

# UPDATE OF REGIONAL WEATHER AND SMOKE HAZE FOR JUNE 2015

## 1. Review of Regional Weather Conditions in May 2015

1.1 Inter-Monsoon season, which is characterised by light wind and wet weather conditions, prevailed over the ASEAN region in May 2015. The northward migration of the monsoon trough during the period brought persistent shower activities over the northern ASEAN region.

1.2 Super Typhoon Noul, which developed in early May 2015 from a tropical depression in the western Pacific Ocean made landfall over Cagayan in northeastern Luzon Island in the Philippines on 10 May 2015. “Noul” continued to track northeast towards Okinawa, Japan before dissipating in the North Pacific Ocean.

1.3 In southern ASEAN, wet weather conditions generally prevailed until mid-May. Due to the northward migration of the monsoon trough, the shower activities had gradually eased off by late May.

1.4 In May 2015, most parts of northern ASEAN region received less than 50% of normal rainfall. Most of the southern ASEAN region, except Java, received 50 – 75 % of normal rainfall. The regional rainfall distribution for May 2015 is shown in Fig. 1A.

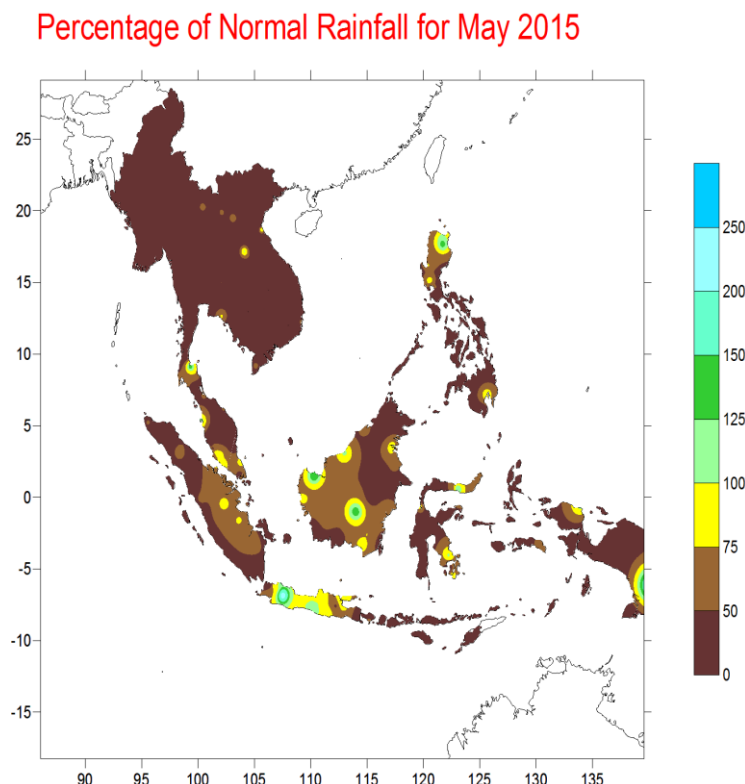
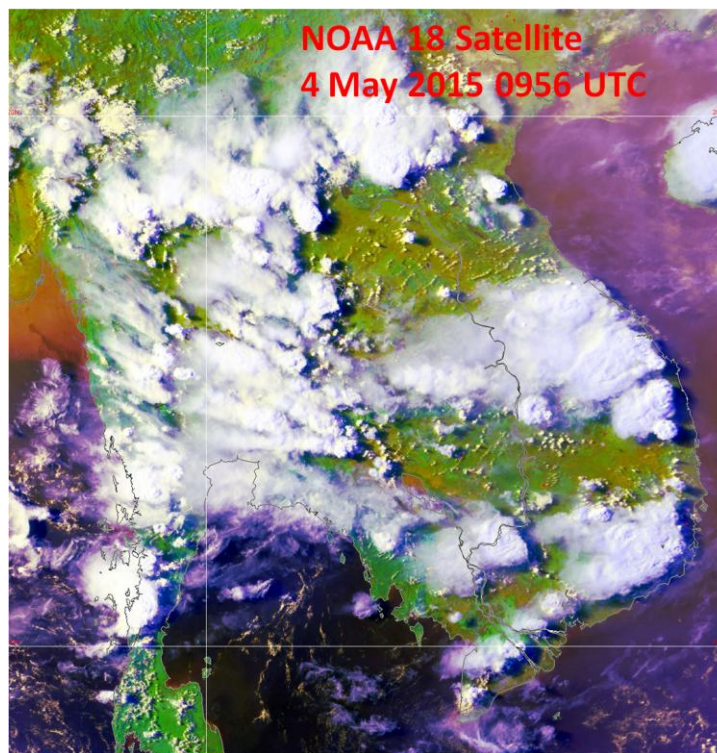


Fig. 1A: Percentage of Normal Rainfall for May 2015

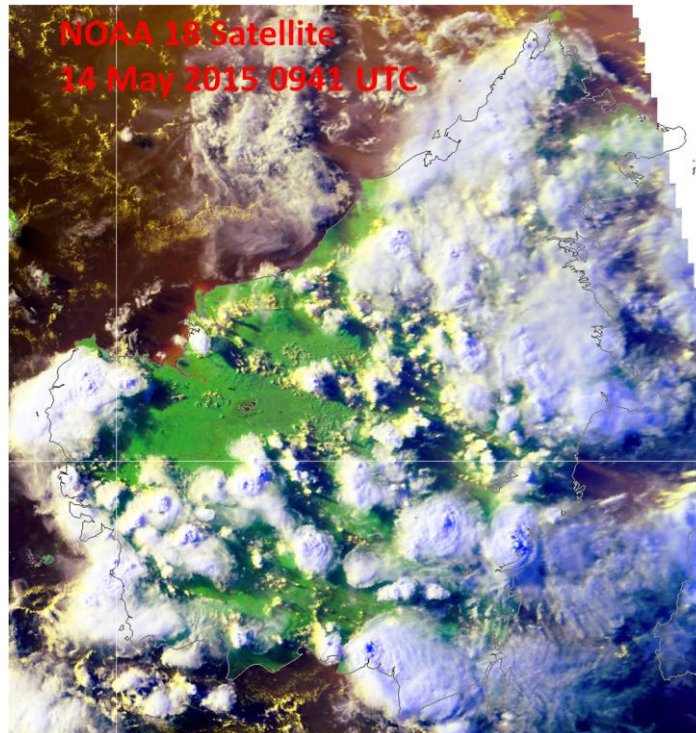
## **2. Review of Land/Forest Fires and Smoke Haze Situation**

2.1 Persistent shower activities prevailed in May 2015 over the ASEAN region. The hotspot activities were generally subdued, and there were no occurrences of significant transboundary haze during the review period.

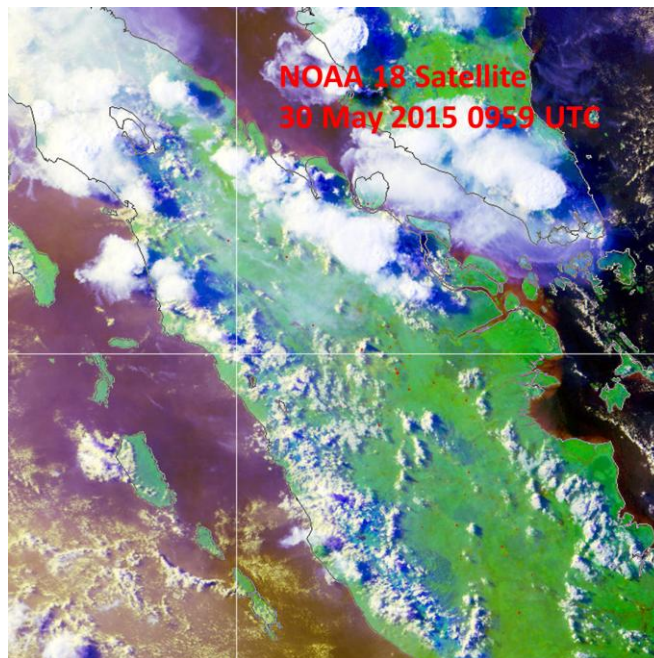
2.2 During periods of drier weather conditions in May 2015, isolated hotspots with localized smoke haze were observed on a few days. Satellite images depicting of the hotspot activities over the ASEAN region in May 2015 are shown in Figs. 2A to 2D.



**Fig. 2A: NOAA-18 satellite image on 4 May 2015 shows widespread shower activities which helped to subdue hotspot activities**

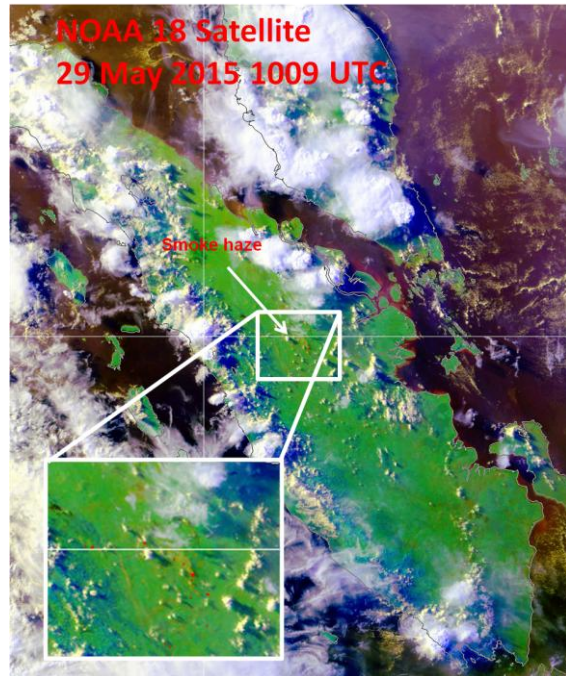


**Fig. 2B: NOAA-18 satellite picture on 14 May 2015 shows showers over most parts of Kalimantan which helped subdue the hotspot activities**



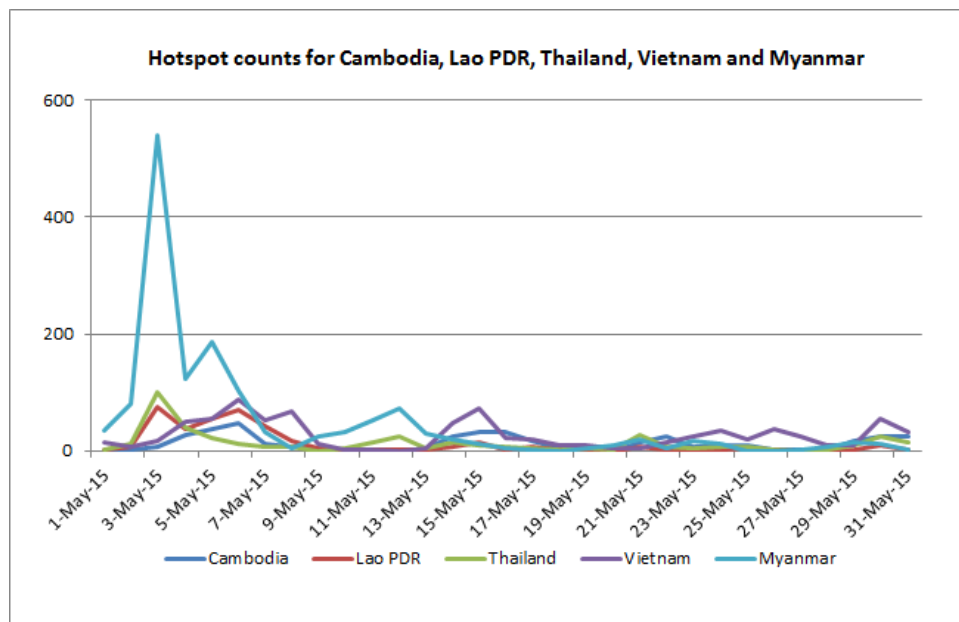
**Fig. 2C: NOAA-18 satellite picture on 30 May 2015 shows wet weather over most parts of Peninsular Malaysia and central Sumatra, with isolated hotspots over cloud-free areas.**



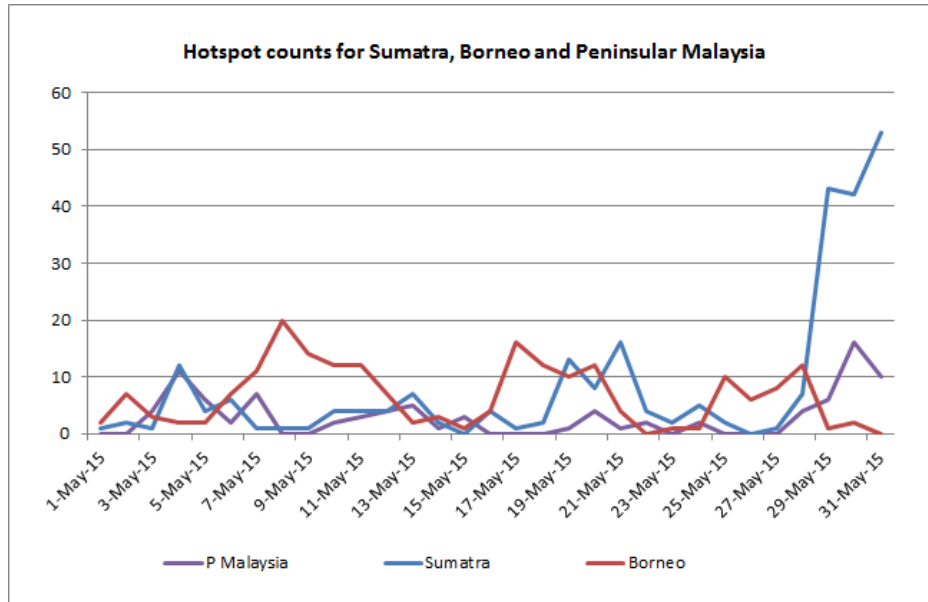


**Fig. 2D: NOAA-18 satellite picture on 29 May 2015 shows localised smoke haze emanating from hotspots in Riau province, central Sumatra**

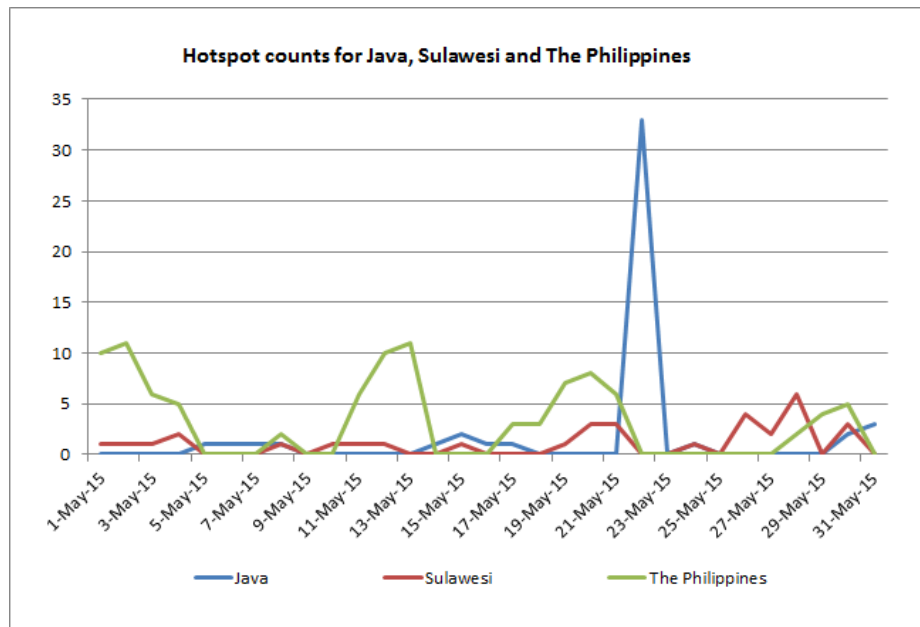
2.3 The hotspot charts for May 2015 for  
 a) Cambodia, Myanmar, Thailand, Lao PDR and Vietnam;  
 b) Sumatra, Borneo and Peninsular Malaysia; and  
 c) Java, Sulawesi and the Philippines  
 are shown in Figs. 2E to 2G respectively.



**Fig. 2E: Hotspot Counts in Cambodia, Lao PDR, Thailand, Vietnam, Myanmar for May 2015**



**Fig 2F: Hotspot Counts in Sumatra, Borneo and Peninsular Malaysia for May 2015**



**Fig. 2G: Hotspot Counts in Java, Sulawesi, Philippines for May 2015**

### 3. Status of El Niño/La Niña\*

3.1 The tropical Pacific Ocean's sea-surface temperature (SST) continues to warm in May 2015 (Figure 3A). Both its atmosphere and ocean conditions are at moderate El Nino levels. The Nino3.4 index for May is 1.13 (Figure 3B) and the latest 3-month (Mar-Apr-May) average value increased from 0.71 to 0.89.

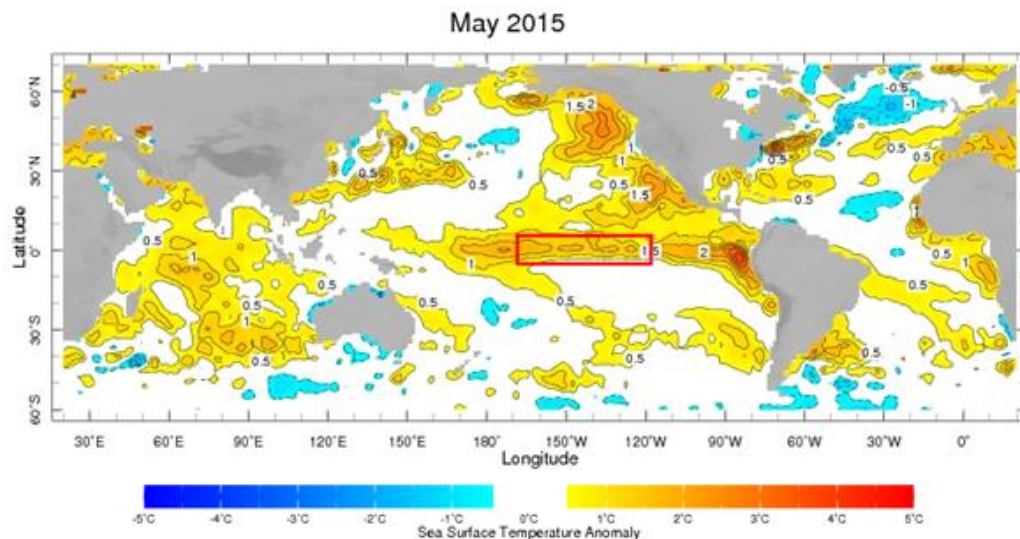
3.2 The atmospheric patterns over the tropical Pacific Ocean continue to show response to the warming of the SST. Negative anomalies in easterly trade winds

and above normal cloudiness suggest strong coupling between the atmospheric and oceanic conditions that are necessary for favourable El Niño development. International climate models and expert opinion predict 80-90% chance for this SST warming to continue (Figure 3C), with a possibility of reaching strong El Niño levels in the coming months. However, there is still a considerable spread of possible outcomes ranging from weak to strong El Niño strength (Figure 3D).

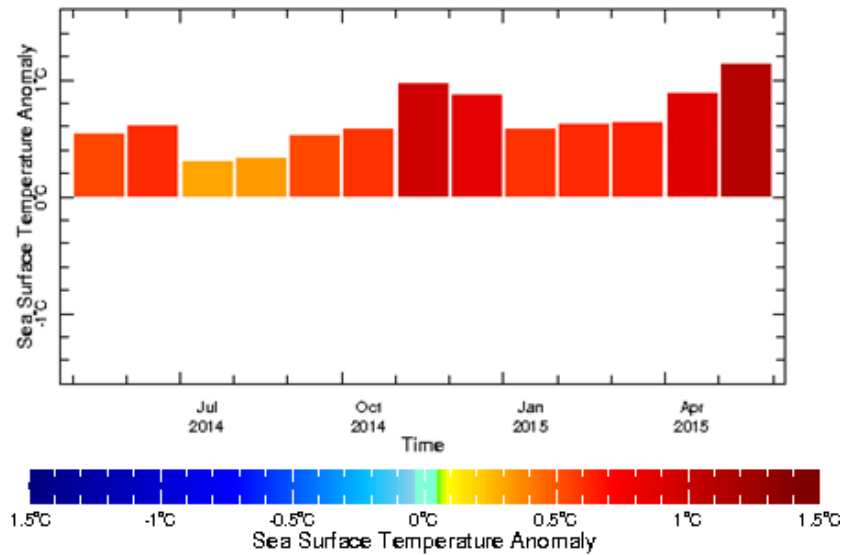
3.3 Typically the impact from El Niño for the Southeast Asia region is drier than average rainfall conditions, especially for the southern parts during June to October (Figure 3E). More locally-specific impact differs from place to place and for different seasons.

3.4 The region is now in the Southwest Monsoon season (June – September), where El Niño is known to have considerable impact (dryness) on the western part of the Maritime Continent. Thus with the current El Niño developing conditions, the upcoming Jul-Jul-August-September (JJAS) faces risk of extended periods of drier and warmer conditions in this part of Southeast Asia.

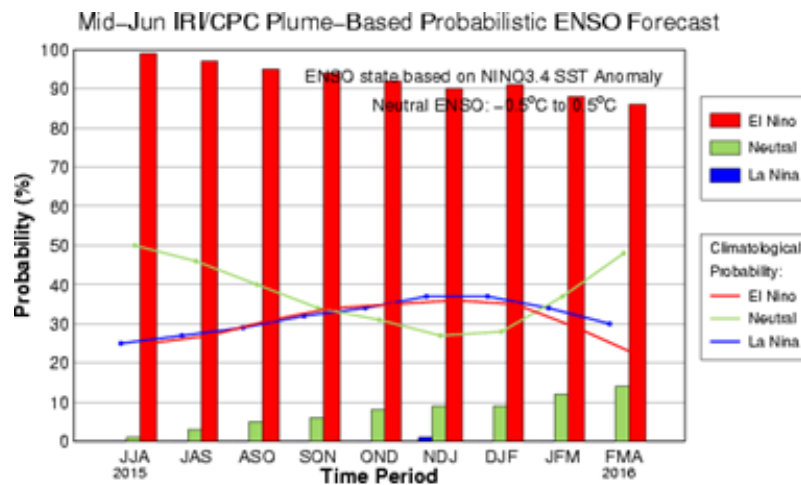
*\* For El Niño/La Niña updates, ASMC assesses information provided by the World Meteorological Organization (WMO) and various international climate centres, such as the Climate Prediction Center (CPC) US, the Bureau of Meteorology (BoM) Australia, as well information from the International Research 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](#).*



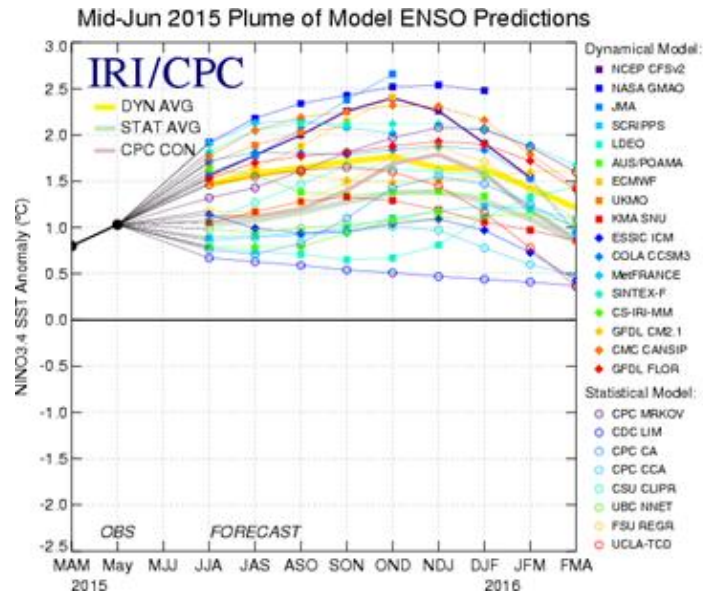
**Fig. 3A: Warming of the tropical Pacific Ocean continued over the Niño3.4 region (red box, 120°W-170°W and 5°S-5°N) for May 2015 (image credit: IRI Map Room). Yellow shades show regions of relative warming, while blue shades show regions of relative cooling with respect to 1971-2000 climatology for that month.**



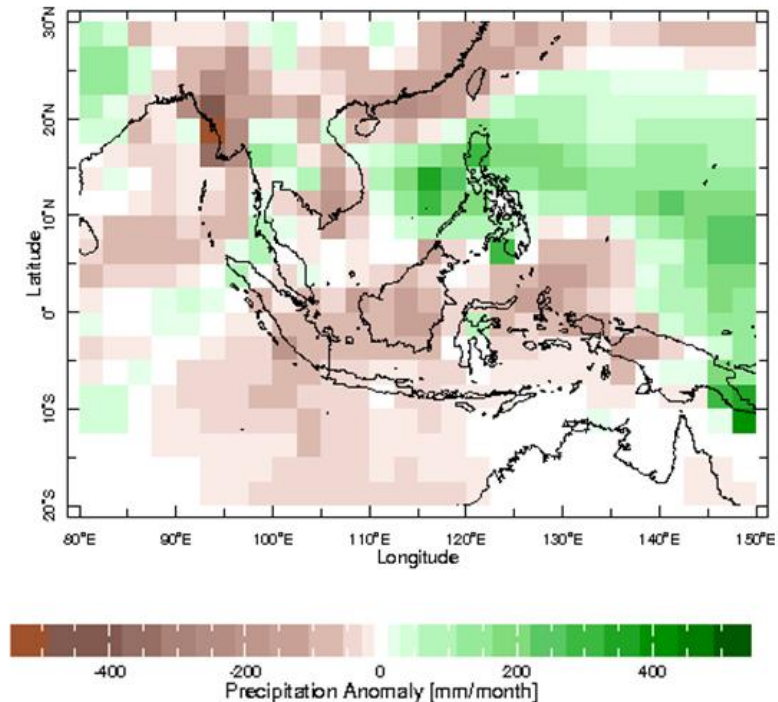
**Fig. 3B: Monthly sea-surface temperature anomaly over the Niño3.4 region (120°W-170°W and 5°S-5°N) over the tropical Pacific Ocean from May 2014 (left) to May 2015 (right) (image credit: IRI Map Room). Sustained warming has been observed in the last 12 months and the warming rate has increased recently. The running 3-month average value has hit above 0.5, which is a threshold set to indicate El Niño conditions, for seven consecutive months.**



**Fig. 3C: Probability of El Niño (red), La Niña (blue) and neutral conditions (green) for 2015. For the next few seasons, there is around 80% - 90% chance of El Niño developing based on international model outlooks and expert assessment (image credit: IRI-CPC).**

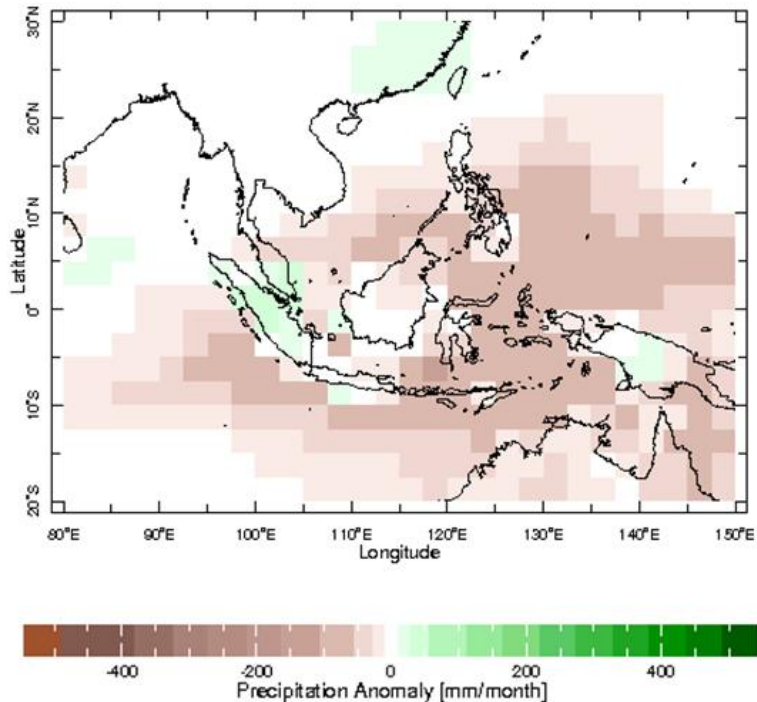


**Fig. 3D: Forecasts of El Niño strength (in terms of the Niño3.4 index) for 2015 from various seasonal prediction models of international climate centres. Temperature anomalies above 0.5°C indicate El Niño conditions, below -0.5°C indicate La Niña conditions, and in between indicate neutral conditions, i.e. neither El Niño nor La Niña. In the coming months, there is still a considerable spread of climate model outlooks for tropical Pacific Ocean SST, but a majority are in the moderate region (between 1.0°C and 1.5°C) (image credit: IRI-CPC).**



**Fig. 3E: June to October rainfall anomaly composite for El Niño years (1982, 1986, 1987, 1991, 1994, 1997, 2002, 2004, 2006, and 2009) showing drier than average conditions (brown shades) mostly in the southern half of the region (image credit: IRI Data Library).**





**Figure 3F: December to February rainfall anomaly composite for El Niño years (1982, 1986, 1987, 1991, 1994, 1997, 2002, 2004, 2006, and 2009) showing drier than average conditions (brown shades) constrained to mostly the southern and eastern Maritime Continent (image credit: IRI Data Library).**

## 4. Outlook

4.1 The Inter-Monsoon conditions in May 2015 have given way to Southwest Monsoon conditions in early June 2015. With the monsoon trough across the northern South China Sea area, increased in shower activities can be expected for the northern ASEAN region.

4.1 The traditional dry season in the southern ASEAN region is associated with the Southwest Monsoon season where extended periods of drier weather conditions can occur from time to time. The El Niño conditions present in the equatorial Pacific Ocean are expected to persist until the end of the year, and this could further exacerbate the impact of dry weather conditions in the region, and lead to an increase of hotspot activities especially in fire-prone provinces of Sumatra and Kalimantan. Vigilance should be stepped up for any escalation of fire activities in the coming dry season.

4.2 In the next three months, slightly below to below-normal rainfall are expected for most parts of southern ASEAN region, except over northern Sumatra where normal rainfall is likely. For northern ASEAN region, normal rainfall conditions are expected except in Vietnam where below-normal rainfall is forecast. The rainfall outlook for the ASEAN region from June 2015 to August 2015 is shown in Figs. 4A – 4C.

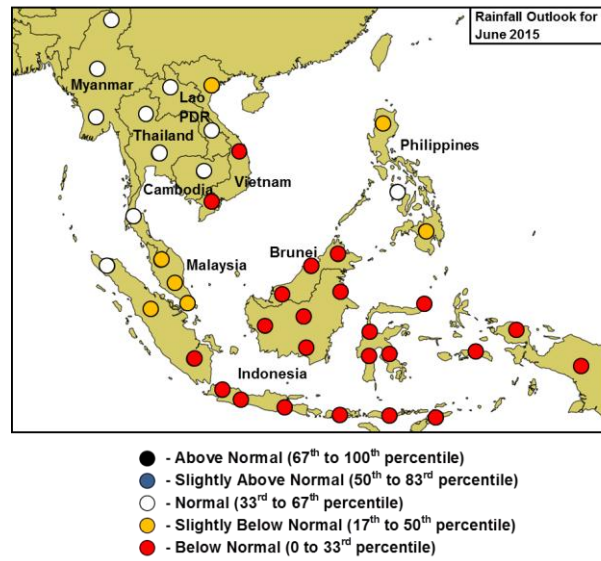


Fig. 4A: Rainfall Outlook for the ASEAN Region (June 2015)

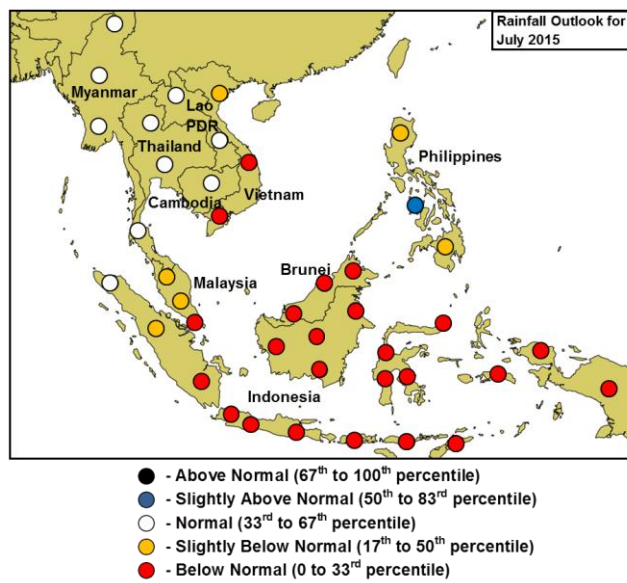
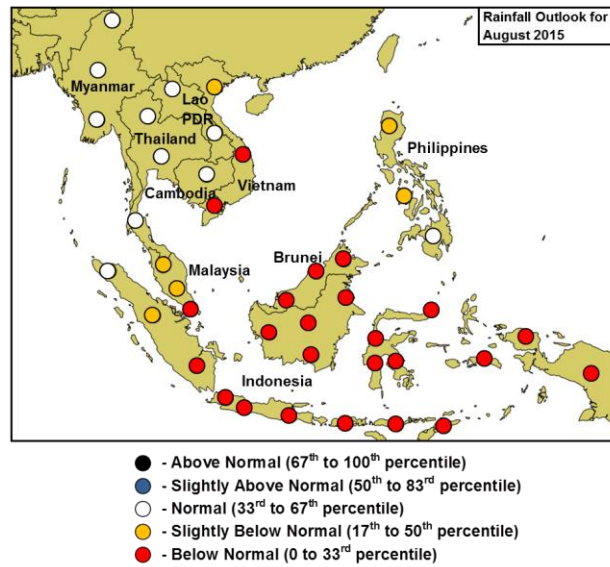


Fig. 4B: Rainfall Outlook for the ASEAN Region (July 2015)



**Fig. 4C: Rainfall Outlook for the ASEAN Region (August 2015)**