UPDATE OF REGIONAL WEATHER AND SMOKE HAZE April 2016

1. Review of Regional Weather Conditions in March 2016

1.1 Weak Northeast Monsoon conditions prevailed in March 2016 with winds that were-Light and from the northeaster on most days in March 2016. The monsoon rain belt continued to lie south of the equator. Most of the shower activities fell mostly over areas south of the equator while warm and dry weather conditions persisted over areas in the southern ASEAN region north of the equator, in particular over Peninsular Malaysia and Singapore.

1.2 Drought conditions affected several parts of the northern ASEAN region, and were particularly severe in northern Thailand, central and south Vietnam. Persistent warmer than usual temperatures were experienced in countries such as Thailand, Malaysia and Singapore. The northern states of Peninsular Malaysia, such as Chu Ping, Alor Star and Ipoh experienced very high temperatures on several consecutive days where the highest daily maximum temperatures ranged between 37 and 39 degrees Celsius.

1.3 Large scale drier than usual weather conditions were observed across many parts of ASEAN region in March 2016. In particular, significantly below-normal rainfall, i.e. less than 50% of normal rainfall, was received over areas north of the equator including northern ASEAN, Malaysia, Singapore, northern Sumatra and eastern Kalimantan. An exception was in the western coastal areas of Kalimantan where near-normal rainfall was received. The regional rainfall distribution for March 2016 is shown in Figure 1A.



Percentage of Normal Rainfall for Mar 2016

Figure 1A: Percentage of Normal Rainfall for March 2016

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

2.1 Hotspot activities in Sumatra and Kalimantan were generally subdued by shower activities in March 2016. However, isolated hotspots with localised smoke plumes were detected in some parts of Peninsular Malaysia and Sabah such as central Pahang and Beaufort, Sabah due to drier than usual weather conditions there.

2.2 In the northern ASEAN region, hotspot activities remained elevated in March 2016 due to the prevailing dry weather conditions. The fires were particularly active along the borders between Myanmar and Thailand near Maehongsorn and Kanchanaburi provinces, as well as in northern Lao PDR and eastern Cambodia. Visible smoke plumes were seen emanating from these hotspot regions on a number of days. Hazy conditions and elevated PM_{10} readings exceeding 150*u*g/m³ were reported in Maehongsorn, Thailand.



Figure 2A: AQUA satellite image on 18 March 2016 shows several clusters of hotspots with smoke plumes observed, especially over northern Lao PDR, northern Thailand, Cambodia and Vietnam.



Figure 2B: AQUA satellite image on 23 March 2016 show hotspots detected in the northern parts of the Mekong sub-region.



Figure 2C: AQUA satellite image on 25 March 2016 shows scattered hotspots and smoke haze near near the border between Myanmar and northern Thailand.



Figure 2D: AQUA satellite image on 28 March 2016 shows isolated hotspots detected in Riau province, Sumatra.



Figure 2E: AQUA satellite picture 29 March 2016 shows isolated hotspots with localised smoke plumes in Beaufort, Sabah.

- 2.3 The hotspot charts for March 2016 for
 - a) Cambodia, Myanmar, Thailand, Lao PDR and Vietnam;
 - b) Sumatra, Borneo and Peninsular Malaysia;

are shown in Figures 2F to 2G respectively.



Figure 2F: Hotspot Counts in Cambodia, Lao PDR, Thailand, Vietnam, Myanmar for March 2016



Fig 2G: Hotspot Counts in Sumatra, Borneo and Peninsular Malaysia for March 2016

3. Status of El Niño/La Niña

3.1 The tropical Pacific Ocean continued to show declining but still strong El Niño conditions in March 2016. The El Niño has passed its peak strength, and will continue a slow and steady decline.

3.2 Large-scale rainfall response to the El Niño in terms of widespread drier-thannormal conditions was observed over mosst areas of the Southeast Asia region for March 2016. The consensus forecast based on assessments from international climate models and experts assessment project that the current El Niño conditions to continue through the first quarter of 2016 before transiting to Neutral (neither El Niño nor La Niña) by mid-2016 and persisting for a few months. There is a chance of La Niña development by the third quarter of 2016.

3.3 The region is transitioning from the Northeast Monsoon season (late Nov - Mar) to the Inter-Monsoon period (Apr – May), and the impact of El Niño is usually less pronounced as compared to the Southwest Monsoon season (Jun – Sep). Typically, El Niño will bring drier than average rainfall conditions over to the southern and eastern parts of the region but less significant impact to the northern and western parts of the region during this period. More locally-specific impact differs from place to place and for different seasons.

4. Outlook

4.1 The ASEAN region is transitioning to the Inter-Monsoon season (Apr – May) which is typically characterised by light and variable wind conditions and afternoon showers. The increase in shower activities during the season is expected to bring some relief to the warm and dry weather conditions which had persisted for areas north of the equator.

4.2 During the early phase of the Inter Monsoon season, elevated hotspot activities are likely to continue for the fire-prone areas of the northern ASEAN region. For the southern ASEAN region, sporadic hotspot activities may emerge from time to time in Malaysia, Sumatra and Kalimantan. However, a gradual increase of shower activities during the Inter Monsoon season should help subdue fire activities in the region.

4.3 In June, the Southwest Monsoon season which is the traditional dry (wet) season for the southern (northern) ASEAN region is expected to set in. . An increase in land and forest fires activities may emerge in the fire-prone provinces of Sumatra and Kalimantan. Vigilance should thus be stepped up for any escalation of fire activities. Typically, the fires start in northern and central Sumatra and western Kalimantan during the early part of the season.

4.4 For the coming April to June 2016 period, drier than usual weather conditions with slightly below to below-normal rainfall are still expected for the northern ASEAN region, and the near-equatorial areas including Malaysia, Singapore, Brunei and northern Sumatra. Near-normal rainfall is expected to prevail for the Indonesian Archipelago. The rainfall outlooks for the ASEAN region from April 2016 to June 2016 are shown in Figures 4A – 4C.



Indonesia

Region – April 2016 (top left), May 2016 (top right), and June 2016 (bottom left)