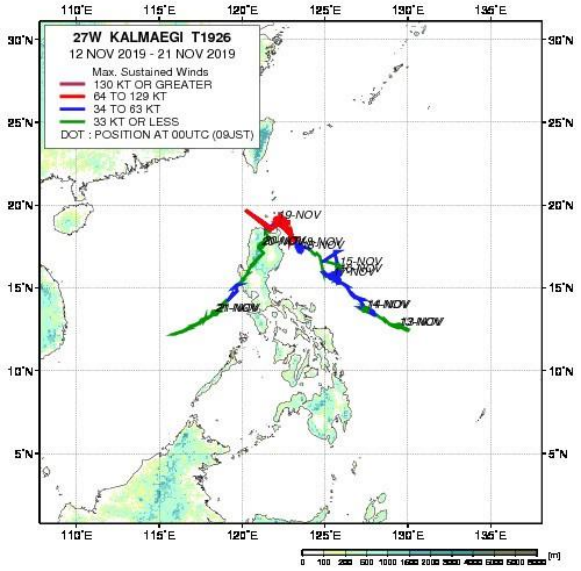


Figure 2: Historical track of Typhoon Kalmaegi. (Source: JAXA)

1.3 Because of the dry weather in the northern ASEAN region, many parts of the Mekong sub-region experienced below-average rainfall during the review period. In the southern ASEAN region, rainfall was near-average to above-average over the equatorial region. Rainfall was below-average over the eastern archipelago of Indonesia.

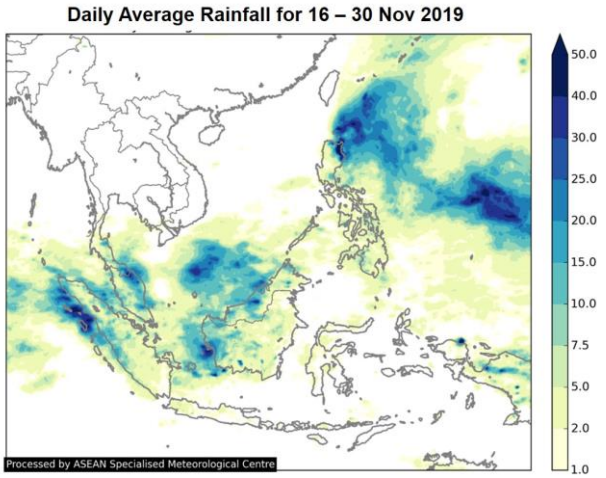


Figure 3: Daily average rainfall for the ASEAN region in the second fortnight of November 2019. (Source: JAXA Global Satellite Mapping of Precipitation)

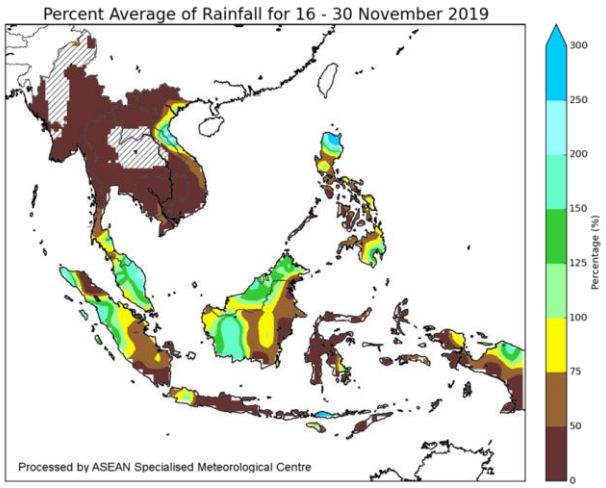


Figure 4: Percent of average rainfall for 16 – 30 November 2019. The rainfall data is less representative for areas with a less dense rainfall network. Hatched areas indicate climatology dry mask (average daily rainfall below 1 mm). (Source: IRI NOAA/NCEP CPC Unified Precipitation Analyses)

1.4 In the second half of November 2019, the Madden-Julian Oscillation (MJO) began to weaken but continued to propagate through Phase 8 – 1 into the Indian Ocean. The MJO although weak, could have contributed to the easterly wind anomalies observed over the Indian Ocean and Java Sea.

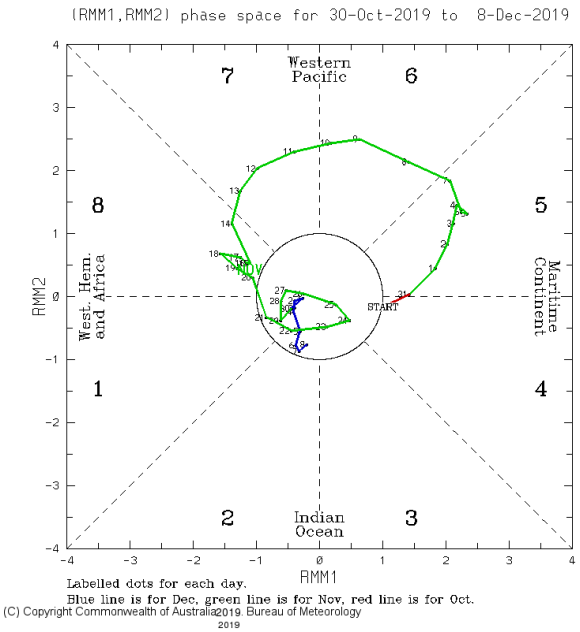


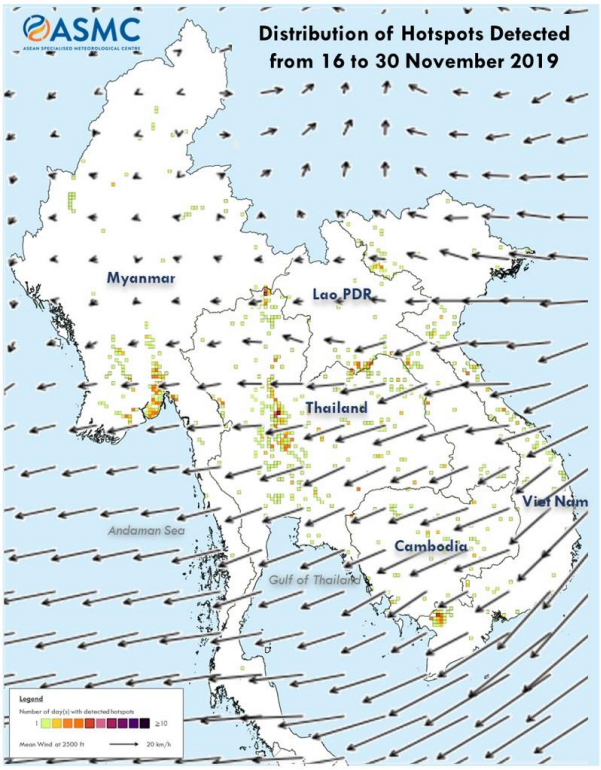
Figure 5: The MJO phase diagram for November 2019 (green). The diagram illustrates the movement of the MJO through different phases, which correspond to different locations along the equator. The distance of the index from the centre of the diagram is correlated with the strength of MJO. When the index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

1.5 The El-Niño Southern Oscillation (ENSO) continued to remain in the neutral state (i.e neither El Niño nor La Niña conditions). The Indian Ocean Dipole (IOD) remained in the positive phase, but was declining.

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

2.1 During the second fortnight of November 2019, isolated hotspots began to emerge in the Mekong sub-region as dry weather prevailed. These hotspots were mostly short-lived. Localised smoke plumes were observed to emanate from some of the hotspots, particularly from those detected in central Thailand.

2.2 With the end of the dry season and increase in shower activities over the southern ASEAN region, hotspot activities were subdued.



Note:
Hotspots may not have been detected on some days due to cloudiness or partial satellite pass.
Each coloured 10km x 10km grid represents the number of days in which hotspots were detected within that grid over the two-week period. A darker grid colour indicates more days with detected hotspots within that grid.

Figure 6: Distribution of hotspots detected based on NOAA-20 satellite surveillance and mean winds at 2500 ft in the second fortnight of November 2019 (Source of wind data: JMA)

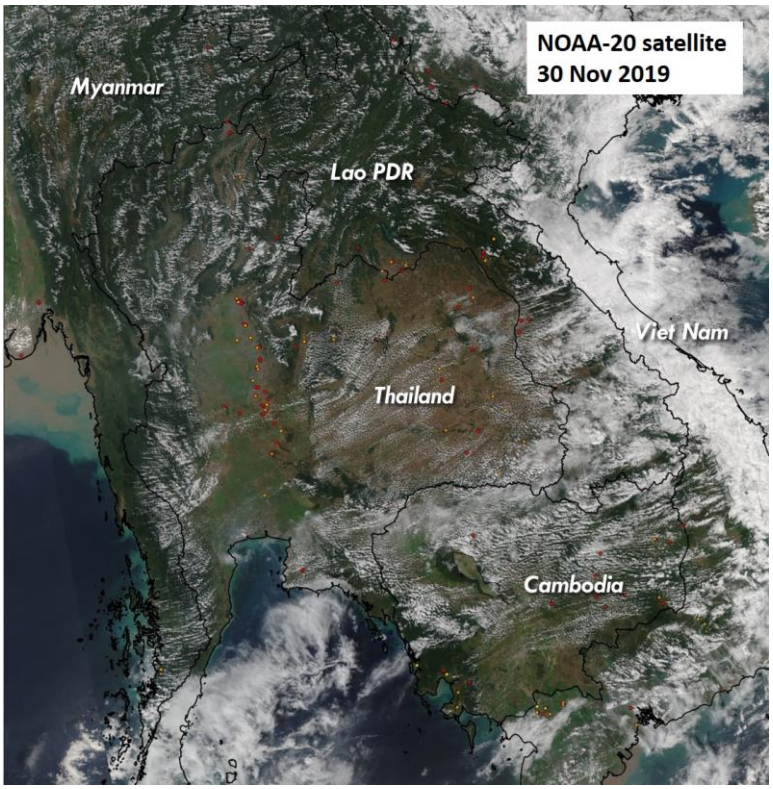


Figure 7: Isolated hotspots detected mainly in Thailand on 30 Nov 2019.