

**REPORT ON HEAVY RAIN OCCURENCE
THAT CAUSE FLOODS IN PAHANG
ON 02-05 DECEMBER 2009**



**Prepared by:
Kuantan Meteorological Office
Malaysian Meteorological Department
Ministry of Science, Technology and Innovation**

Introduction

This report is about the occurrence of heavy rainfall on 2 until 5 December 2009 that caused floods in Pahang state. Over Pahang, the flood started on 2 December and generally ended on 8 December 2009 with 2,133 flood victims recorded. Kuantan district was recorded as the worst affected with 12 villages involved. Inland areas such as Bera district also affected when rivers overflowed resulting low lying areas and houses at the river basins submerged.

Analysis of Rainfall from 01- 05 December 2009

The amount of rainfall which recorded by 4 principal meteorological stations in Pahang for the period of 01-05 December 2009 as shown in Table 1. Whereas as shown in Table 2, accumulated rainfall for Kuantan station for 5 days period nearly reach the monthly mean.

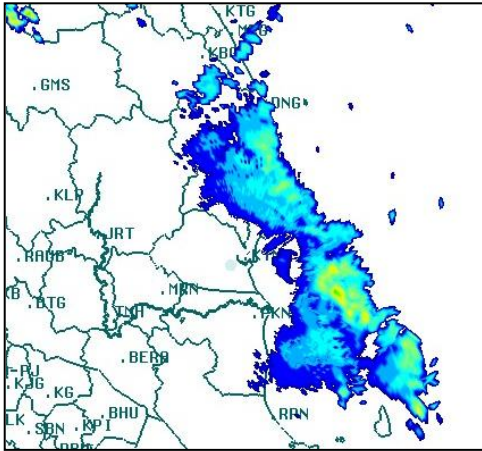
Table 1: Daily rainfall (mm) from 1 until 5 December 2009

Station	Tue 01	Wed 02	Thu 03	Fri 04	Sat 05
Batu Embun	0	3	17	6	62
Kuantan	20	30	133	182	130
Temerloh	2	0.6	79	31	4
Muadzam Shah	4	10	86	42	27

Table 2: Month of December accumulated rainfall for period of 1/12/2009 – 5/12/2009 compared with the monthly mean

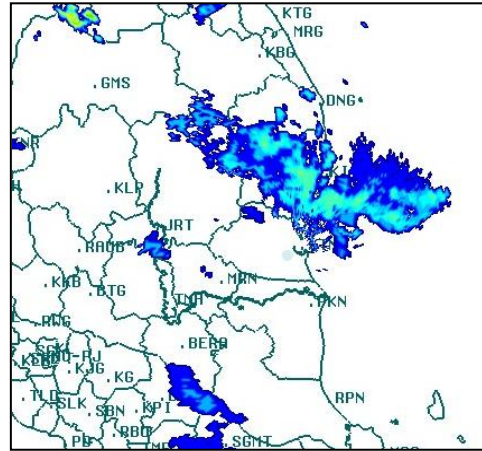
Station	Accumulated rainfall (mm) 01-05/12/09	Monthly mean (mm)	Highest Monthly (mm)	Lowest Monthly (mm)
Batu Embun	88	254	502	68
Kuantan	595	623	1471	115
Temerloh	116.6	197	441	50
Muadzam Shah	169	442	1095	84

Radar Pictures from 2 – 5 December 2009



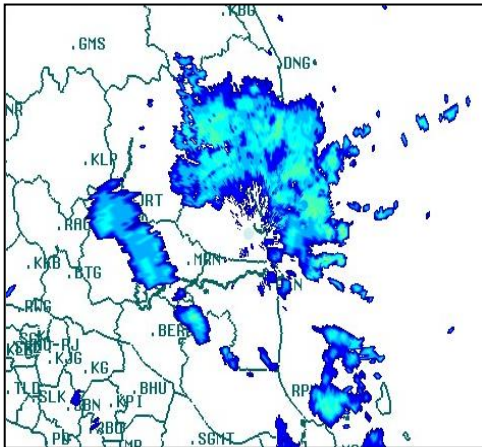
1a: 05.30 am, 2 Dec 2009

Moderate to heavy rain over coastal areas of Pahang at early morning, 2 December 2009. The rain clouds moved southwestward until it reached inland areas and dissipated at noon.



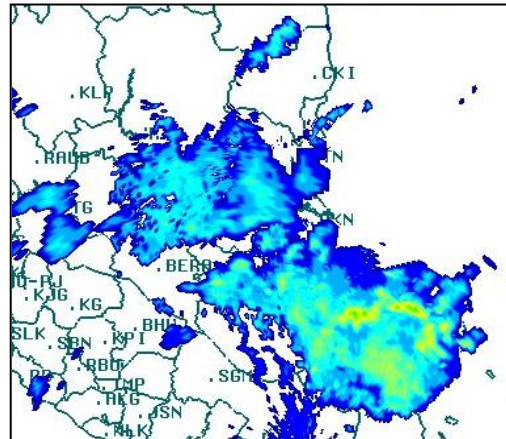
1b: 08.30 pm, 2 Dec 2009

Moderate to heavy rain started to occur in the evening over North Pahang and persisted until midnight.



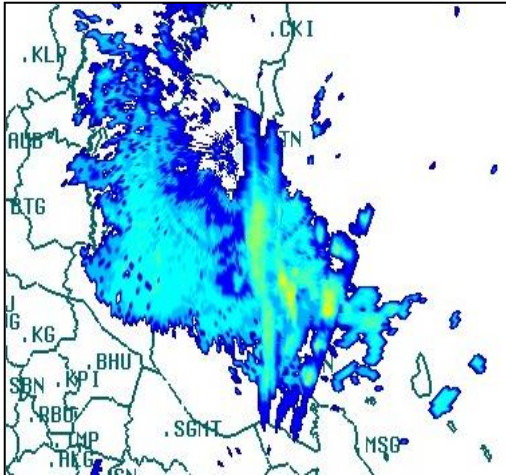
1c: 07.30 am, 3 Dec 2009

Moderate to heavy rain over Kuantan at early morning, whereas rain started to pour over southern part (Rompin) and inland of Pahang.



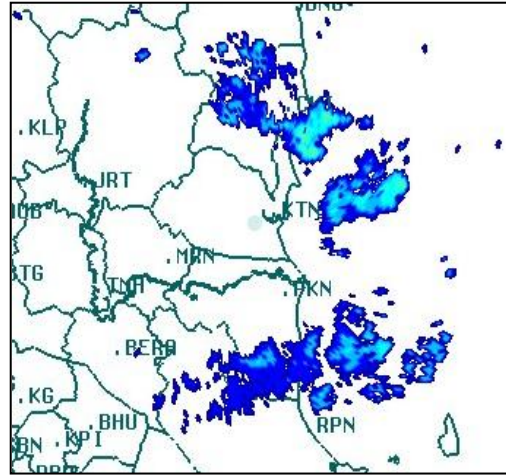
1d: 04.30 am, 4 Dec 2009

Intermittent rain occasionally moderate to heavy over Kuantan, Pekan, Maran, Rompin, Muadzam Shah and Temerloh was persisted the whole day.



1e: 7.30 am, 5 Dec 2009

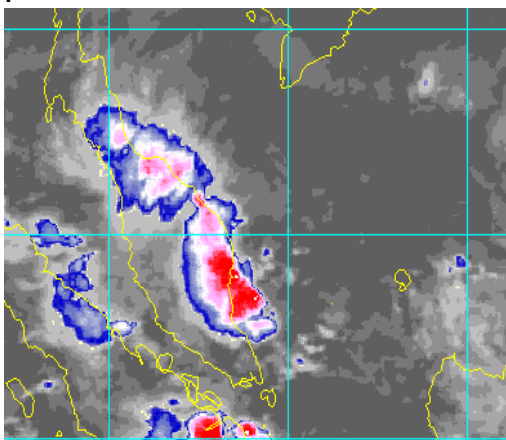
Intermittent rain occasionally moderate to heavy scattered over Pahang especially at the coastal areas.



1f: 3.30 pm, 5 Dec 2009

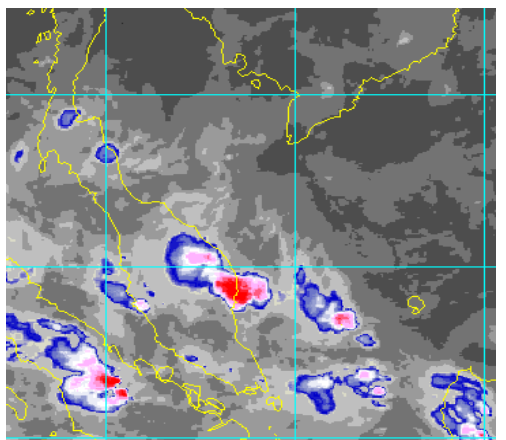
Intermittent rain occasionally moderate still occurred over Kuantan the whole day, whereas at other places the rain started to dissipate.

Weather Satellites Imageries from 2 – 5 December 2009



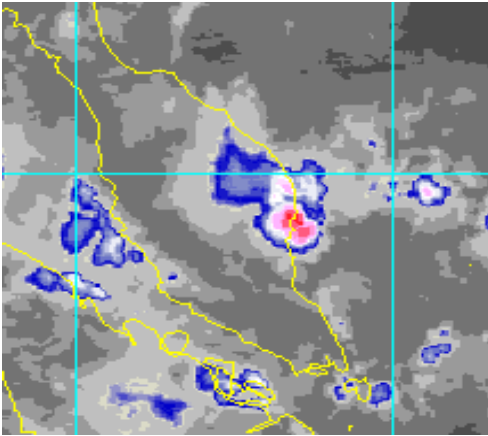
2a: 5.10 am, 2 Dec 2009

The active cloud cluster that developed over Kelantan and Terengganu waters at early morning 1 December 2009 moved towards the coastal areas of Pahang at early morning 2 December. Moderate to heavy rain started to occur.



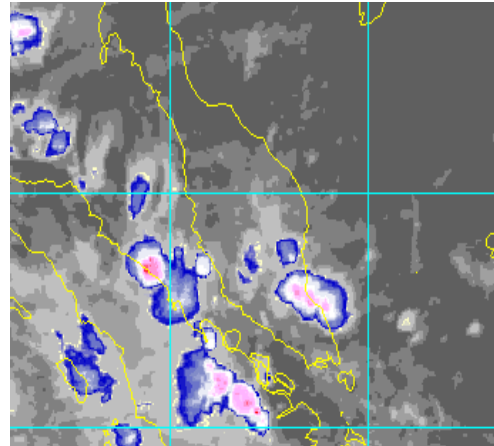
2b: 08.10 pm, 2 Dec 2009

The cloud cluster had re-intensified in the evening and caused heavy rain over Kuantan district persisted until midnight.



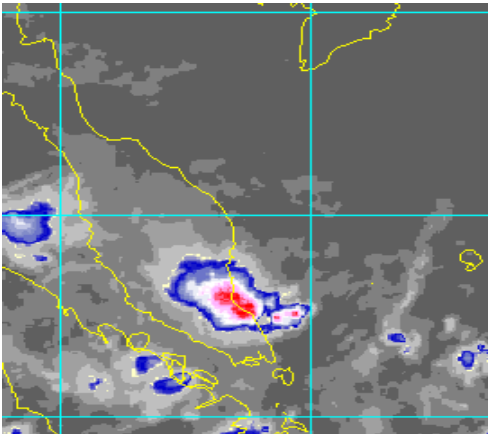
2c: 7.30 am, 3 Dec 2009

The cloud cluster developed again and heavy rain occurred over Kuantan for few hours. Intermittent rain occasionally moderate to heavy persisted the whole day.



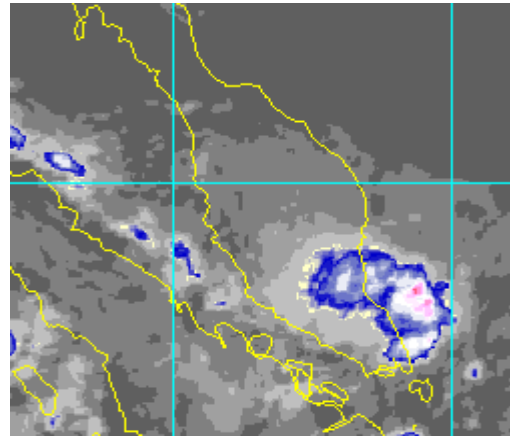
2d: 06.10am, 4 Dec 2009

The large cloud cluster that developed over southern part of Pahang (Rompin) also expanded towards the inland (Muadzam Shah) and caused moderate to heavy rain persisted until noon on 4 December.



2e: 12.10 am, 5 Dec 2009

The cloud cluster re-intensified at midnight and caused heavy rain occurred over Kuantan, Maran, Pekan, Rompin dan Muadzam Shah.



2f: 12.10 pm, 5 Dec 2009

The cloud cluster started to dissipate at noon 5 December but intermittent rain occasionally moderate still occurred the whole day.

Series of Weather Warning

Date	Time Issued	Type of Warning	Location	Period of Warning
01/12/2009	02.15 pm	Heavy rain advisory (Yellow Stage)	Pahang (Kuantan, Pekan and Rompin)	01.00 pm, 1 Dec - 11.00 pm, 2 Dec
02/12/2009	04.00 am	Heavy rain advisory (Yellow Stage)	Pahang (Kuantan, Pekan and Rompin)	04.00 am, 2 Dec – 11.00 pm, 3 Dec
02/12/2009	08.30 am	Heavy rain advisory (Yellow Stage)	Pahang (Kuantan, Pekan and Rompin)	08.30 am, 2 Dec - 08.30 am, 4 Dec
04/12/2009	08.30 am	Heavy rain advisory (Yellow Stage)	Pahang (Kuantan, Pekan and Rompin)	08.30 am, 2 Dec - 11.00 pm, 5 Dec
05/12/2009	07.00 am	Heavy rain warning (Orange Stage)	Pahang (Kuantan, Maran, Bera, Pekan and Rompin)	07.00 am, 5 Dec - 11.00 pm, 5 Dec

6. Conclusion

The occurrence of heavy rainfall on 2 until 5 December 2009 and caused flood in Pahang was due to Monsoon Surge. Surface high pressure developed over Siberia and Northern China forcing the cold air to burst towards South China Sea and reached waters of east coast states of Peninsular Malaysia. Cyclonic Vortex that developed over the waters also caused the heavy rain occurred periodically between 2 to 5 December 2009. Besides, the north-easterly wind with speed between up to 40 to 50 kilometer per hour could cause the sea level rise and wave height could reach up to 3.5 meters or higher along the coastal areas of Pahang.