

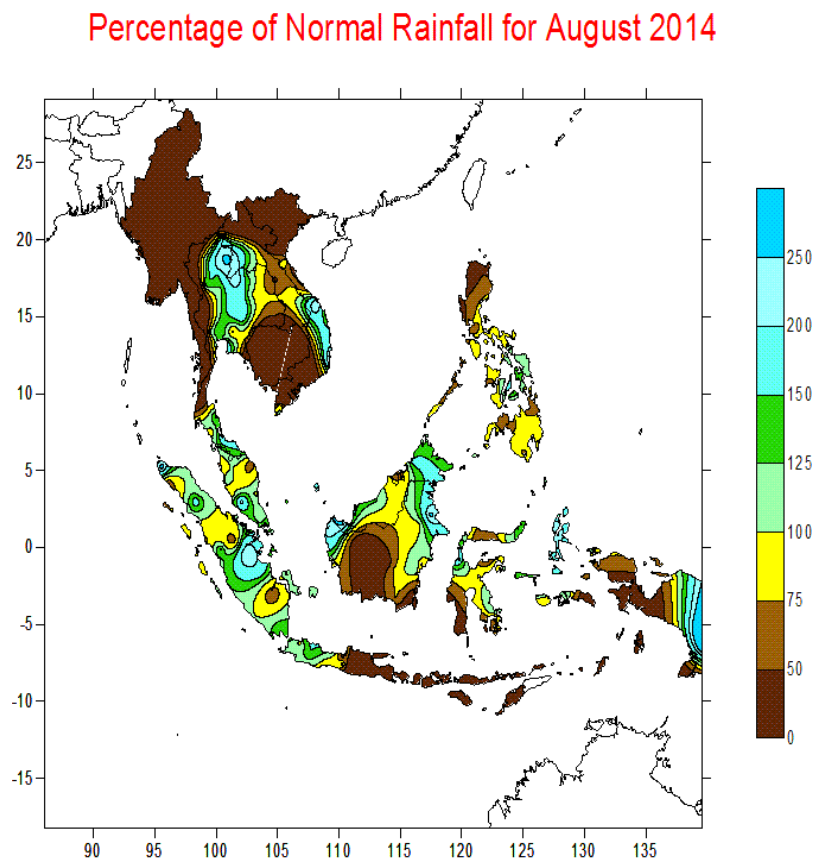
# UPDATE OF REGIONAL WEATHER AND SMOKE HAZE FOR SEPTEMBER 2014

## 1. Review of Regional Weather Conditions in August 2014

1.1 Southwest Monsoon conditions continued to prevail in August 2014. In the northern ASEAN region of Cambodia, Laos PDR, Myanmar, Thailand, Vietnam and the Philippines, the traditional rainy season. For the southern ASEAN region, generally wet weather conditions with brief periods of drier weather conditions prevailed.

1.2 One typhoon affected the north-western Pacific Ocean during this month. Typhoon "Halong" developed to the east of the Philippines, tracked towards northwards and made landfall in Japan on 8 August. The presence of Typhoon "Halong" enhanced convective activities in the equatorial region which resulted in the development of extensive rain clouds, bringing wet weather to most parts of the southern ASEAN region during the first half of the month.

1.3 During the month, most parts of the ASEAN region received more than 75% of normal rainfall with the exception of Kalimantan and western Java where less than 50% of normal rainfall was received. The regional rainfall pattern for August 2014 is shown in Figure 1A.



**Fig. 1A: Percentage of Normal Rainfall for August 2014**

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

2.1 Shower activities have helped to subdue hotspot activities in most parts of the southern ASEAN region during the month. However, elevated hotspot activities were detected mainly over Borneo and Sumatra during periods of drier weather conditions. Scattered hotspots with smoke haze were detected mainly over western and central Kalimantan. In Sumatra, isolated hotspots with localized smoke plumes were detected mainly in the southern half of Sumatra.

2.2 In the northern ASEAN region, the prevailing rainy season continued to keep hotspot activities subdued. Sporadic hotspots were detected mainly in Vietnam during occasional brief dry periods. Satellite images depicting some of the hotspot activities over the ASEAN region in August 2014 are shown in Figs. 2A to 2E.

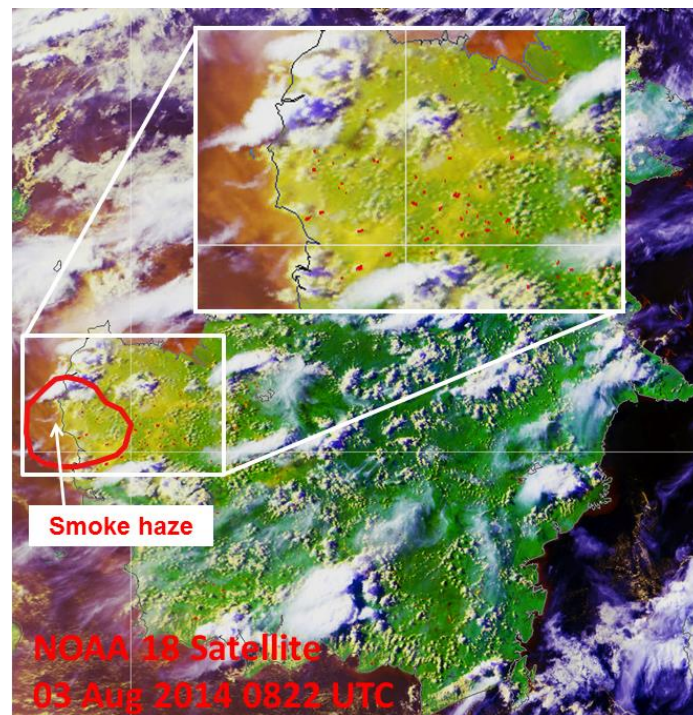
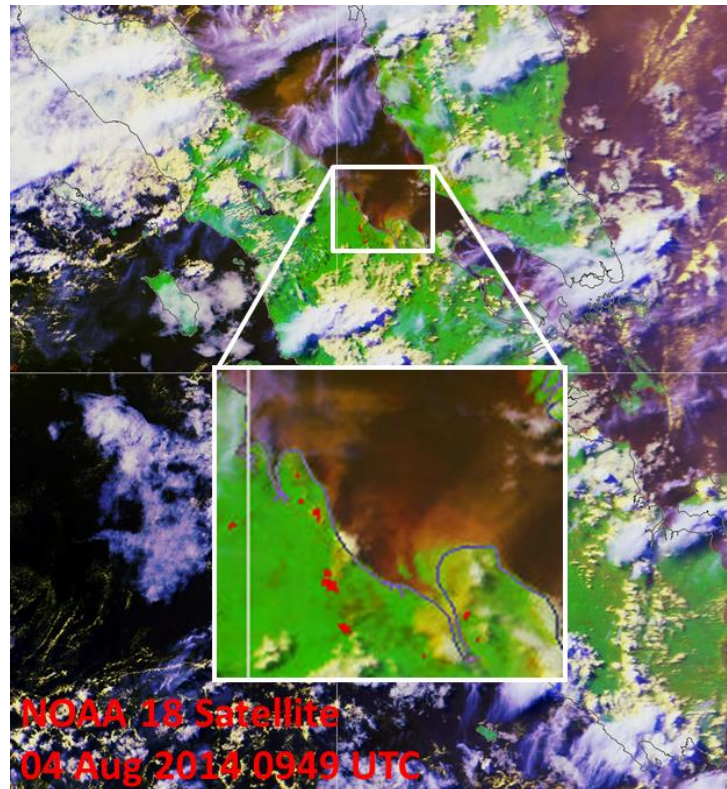
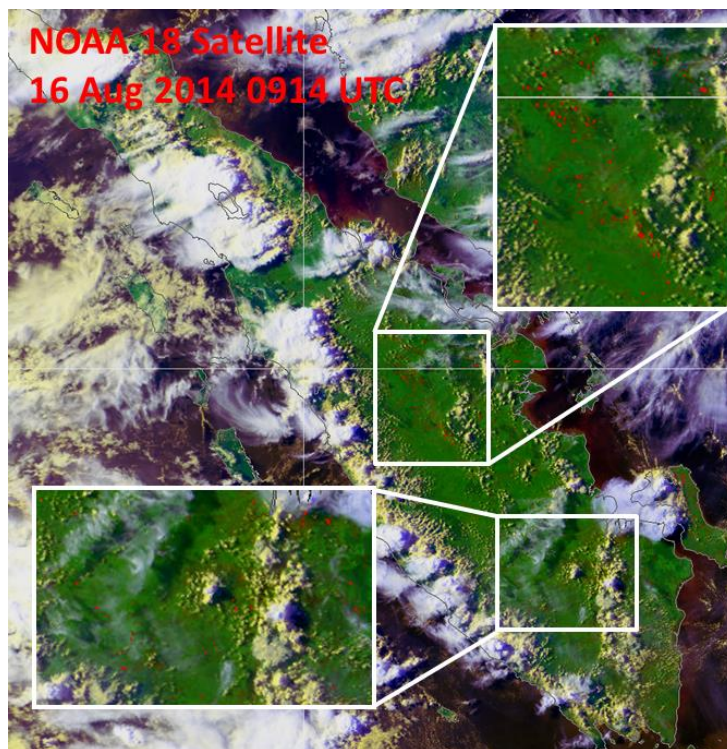


Fig. 2A: NOAA-18 satellite picture on 03 August 2014 showing moderate smoke haze from scattered hotspots in west Kalimantan.

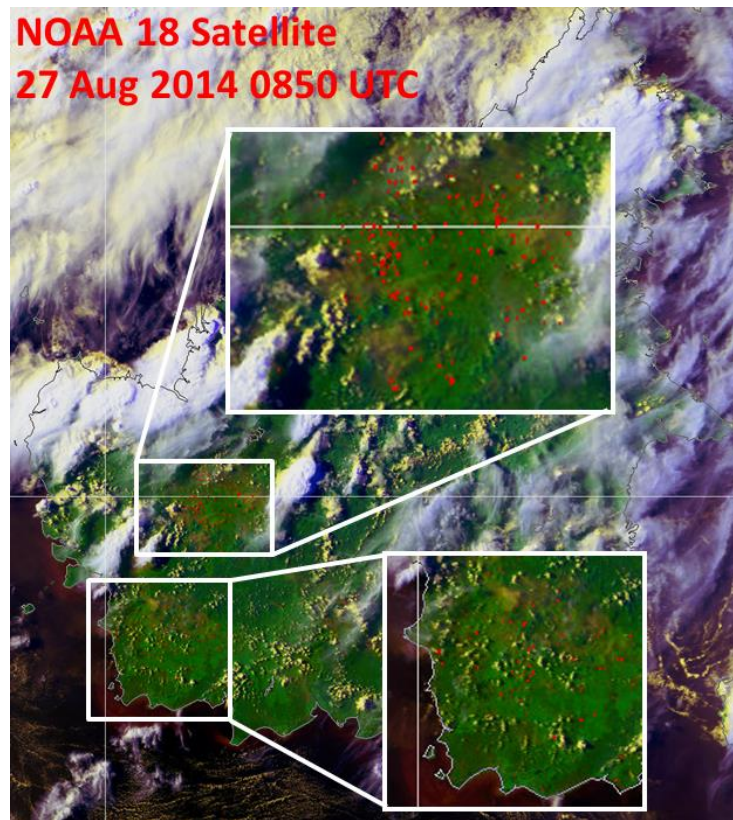


**Fig. 2B: NOAA-18 satellite picture on 04 August 2014 showing smoke plumes emanating from some of hotspots in Riau**

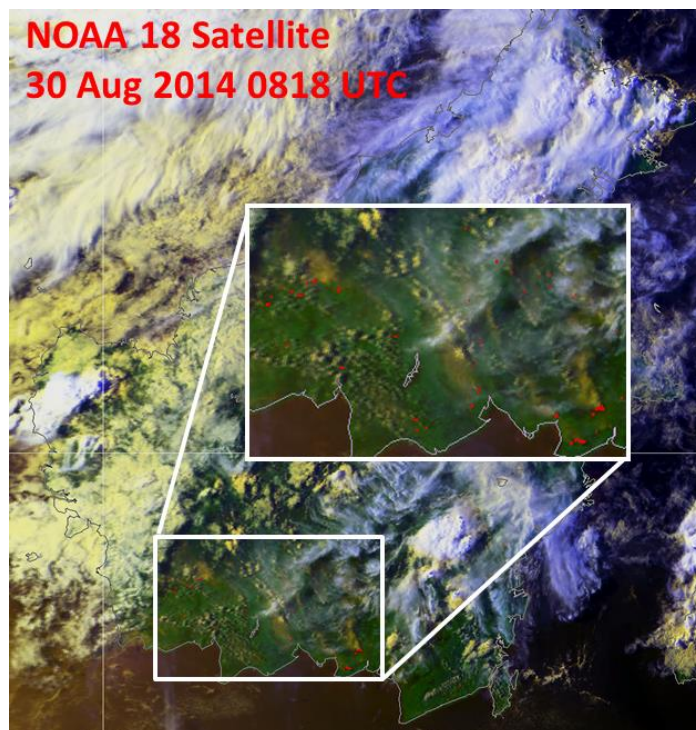


**Fig. 2C: NOAA-18 satellite picture on 16 August 2014 showing an increase in hotspot activities in southern Sumatra due to drier weather conditions**



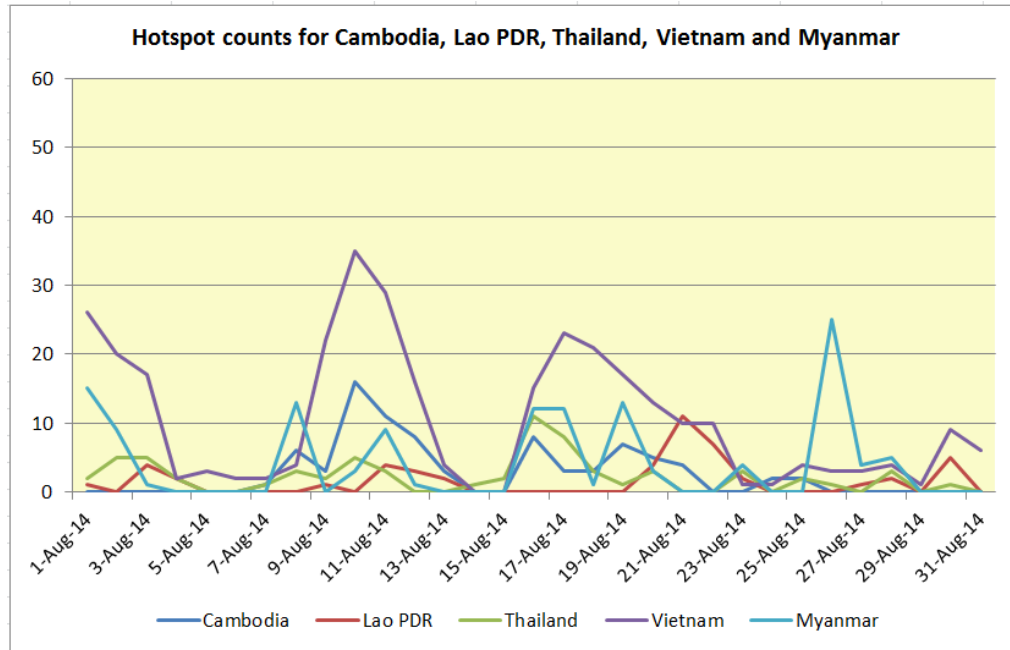


**Fig. 2D: NOAA-18 satellite picture on 27 August 2014 showing smoke haze emanating from scattered hotspots over western and southern Borneo**

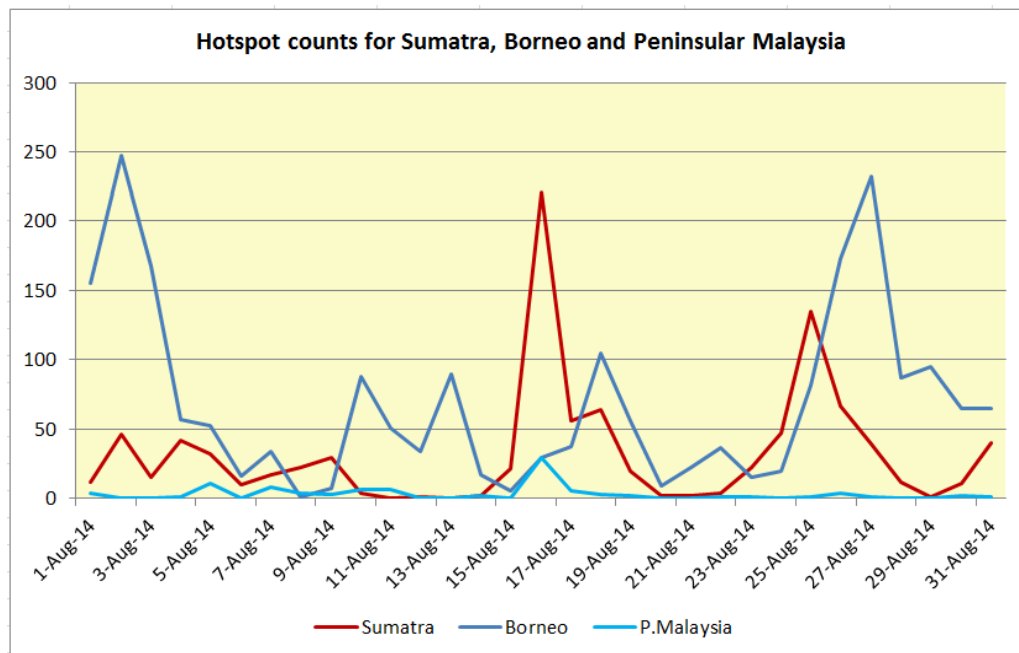


**Fig. 2E: NOAA-18 satellite picture on 30 August 2014 showing isolated hotspots with localised smoke plumes in central Kalimantan.**

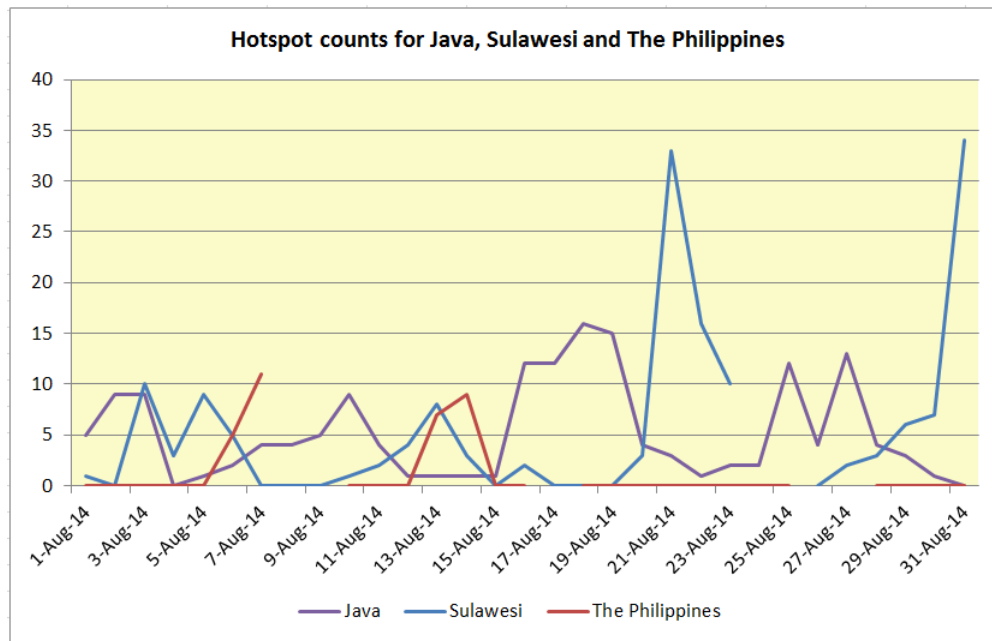
- 2.3 The hotspot charts for August 2014 for
- a) Cambodia, Myanmar, Thailand, Lao PDR and Vietnam;
  - b) Sumatra, Borneo and Peninsular Malaysia; and
  - c) Java, Sulawesi and the Philippines
- are shown in Figs. 2F to 2H respectively.



**Fig. 2F: Hotspot Counts in Cambodia, Lao PDR, Thailand, Vietnam, Myanmar for August 2014**



**Fig 2G: Hotspot Counts in Sumatra, Borneo and Peninsular Malaysia for August 2014**



**Fig. 2H: Hotspot Counts in Java, Sulawesi, Philippines for August 2014**

### 3. Status of El Niño/La Niña\*

3.1 Following the slight easing of the tropical Pacific Ocean warming during the month of July, especially over the Niño3.4 region (Figure 3A: Slowdown of the warming over the tropical Pacific Ocean, especially over the Niño3.4 region (red box), has been observed during July 2014 (image credit: IRI Map Room). Yellow shades show regions of relative warming, while blue shades show regions of relative cooling with respect to 1971-2000 climatology for that month. ), August has seen temperature anomalies gradually increasing again (**Error! Reference source not found.**). Expert assessment and most climate models predict this warming to continue (Fig. ), and that El Niño of weak strength is likely to develop in the last quarter of 2014. There is now about 60% chance of El Niño occurring in September-October-November season and this is down from 70-80% stated in June's and July's predictions (**Error! Reference source not found.**).

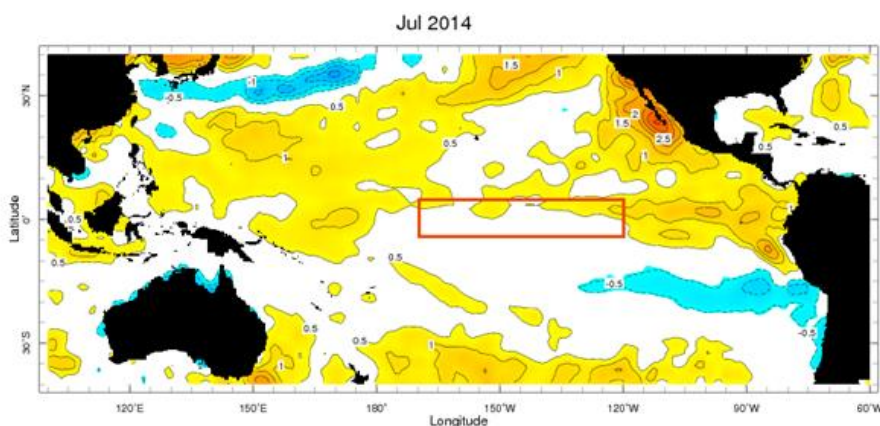
3.2 Despite the observed warming over the tropical Pacific Ocean over the last few months, a number of atmospheric indicators of the El Niño, such as wind flow and cloudiness, have remained largely neutral. A plausible explanation for the lack of atmospheric response is that the warming has occurred over almost the entire tropical Pacific Ocean, including the sea areas in our region. During a typical El Niño development, warming is observed mostly in the eastern and central parts of the tropical Pacific Ocean.

3.3 With the forecast of a weak El Niño in the last quarter of the year, it should be noted that the El Niño is known to have relatively less impact on weather patterns in Singapore and the nearby region during the Northeast Monsoon season (typically

from late November to March). The risk of drier weather conditions due to the El Niño is thus expected to be lower towards the end of the year.

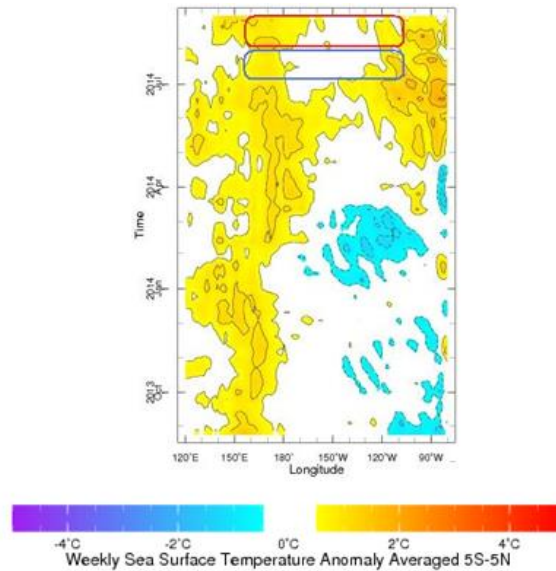
3.4 Typically the impact from El Niño for the Southeast Asia region is drier than average rainfall conditions, especially for the southern and eastern parts (Fig. ). More locally-specific impact differs from place to place and for different seasons. As the Southwest Monsoon season continues to prevail in the region, and with the possibility of a weak El Niño developing in the last quarter of 2014, the risks of occasional extended periods of drier and warmer conditions cannot yet be ruled out.

*\* For El Niño/La Niña updates, ASMC assesses information provided by the World Meteorological Organization (WMO) and various international climate centres, such as the Climate Prediction Center (CPC) US, the Bureau of Meteorology (BoM) Australia, as well information from the International Research Institute for Climate and Society (IRI) which contains model outputs from various other centres around the world. For more information on El Niño/La Niña, please refer to the [FAQs website](#).*

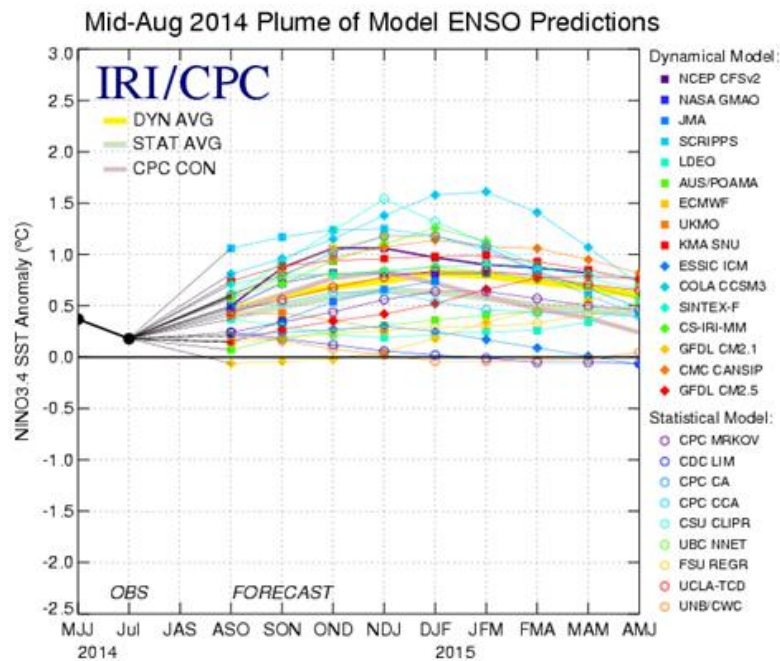


**Figure 3A: Slowdown of the warming over the tropical Pacific Ocean, especially over the Niño3.4 region (red box), has been observed during July 2014 (image credit: IRI Map Room). Yellow shades show regions of relative warming, while blue shades show regions of relative cooling with respect to 1971-2000 climatology for that month.**





**Fig. 3B:** Time evolution of sea-surface temperature anomaly over the tropical Pacific Ocean (120E-90W, 5S-5N) from Sep 2013 (bottom) to August 2014 (top) (image credit: IRI Map Room). Notice the relative warming in August 2014 (red box) compared to the preceding month of July 2014 (blue box). Yellow shades show regions of relative warming, while blue shades show regions of relative cooling with respect to 1971-2000 mean for that week of the year



**Fig. 3C:** Forecasts of El Niño strength (in terms of the Niño3.4 index) for the remaining 3-month seasons of 2014 and 1st half of 2015. Temperature anomalies above 0.5°C indicate El Niño conditions, below -0.5°C indicate La Niña conditions, and in between indicate neutral conditions, i.e. neither El Niño nor La Niña. Model outlook and expert opinion suggest a weak El Niño strength to be likely if it occurs (image credit: IRI-CPC).



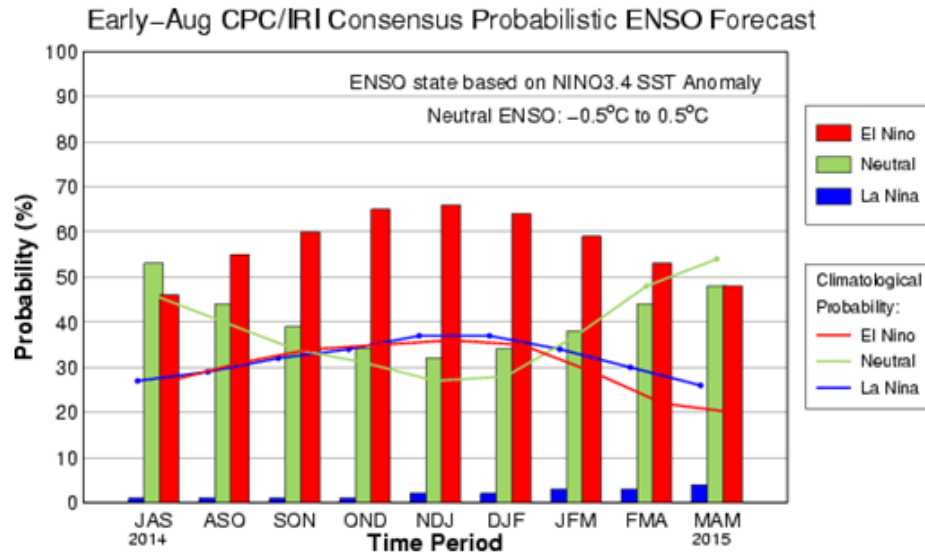


Fig. 3D: Probability of El Niño (red), La Niña (blue) and neutral conditions (green) in the remaining 3-month seasons of 2014 and 1st half of 2015. Beginning from the SON (September–November) season, there is about 60% chance of El Niño developing based on the percentage of models showing El Niño conditions. Likelihood increases slightly as we approach the end of 2014 (image credit: IRI-CPC).

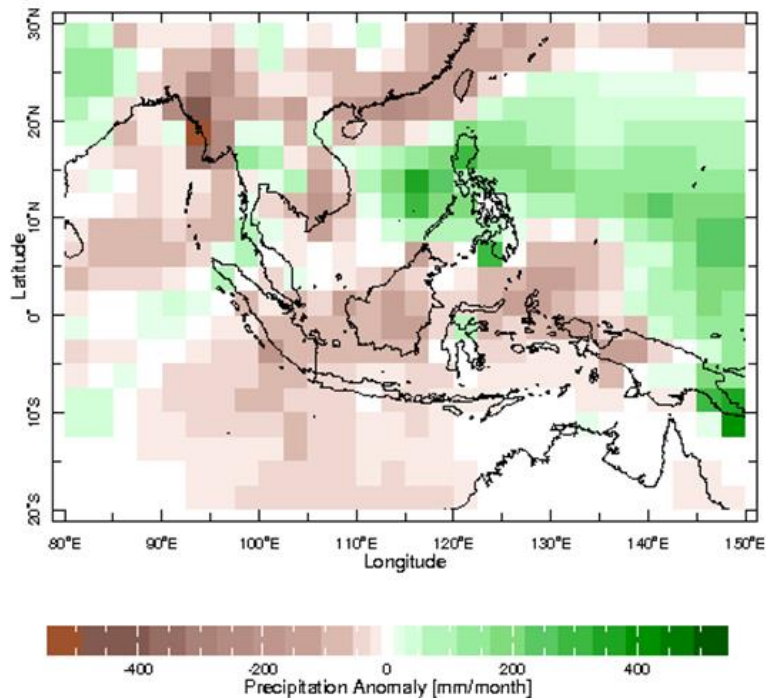


Fig. 3E: Rainfall anomaly composite for El Niño years (1965, 1972, 1982, 1987, 1991, 1993, 1994, 1997, 2002, 2004, 2006, and 2009) showing drier than average conditions (brown shades) mostly in the southern half of the region for the months June to September (image credit: IRI Data Library).

## 4. Outlook

4.1 The prevailing Southwest Monsoon conditions are likely to prevail till early October 2014 before transiting to Inter-Monsoon conditions. During this period, the current rainy season of the northern ASEAN region is expected to keep hotspot activities subdued until the onset of the Northeast Monsoon in December 2014.

4.2 In the southern ASEAN region, the dry season is expected to prevail and may extend into early October 2014. During this period, active hotspot activities accompanied with smoke haze can be expected in the fire-prone provinces of Sumatra and Borneo, particularly during extended periods of dry weather conditions. This is likely to lead to the occurrences of transboundary smoke haze in the region. Vigilance should therefore be stepped up for any escalation of hotspot activities in the fire-prone areas in the coming two months.

4.3 With a weak El Niño expected in the last quarter of 2014, most parts of the ASEAN region is expected to receive between slightly below average to average rainfall for the next three months. The rainfall outlook for the ASEAN region for September to October 2014 is shown in Figs. 4A – 4C.

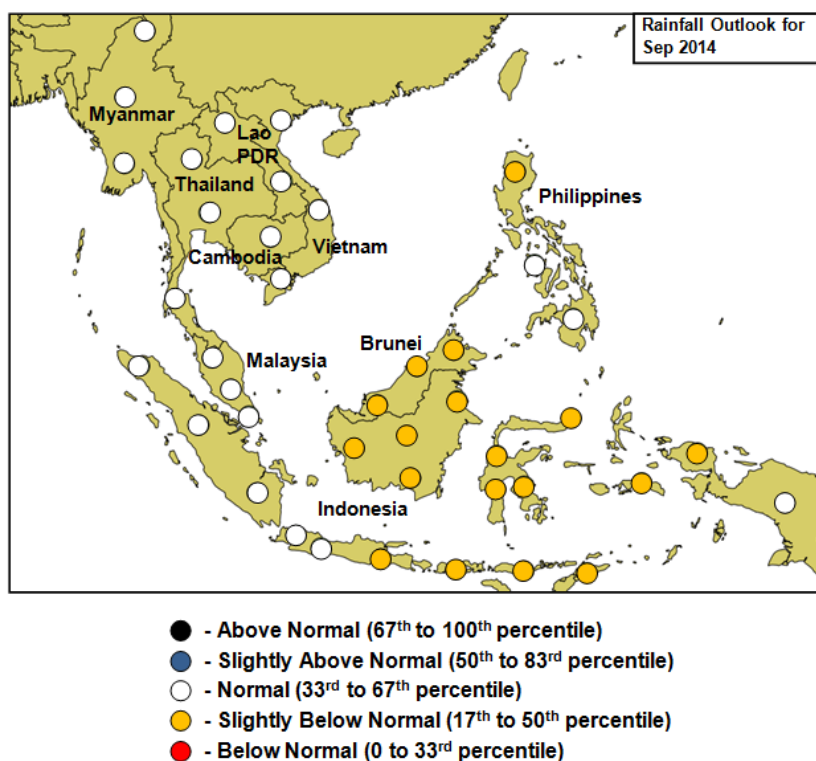


Fig. 4A: Rainfall Outlook for the ASEAN Region (Sep 2014)

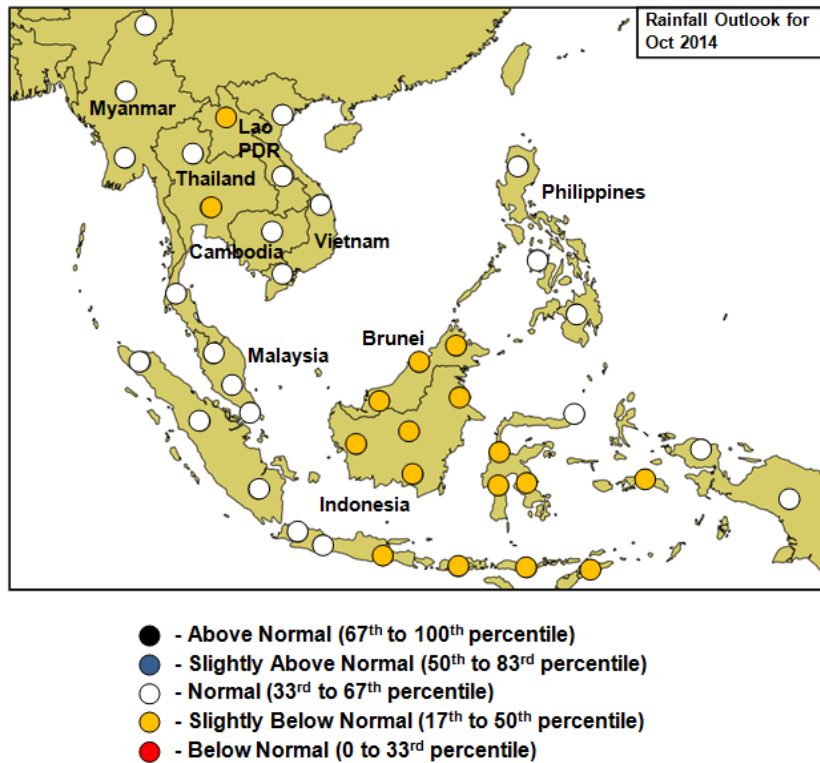


Fig. 4B: Rainfall Outlook for the ASEAN Region (Oct 2014)

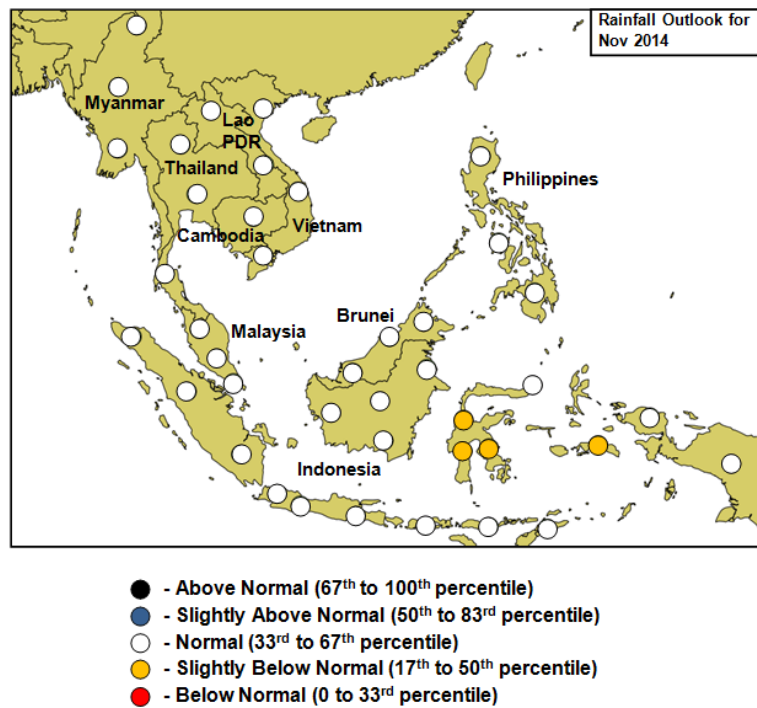


Fig. 4C: Rainfall Outlook for the ASEAN Region (Nov 2014)