

UPDATE OF REGIONAL WEATHER AND SMOKE HAZE FOR OCTOBER 2015

1. Review of Regional Weather Conditions in September 2015

1.1 The Southwest Monsoon season prevailed in September 2015, with low level winds mainly blowing from the southeast or southwest. The monsoon rain band located close to the northern ASEAN region brought shower activities on most days to parts of the region. In contrast, dry weather conditions in the southern ASEAN region prevailed throughout September 2015.

1.2 Tropical Storm Vamco, which developed on 13 September 2015 over the South China Sea, made landfall south of Danang, Vietnam the next day. Vamco caused flooding and damages particularly to the agriculture and fisheries sectors in Vietnam. The Tropical Storm Vamco continued on its westward track and triggered floods across some provinces in Thailand before gradually dissipating on 18 September.

1.3 The prevailing El Niño conditions continued to have an impact on rainfall activities in the ASEAN region. Below-average rainfall was recorded across most parts of the southern ASEAN region. In the northern ASEAN region, near-average to below-average rainfall was received in the Mekong sub-region. The southern part of Philippines recorded above-average rainfall while below-average rainfall was received in the northern part of Philippines. The regional rainfall distribution for September 2015 is shown in Figure 1A.

Percentage of Normal Rainfall for September 2015

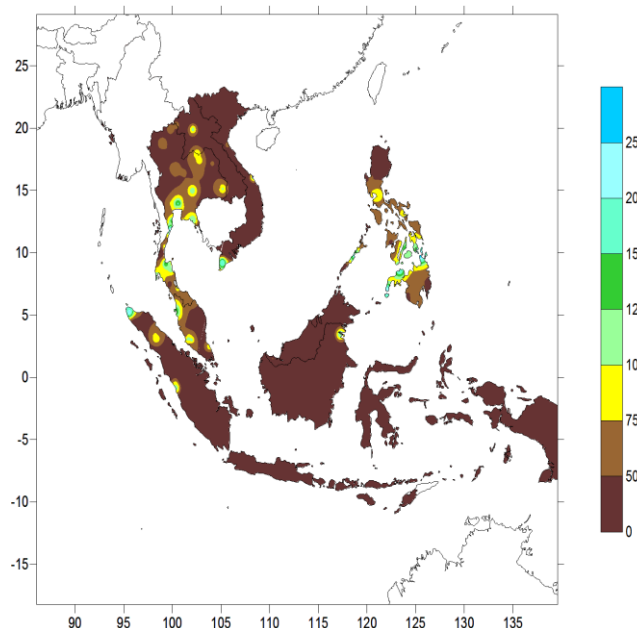


Figure 1A: Percentage of Normal Rainfall for September 2015

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

2.1 In September, hotspot activities over the northern ASEAN region were generally subdued by the prevailing wet weather conditions. In contrast, the southern ASEAN region was affected by a prolonged transboundary haze situation in recent years. Persistent

hotspot activities were observed especially in the fire-prone provinces of central and southern Sumatra, as well as in Kalimantan throughout the month.

2.2 In September 2015, moderate to dense smoke haze blanketed most parts of the central and southern Sumatra, and West and Central Kalimantan. On most days, the air quality readings in many parts of Sumatra including Jambi were in the hazardous range. Hazardous air quality readings were also reported in Palangkaraya in central Kalimantan and Pontianak in western Kalimantan on a number of days. Visibility was reduced to less than 1 km on most days in Jambi, Pekanbaru and Rengat in Sumatra and in Pontianak and as the haze situation worsened.

2.3 The moderate to dense smoke haze from the fire-prone provinces in Sumatra and Kalimantan were carried by the prevailing winds to affect the region including Brunei Darussalam, Peninsular Malaysia, Sarawak, Singapore and southern Thailand. Some haze had also spread to the South China Sea and was blown by the prevailing winds to affect some islands in southern Philippines.

2.4 Parts of Peninsular Malaysia, East Malaysia and Singapore were affected by transboundary smoke haze since early September 2015. Air quality was in the Unhealthy and/or Very Unhealthy ranges on most days, and on a few days, the air quality entered into the Hazardous range which resulted in school closures, flight diversions or delayed flights amid poor visibility. On 25 September, the 24-hr PSI in Singapore hit a high of 322. On 26 September, visibility at the Subang Airport deteriorated to below 500 m and the airport was closed for several hours. Air quality readings in Port Klang, Shah Alam and Batu Muda also worsened to Very Unhealthy levels of 224-243 the next day morning.

2.5 In Kuching, Samarahan and Sri Aman, the Air Quality Index (AQI) ranged from ~68-~205, with most days in the Unhealthy to Very Unhealthy range between 9 and 28 September 2015. On 10 September, visibility at the Kuching International Airport deteriorated to below 800m and caused disruptions to flight operations and schedules.

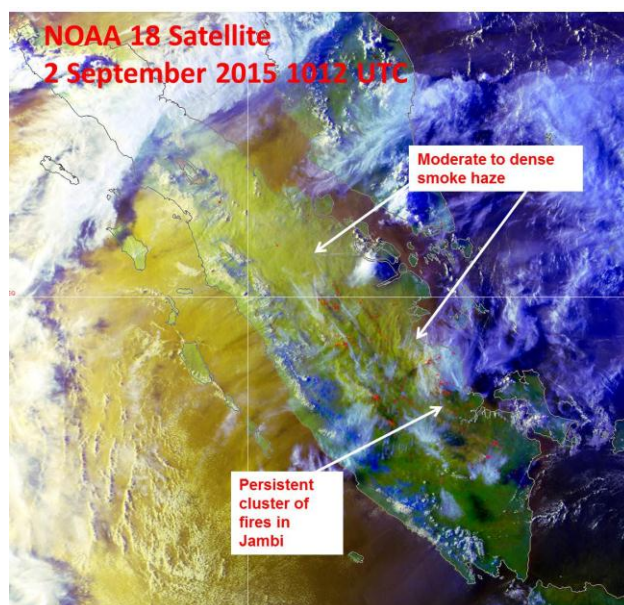


Figure 2A: NOAA-18 satellite image on 2 September shows the central and southern part of Sumatra shrouded in widespread smoke haze. Some smoke haze had spread to the Strait of Malacca and affected the western part of Peninsular Malaysia.

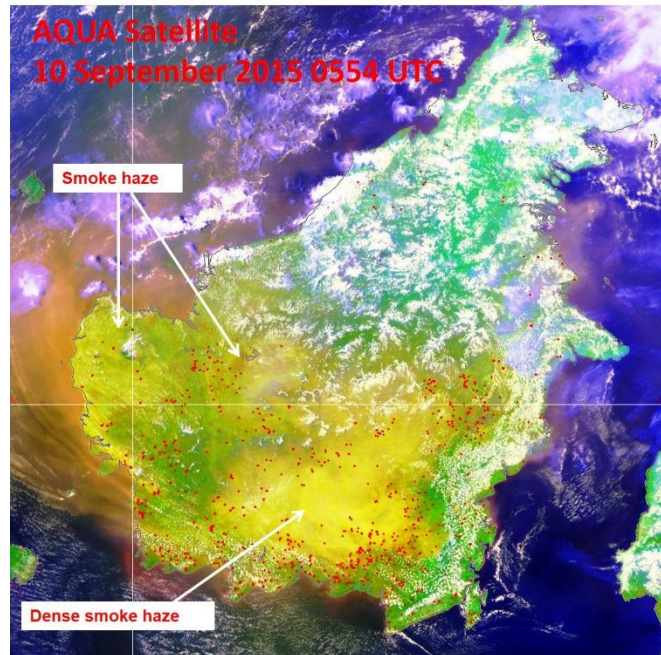


Figure 2B: AQUA satellite picture on 10 September 2015 shows parts of Kalimantan and Sarawak shrouded in widespread smoke haze. The dense smoke haze was observed mainly over western and central Kalimantan.

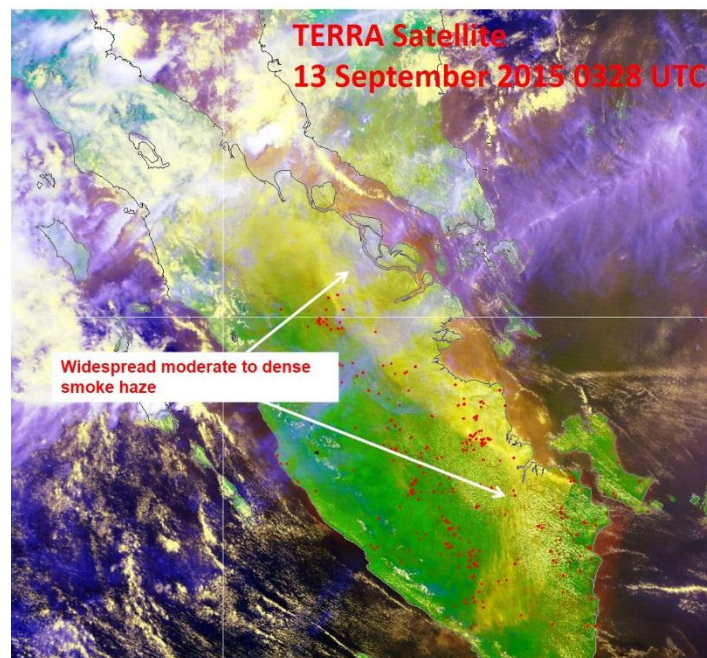


Figure 2C: TERRA satellite picture on 13 September 2015 shows widespread moderate to dense smoke haze from Sumatra spreading into the Strait of Malacca and the Peninsular Malaysia.

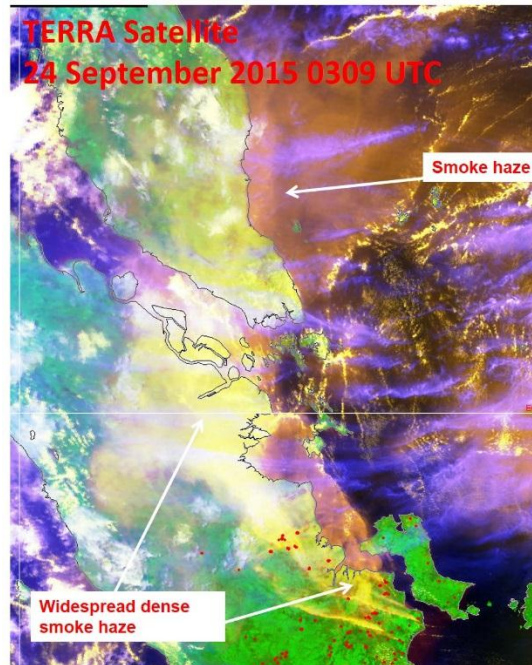


Figure 2D: TERRA satellite picture on 24 September 2015 shows central and southern Sumatra covered in widespread dense haze. The dense haze was blown in to the southern part of Peninsular Malaysia by the prevailing southwesterly winds.

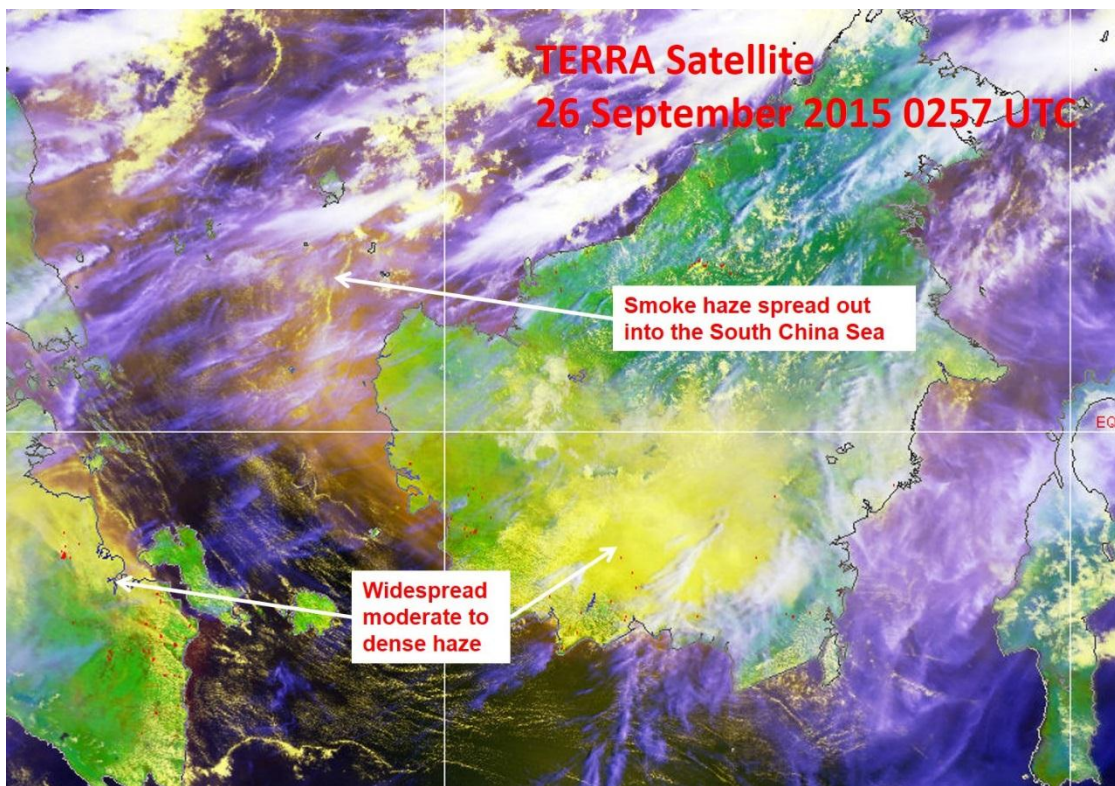


Figure 2E: TERRA satellite picture on 26 September 2015 shows smoke haze from Kalimantan spreads to the South China Sea.

- 2.6 The hotspot charts for September 2015 for
- a) Cambodia, Myanmar, Thailand, Lao PDR and Vietnam;
 - b) Sumatra, Borneo and Peninsular Malaysia; and
- are shown in Figures 2F to 2G respectively.

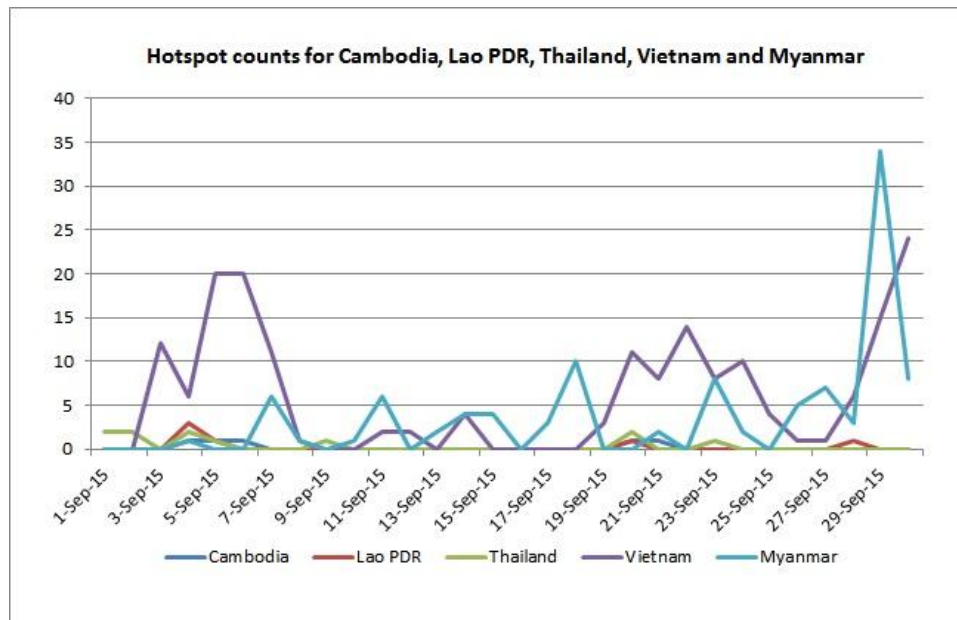


Figure 2F: Hotspot count in Cambodia, Lao PDR, Thailand, Vietnam, and Myanmar for September 2015

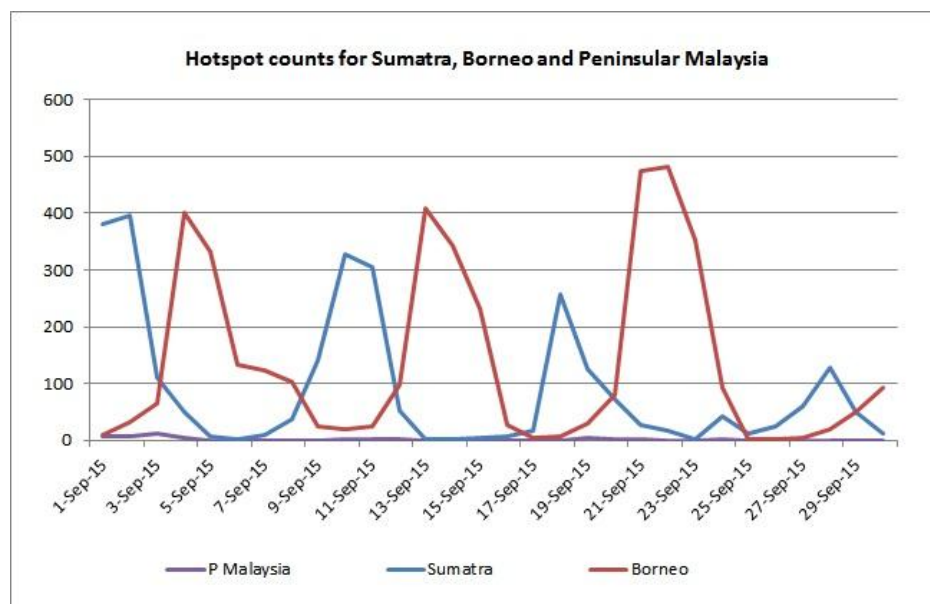


Fig 2G: Hotspot counts in Sumatra, Borneo and Peninsular Malaysia for September 2015

3. Status of El Niño/La Niña

3.1 The sea surface temperatures (SSTs) in the tropical Pacific Ocean (SST) have increased further in September 2015. A strong El Niño currently prevails in the tropical Pacific Ocean.

3.2 Atmospheric conditions in the ASEAN region have been showing a clear response to the strong El Niño conditions. Large-scale drier-than-normal conditions have been observed particularly in the southern and eastern parts of the ASEAN region. A consensus forecast based on international climate models and expert opinions suggest the continuation of strong El Niño conditions into early-2016, with the possibility of further strengthening in the coming months.

3.3 Typically the impact of El Niño for the Southeast Asia region is drier than average rainfall conditions, especially in the southern parts of the ASEAN region during June to October. More locally-specific impact differs from place to place and for different seasons.

3.3 The region is now gradually transitioning from the Southwest Monsoon season (Jun – Sep/Oct) into the inter-monsoon period (Oct – Nov). El Niño can still have a significant impact on the weather conditions (dryness) over the southern part of ASEAN region, in particular, the western part of the Maritime Continent. With the current El Niño conditions, there is still a risk that the prevailing Aug-Sep-Oct (ASO) season could experience extended periods of drier and warmer conditions in this part of Southeast Asia.

4. Outlook

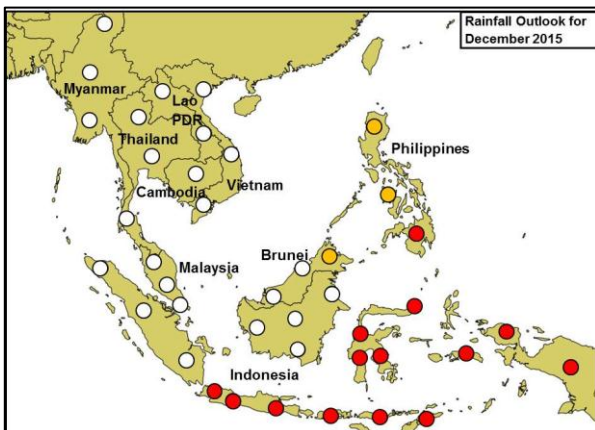
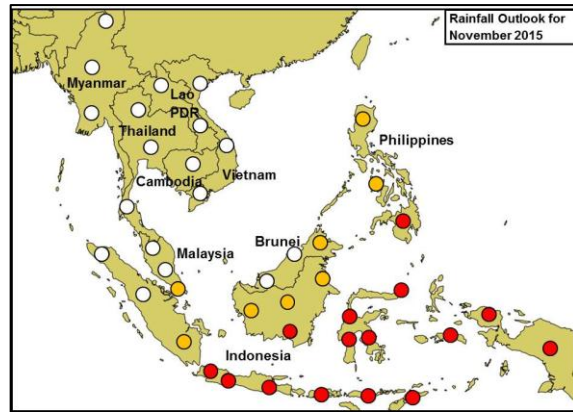
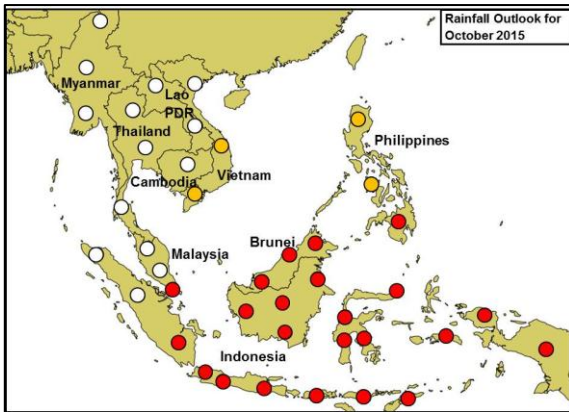
4.1 The prevailing Southwest Monsoon season is expected to transit to the Inter-Monsoon period by early November 2015, followed by the Northeast Monsoon in December 2015. The Inter-Monsoon is characterised by afternoon shower interspersed with occasional dry periods and light wind conditions.

4.2 In the northern ASEAN region, the traditional wet season will gradually give way to the traditional dry season of Northeast Monsoon, which usually onsets in December. Shower activities are likely to keep hotspot activities subdued until the start of the dry season. Nonetheless, isolated hotspot activities may still emerge from time to time.

4.3 For the southern ASEAN region, the current traditional dry season could extend further into late-October or early November 2015. Occurrences of transboundary smoke haze episodes could still continue from time to time in the coming weeks, especially if the prevailing winds blow to carry smoke haze towards other parts of the region. Vigilance should be stepped up for any escalation of fire activities in the coming weeks.

4.4 The prevailing drier weather is forecast to gradually ease by early November 2015 as the region transitions from the Southwest Monsoon season to the Inter-Monsoon period. An increase in shower activities over the southern ASEAN region is expected and this may help subdue the hotspot activities in the region.

4.5 Drier than usual weather conditions are forecast to continue for the southern ASEAN region in October and November 2015, with slightly-below to below-normal rainfall expected for most parts of the region. The impact of El Niño over the southern ASEAN region typically becomes less pronounced during the boreal winter, and near-normal rainfall can be expected for the near-equatorial region in December. For the northern ASEAN region, normal rainfall conditions are forecast except in the Philippines where slightly below to below normal rainfall is expected. The rainfall outlooks for the ASEAN region from October 2015 to December 2015 are shown in Figures 3A – 3C.



- - Above Normal (67th to 100th percentile)
- - Slightly Above Normal (50th to 83rd percentile)
- - Normal (33rd to 67th percentile)
- - Slightly Below Normal (17th to 50th percentile)
- - Below Normal (0 to 33rd percentile)

Figure 3: Rainfall Outlook for the ASEAN Region – October 2015 (top left), November 2015 (top right), and December 2015 (bottom left)