

## SEASONAL PREDICTION BY ECMWF MODEL FOR THE PERIOD APRIL TO SEPTEMBER 2011

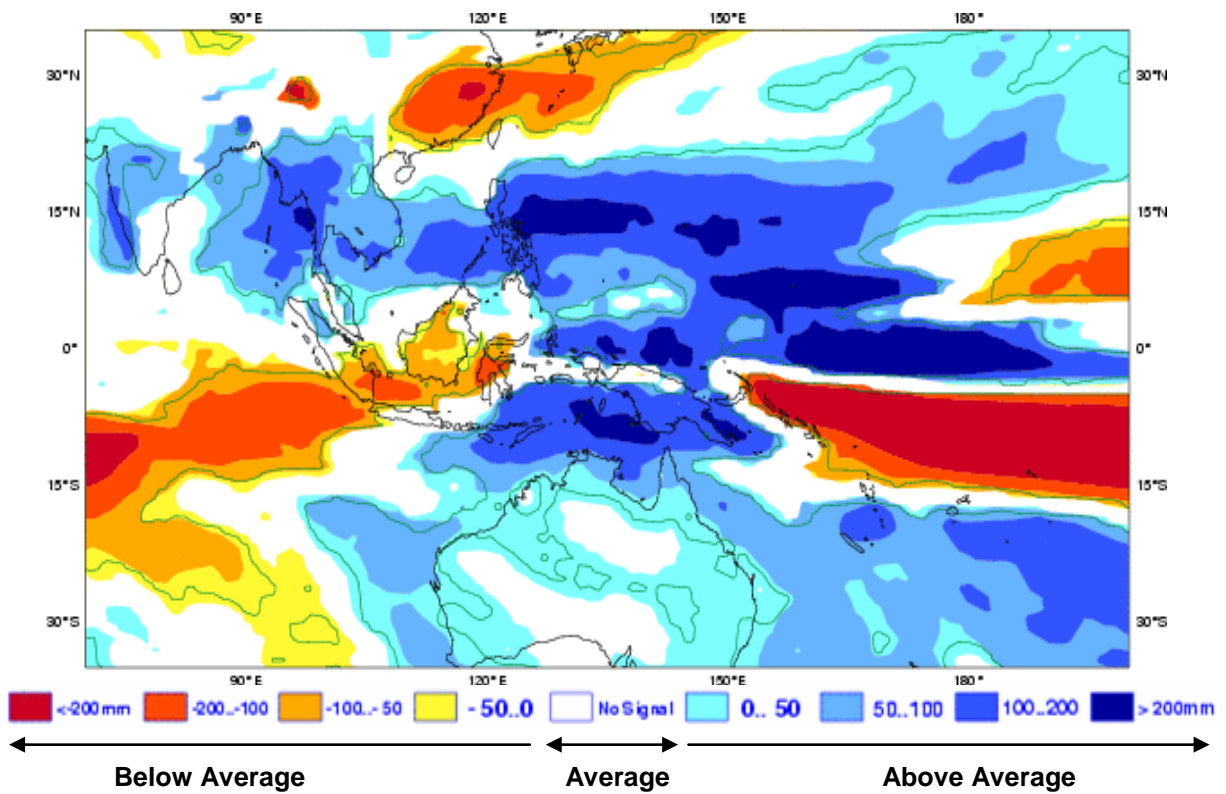
**Figures 1a, 1b, 1c, and 1d** represent the mean of total precipitation anomalies, that is, the differences between predicted precipitation and the long-term mean precipitation, for three monthly periods; April-May-June, May-June-July, June-July-August and July-August-September respectively, from the European Centre for Medium-Range Weather Forecast (ECMWF) seasonal forecast model.

The three-month mean prediction for April-May-June period shows average rainfall amount is expected throughout Peninsular Malaysia, Sabah and Sarawak. However some area especially over the inland of Sarawak are expected to experience slightly below average of rainfall amount.

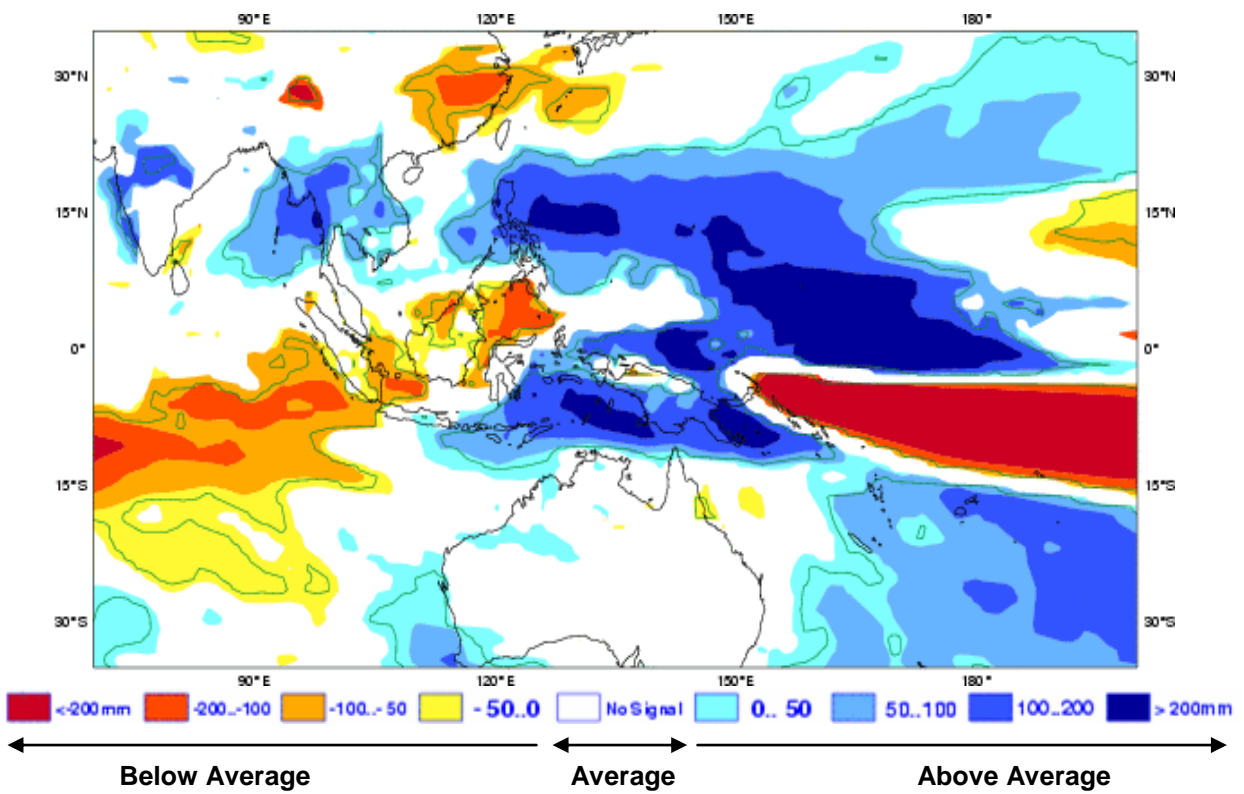
The three-month mean prediction for May-June-July period shows average rainfall amount is expected over the Peninsular Malaysia and most areas of Sarawak. On the other hand, the eastern Sarawak and southern Sabah are expected to have slightly below average of rainfall amount.

The three-month mean prediction for June-July-August period is largely follows the three-month mean prediction of May-June-July. Average rainfall amount is expected over the Peninsular Malaysia and most area of Sarawak, whilst slightly below average over the eastern Sarawak and Sabah.

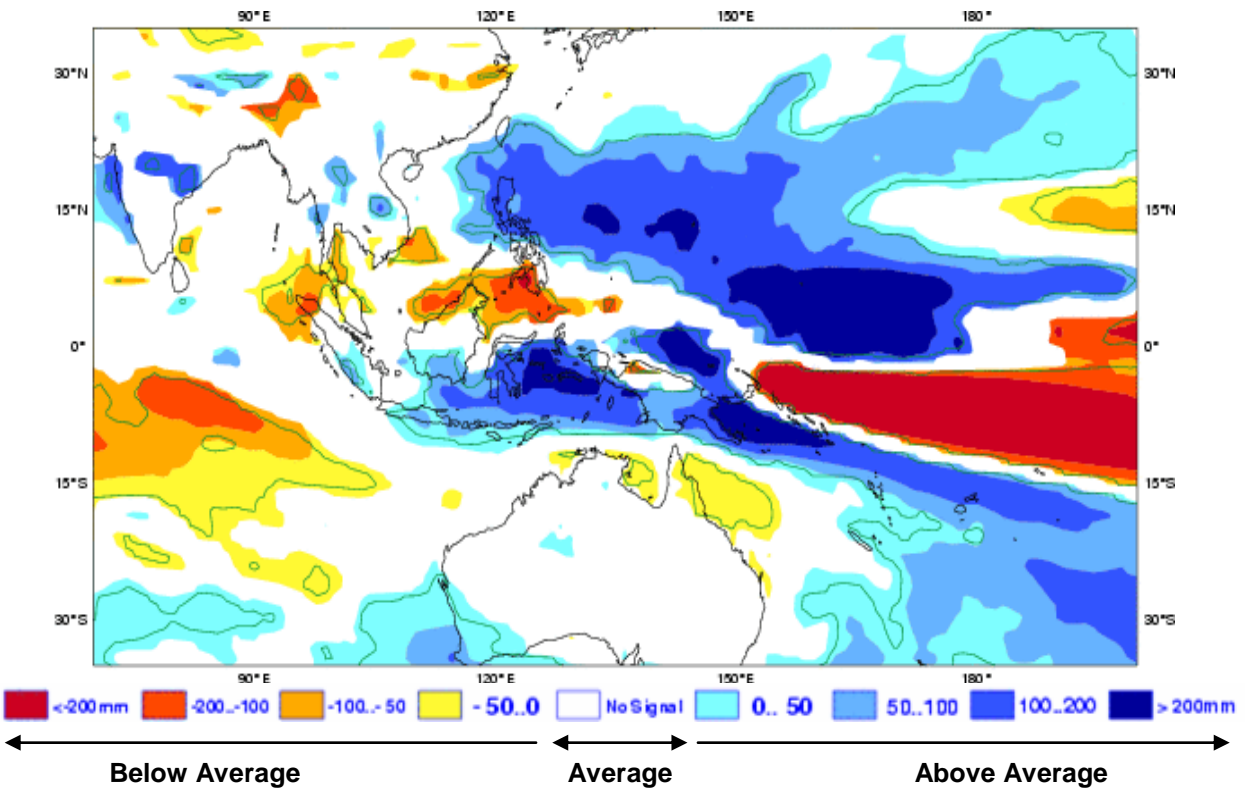
The three-month mean prediction for July-August-September period depicts that the southern Peninsular Malaysia and western Sarawak are expected to experience slightly above average of rainfall amount. On the other hand, the rest area of Peninsula, Sarawak and Sabah with average of rainfall amount.



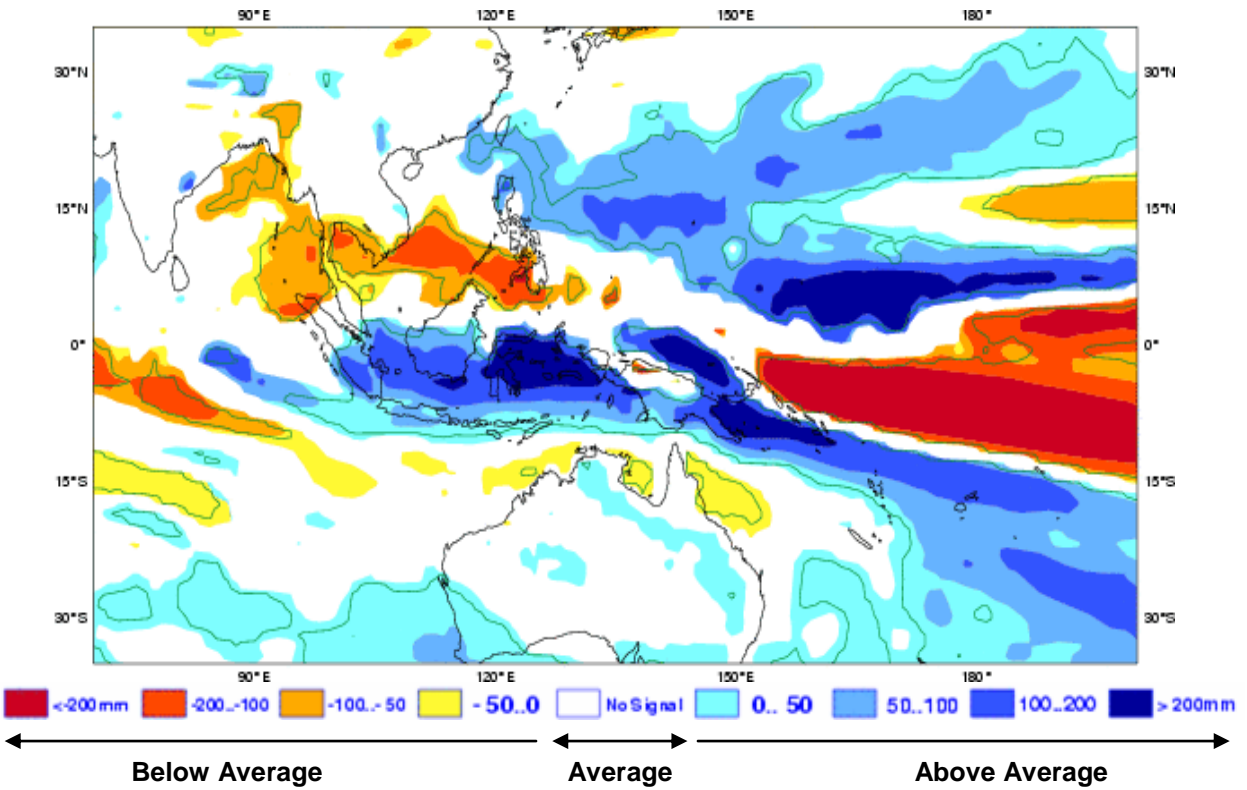
**Figure 1a:** Predicted Seasonal Mean Precipitation Anomaly (mm) by ECMWF Model for April-May-June



**Figure 1b:** Predicted Seasonal Mean Precipitation Anomaly (mm) by ECMWF Model for May-June-July



**Figure 1c:** Predicted Seasonal Mean Precipitation Anomaly (mm) by ECMWF Model for June-July-August



**Figure 1d:** Predicted Seasonal Mean Precipitation Anomaly (mm) by ECMWF Model for July-August-September

## WEATHER OUTLOOK FROM APRIL UNTIL SEPTEMBER 2011

Based on a combination of information extracted from seasonal predictions issued by ECMWF<sup>1</sup>, the Peninsular Malaysia is expected to experience normal weather conditions throughout the forecast period. However, slightly above average of rainfall amount is also expected over the southern Peninsular Malaysia during August to September.

Over Sarawak, normal weather condition is expected throughout the forecast period except over the Miri Division. This area is expected to receive slightly below average of rainfall amount during April to August.

The Labuan Federal Territory is expected to have normal weather condition throughout the forecast period except in August whereas slightly below average of rainfall amount is expected.

Over Sabah, the Sandakan and Tawau Divisions are expected to experience slightly dry weather conditions during May before shifted to Kudat Division from July to September. The rest of Sabah would be getting normal weather condition throughout the forecast period.

**Tables 1 and 2** show the summary and detail explanations respectively on weather outlook from April until September 2011 according to states in Malaysia.

**Note:**

[1] *European Centre for Medium- Range Weather Forecast (ECMWF)*

**Table 1: Summary on Weather Outlook from April until September 2011**

State		Monthly Rainfall Amount (mm) Forecast	Period	Weather Outlook (In terms of Rainfall)
Perlis		140 – 220	April	Average
		130 – 200	May	Average
		90 – 150	June	Average
		130 – 210	July	Average
		150 – 240	August	Average
		170 – 270	September	Average
Kedah	Mainland	150 – 240	April	Average
		170 – 270	May	Average
		120 – 200	June	Average
		150 – 240	July	Average
		160 – 250	August	Average
		220 – 340	September	Average
	Langkawi	150 – 240	April	Average
		160 – 240	May	Average
		190 – 300	June	Average
		200 – 310	July	Average
		250 – 390	August	Average
		260 – 410	September	Average
Penang		160 – 260	April	Average
		160 – 290	May	Average
		120 – 210	June	Average
		130 – 240	July	Average
		170 – 300	August	Average
		250 – 410	September	Average

<b>Perak</b>	130 – 320	April	Average
	80 – 260	May	Average
	60 – 170	June	Average
	80 – 200	July	Average
	90 – 200	August	Average
	130 – 250	September	Average
<b>Selangor</b>	210 – 370	April	Average
	80 – 290	May	Average
	90 – 170	June	Average
	100 – 200	July	Average
	120 – 230	August	Average
	140 – 250	September	Average
<b>Kuala Lumpur</b>	210 – 340	April	Average
	160 – 290	May	Average
	100 – 170	June	Average
	100 – 190	July	Average
	120 – 200	August	Average
	150 – 250	September	Average
<b>Putrajaya</b>	210 – 370	April	Average
	80 – 290	May	Average
	90 – 170	June	Average
	120 – 200	July	Average
	130 – 230	August	Average
	140 – 250	September	Average
<b>Negeri Sembilan</b>	120 – 370	April	Average
	80 – 210	May	Average
	90 – 210	June	Average
	130 – 230	July	Average
	140 – 230	August	Average
	140 – 250	September	Average

<b>Malacca</b>		120 – 190	April	Average
		130 – 210	May	Average
		130 – 210	June	Average
		140 – 230	July	Average
		150 – 230	August	Average
		160 – 250	September	Average
<b>Kelantan</b>	<b>Pasir Mas, Tanah Merah, Jeli, Gua Musang, Kuala Krai</b>	70 – 110	April	Average
		110 – 170	May	Average
		120 – 200	June	Average
		110 – 180	July	Average
		140 – 220	August	Average
		200 – 300	September	Average
	<b>Tumpat, Bachok, Kota Bharu, Pasir Puteh, Machang</b>	180 – 290	April	Average
		80 – 140	May	Average
		90 – 150	June	Average
		120 – 190	July	Average
		130 – 200	August	Average
		150 – 230	September	Average
<b>Terengganu</b>		70 – 120	April	Average
		80 – 130	May	Average
		90 – 140	June	Average
		90 – 140	July	Average
		100 – 170	August	Average
		150 – 230	September	Average
<b>Pahang</b>	<b>Kuantan, Pekan, Rompin</b>	70 – 230	April	Average
		110 – 230	May	Average
		90 – 200	June	Average
		100 – 190	July	Average
		110 – 230	August	Average
		120 – 260	September	Average

<b>Pahang</b>	<b>Lipis, Jerantut, Raub, Maran, Temerloh</b>	130 – 230	April	Average
		120 – 210	May	Average
		90 – 160	June	Average
		90 – 160	July	Average
		110 – 190	August	Average
		140 – 260	September	Average
	<b>Cameron Highlands</b>	210 – 330	April	Average
		210 – 330	May	Average
		140 – 210	June	Average
		170 – 270	July	Average
		180 – 280	August	Average
		220 – 340	September	Average
<b>Johore</b>	<b>Mersing, Kota Tinggi</b>	150 – 240	April	Average
		110 – 170	May	Average
		110 – 180	June	Average
		130 – 200	July	Average
		140 – 210	August	Average
		130 – 210	September	Average
	<b>Kluang, Batu Pahat, Segamat, Muar, Ledang</b>	150 – 250	April	Average
		140 – 230	May	Average
		100 – 160	June	Average
		110 – 180	July	Average
		160 – 230	August	Slightly Above Average
		170 – 220	September	Slightly Above Average
	<b>Pontian, Johor Bahru, Nusajaya</b>	180 – 280	April	Average
		170 – 270	May	Average
		120 – 190	June	Average
		140 – 220	July	Average
		150 – 230	August	Average
		150 – 230	September	Average



<b>Sarawak</b>	<b>Kuching Samarahan</b>	90 – 150	April	Average
		200 – 300	May	Average
		160 – 250	June	Average
		150 – 240	July	Average
		170 – 270	August	Average
		210 – 320	September	Average
	<b>Sri Aman Betong</b>	210 – 320	April	Average
		180 – 290	May	Average
		160 – 250	June	Average
		150 – 230	July	Average
		190 – 290	August	Average
		230 – 350	September	Average
	<b>Mukah Sarikei Sibu</b>	220 – 340	April	Average
		180 – 280	May	Average
		150 – 230	June	Average
		130 – 210	July	Average
		170 – 260	August	Average
		210 – 330	September	Average
	<b>Kapit Bintulu</b>	190 – 300	April	Average
		180 – 280	May	Average
		200 – 310	June	Average
		190 – 300	July	Average
		220 – 350	August	Average
		240 – 380	September	Average
<b>Miri Limbang</b>	100 – 140	April	Slightly Below Average	
	110 – 160	May	Slightly Below Average	
	130 – 190	June	Slightly Below Average	
	110 – 160	July	Slightly Below Average	
	130 – 180	August	Slightly Below Average	
	200 – 320	September	Average	

<b>Labuan</b>		170 – 270	April	Average
		240 – 360	May	Average
		230 – 360	June	Average
		230 – 360	July	Average
		170 – 240	August	Slightly Below Average
		280 – 430	September	Average
<b>Sabah</b>	<b>Pedalaman Pantai Barat</b>	90 – 150	April	Average
		170 – 260	May	Average
		230 – 360	June	Average
		210 – 330	July	Average
		210 – 330	August	Average
		240 – 370	September	Average
	<b>Kudat</b>	50 – 80	April	Average
		70 – 120	May	Average
		90 – 150	June	Average
		60 – 90	July	Slightly Below Average
		70 – 100	August	Slightly Below Average
		70 – 100	September	Slightly Below Average
	<b>Sandakan</b>	80 – 140	April	Average
		70 – 110	May	Slightly Below Average
		150 – 230	June	Average
		150 – 230	July	Average
		170 – 270	August	Average
		190 – 290	September	Average
	<b>Tawau</b>	70 – 120	April	Average
		80 – 110	May	Slightly Below Average
		130 – 210	June	Average
		150 – 240	July	Average
		160 – 250	August	Average
		130 – 210	September	Average

**Table 2: Detail Explanations on Weather Outlook from April until September 2011**

<b>State</b>	<b>Weather Outlook</b>
<b>Perlis</b>	Average rainfall amount is expected throughout the forecast period. Total monthly rainfall amount would be expected between 140 – 220 mm in April, 130 – 200 mm in May, 90 – 150 mm in June, 130 – 210 mm in July, 150 – 240 mm in August and 170 – 270 mm in September.
<b>Kedah</b>	Average rainfall amount is expected throughout the forecast period for both Mainland and Langkawi. For Mainland areas, total monthly rainfall amount would be expected between 150 – 240 mm in April, 170 – 270 mm in May, 120 – 200 mm in June, 150 – 240 mm in July, 160 – 250 mm in August and 220 – 340 mm in September. Langkawi is expected to receive monthly rainfall amount 150 – 240 mm in April, 160 – 240 mm in May, 190 – 300 mm in June, 200 – 310 mm in July, 250 – 390 mm in August and 260 – 410 mm in September.
<b>Penang</b>	Average rainfall amount is expected throughout the forecast period. Total monthly rainfall amount would be expected between 160 – 260 mm in April, 160 – 290 mm in May, 120 – 210 mm in June, 130 – 240 mm in July, 170 – 300 mm in August and 250 – 410 mm in September.
<b>Perak</b>	Average rainfall amount is expected throughout the forecast period. Total monthly rainfall amount would be expected between 130 – 320 mm in April, 80 – 260 mm in May, 60 – 170 mm in June, 80 – 200 mm in July, 90 – 200 mm in August and 130 – 250 mm in September.
<b>Selangor</b>	Average rainfall is expected throughout forecast period. Total monthly rainfall amount would be expected between 210 – 370 mm in April, 80 – 290 mm in May, 90 – 170 mm in June, 100 – 200 mm in July, 120 – 230 mm in August and 140 – 250 mm in September.
<b>Putrajaya</b>	Average rainfall is expected throughout forecast period. Total monthly rainfall amount would be expected between 210 – 370 mm in April, 80 – 290 mm in May, 90 – 170 mm in June, 120 – 200 mm in July, 130 – 230 mm in August and 140 – 250 mm in September.
<b>Kuala Lumpur</b>	Average rainfall is expected throughout forecast period. Total monthly rainfall amount would be expected between 210 – 340 mm in April, 160 – 290 mm in May, 100 – 170 mm in June, 100 – 190 mm in July, 120 – 200 mm in August and 150 – 250 mm in September.
<b>Negeri Sembilan</b>	Average rainfall is expected throughout forecast period. Total monthly rainfall amount would be expected between 120 – 370 mm in April, 80 – 210 mm in May, 90 – 210 mm in June, 130 – 230 mm in July, 140 – 230 mm in August and 140 – 250 mm in September.

<b>Malacca</b>	Average rainfall amount is expected throughout the forecast period. Total monthly rainfall amount would be expected between 120 – 190 mm in April, 130 – 210 mm in May, 130 – 210 mm in June, 140 – 230 mm in July, 150 – 230 mm in August and 160 – 250 mm in September.
<b>Kelantan</b>	Average rainfall amount is expected throughout the forecast period. For Pasir Mas, Tanah Merah, Jeli, Gua Musang and Kuala Krai districts, total monthly rainfall amount would be expected between 70 – 110 mm in April, 110 – 170 mm in May, 120 – 200 mm in June, 110 – 180 mm in July, 140 – 220 mm in August and 200 – 300 mm in September. Tumpat, Bachok, Kota Bharu, Pasir Puteh and Machang districts, are expected to receive monthly rainfall amount between 180 – 290 mm in April, 80 – 140 mm in May, 90 – 150 mm in June, 120 – 190 mm in July, 130 – 200 mm in August and 150 – 230 mm in September.
<b>Terengganu</b>	Average rainfall amount is expected throughout the forecast period. Total monthly rainfall amount would be expected between 70 – 120 mm in April, 80 – 130 mm in May, 90 – 140 mm in June, 90 – 140 mm in July, 100 – 170 mm in August and 150 – 230 mm in September.
<b>Pahang</b>	Average rainfall amount is expected throughout the forecast period for all districts in Pahang. Total monthly rainfall amount for Kuantan, Pekan and Rompin districts would be expected between 70 – 230 mm in April, 110 – 230 mm in May, 90 – 200 mm in June, 100 – 190 mm in July, 110 – 230 mm in August and 120 – 260 mm in September. For Lipis, Jerantut, Raub, Maran and Temerloh districts are expected to receive monthly rainfall amount between 130 – 230 mm in April, 120 – 210 mm in May, 90 – 160 mm in June, 90 – 160 mm in July, 110 – 190 mm in August and 140 – 260 mm in September. Cameron Highlands is expected to receive monthly rainfall amount between 210 – 330 mm in April, 210 – 330 mm in May, 140 – 210 mm in June, 170 – 270 mm in July, 180 – 280 mm in August and 220 – 340 mm in September.
<b>Johore</b>	Average rainfall amount is expected throughout the forecast period except for Kluang, Batu Pahat, Segamat, Muar, and Ledang districts where slightly above average rainfall amount are expected in August and September. Total monthly rainfall for Mersing and Kota Tinggi districts would be expected between 150 – 240 mm in April, 110 – 170 mm in May, 110 – 180 mm in June, 130 – 200 mm in July, 140 – 210 mm in August and 130 – 210 mm in September. For Kluang, Batu Pahat, Segamat, Muar and Ledang districts are expected to receive monthly rainfall amount between 150 – 250 mm in April, 140 – 230 mm in May, 100 – 160 mm in June, 110 – 180 mm in July, 160 – 230 mm in August and 170 – 220 mm in September. Pontian, Johor Bahru and Nusajaya districts are expected to receive monthly rainfall amount between 180 – 280 mm in April, 170 – 270 mm in May, 120 – 190 mm in June, 140 – 220 mm in July, 150 – 230 mm in August and 150 – 230 mm in September.
<b>Labuan</b>	Average rainfall amount is expected throughout the forecast period except for August, slightly below average rainfall amount is expected. Total monthly rainfall amount would be expected between 170 – 270 mm in April, 240 – 360 mm in May, 230 – 360 mm in June, 230 – 360mm in July, 170 – 240 mm in August and 280 – 430 mm in September.

<p style="text-align: center;"><b>Sarawak</b></p>	<p>Sarawak is generally expected to receive normal rainfall amount throughout the forecast period except for Miri Division, slightly below average rainfall amount is expected from April to August. Total monthly rainfall amount would be expected between 90 – 150 mm in April, 200 – 300 mm in May, 160 – 250 mm in June, 150 – 240 mm in July, 170 – 270 mm in August and 210 – 320 mm in September for Kuching and Samarahan; 210 – 320 mm in April, 180 – 290 mm in May, 160 – 250 mm in June, 150 – 230 mm in July, 190 – 290 mm in August and 230 – 350 mm in September for Sri Aman and Betong; 220 – 340 mm in April, 180 – 280 mm in May, 150 – 230 mm in June, 130 – 210 mm in July, 170 – 260 mm in August and 210 – 330 mm in September for Mukah, Sarikei and Sibü; 190 – 300 mm in April, 180 – 280 mm in May, 200 – 310 mm in June, 190 – 300 mm in July, 220 – 350 mm in August and 240 – 380 mm in September for Kapit and Bintulu; 100 – 140 mm in April, 110 – 160 mm in May, 130 – 190 mm in June, 110 – 160 mm in July, 130 – 180 mm in August and 200 – 320 mm in September for Miri and Limbang.</p>
<p style="text-align: center;"><b>Sabah</b></p>	<p>Average rainfall amount is expected throughout the forecast period for all divisions in Sabah except for in Kudat, Sandakan dan Tawau Divisions. Slightly below average rainfall amount is expected over Sandakan and Tawau during May while Kudat from July until September. Total monthly rainfall amount would be expected between 90 – 150 mm in April, 170 – 260 mm in May, 230 – 360 mm in June, 210 – 330 mm in July, 210 – 330 mm in August and 240 – 370 mm in September for Pedalaman and Pantai Barat; 50 – 80 mm in April, 70 – 120 mm in May, 90 – 150 mm in June, 60 – 90 mm in July, 70 – 100 mm in August and 70 – 100 mm in September for Kudat; 80 – 140 mm in April, 70 – 110 mm in May, 150 – 230 mm in June, 150 – 230 mm in July, 170 – 270 mm in August and 190 – 290 mm in September for Sandakan; 70 – 120 mm in April, 80 – 110 mm in May, 130 – 210 mm in June, 150 – 240 mm in July, 160 – 250 mm in August and 130 – 210 mm in September for Tawau.</p>

**Note:**

Malaysian Meteorological Department would continue to issue update of weather outlook should there be any significant changes in the forecast.

**Updated by:**

Research Section  
 Technical Development Division  
 Malaysian Meteorological Department  
 Ministry of Science, Technology and Innovation

**On:** 21 March 2011