

# **MEMBER REPORT**

ESCAP/WMO Typhoon Committee  
10<sup>th</sup> Integrated Workshop

**(CAMBODIA)**

KUALA LUMPUR, MALAYSIA  
26 - 29 October 2015

# **CONTENTS**

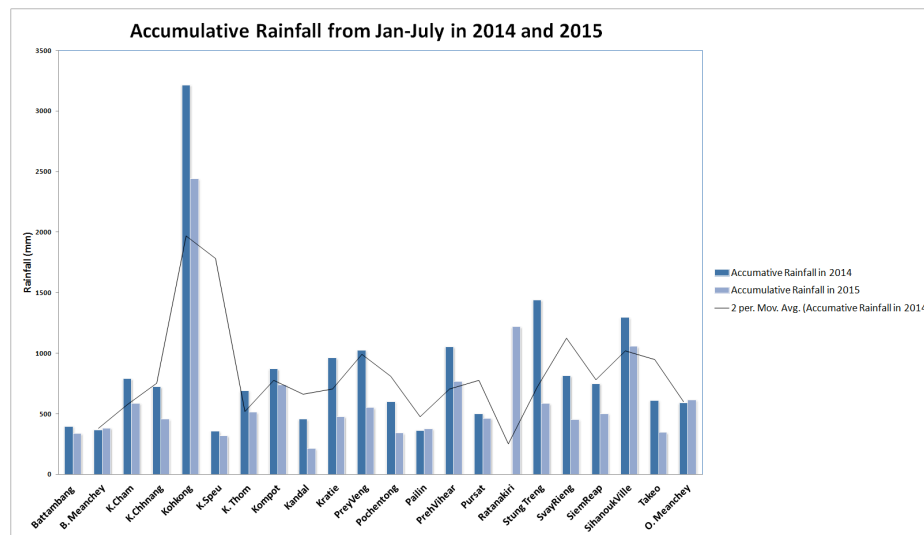
- I. Overview of tropical cyclones which have affected/impacted Member's area since the last Typhoon Committee Session**
- II. Summary of progress in Key Result Areas**

## I-Overview of tropical cyclones which have affected/impacted Member's area in 2015

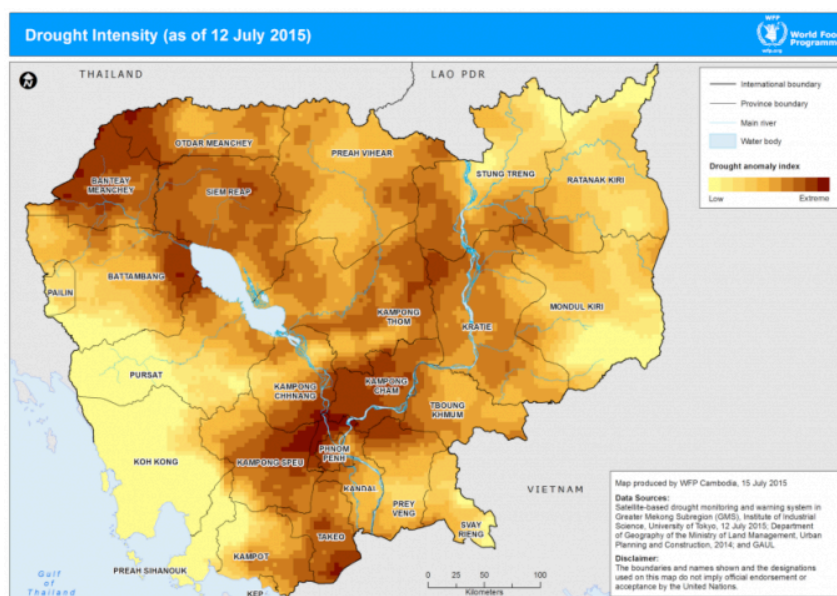
### 1. Meteorological Assessment (highlighting forecasting issues/impacts)

From Jan to the middle of July 2015, the rainfall amount over Cambodia was decreased if compared with the rainfall amount in 2014 (Chart 1). According to the assessment of World Food Program in Cambodia reported that many provinces of the Country were impacted by drought caused to lack of water for Agriculture (Fig. 1).

**Chart.1: The different between rainfall amount from Jan-July 2014 and 2015**

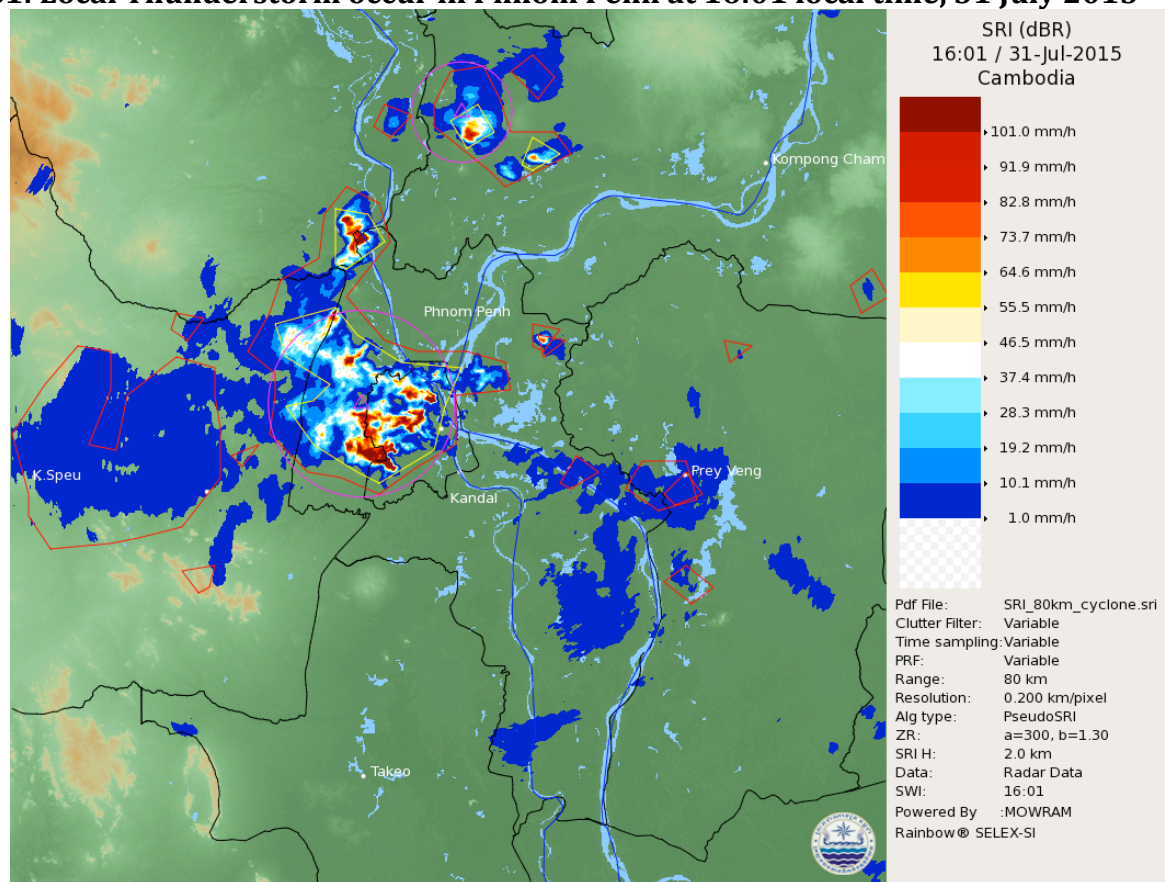


**Fig1. Drought Intensity in Cambodia (source of World Food Programm)**



However, from the middle of July to September, there was heavy rain in many place of the country, excepted the provinces in the Northwest part of the Country, such as Oddar Meanchey, Siem Reap, Banteay Meanchey, Battambang and Pailin province were seemly getting less rainfall while other provinces and Phnom Penh City were frequency flash flood, some home and other infrastructure damaged and some people were injured and died by lightening according to the local thunderstorm produced the heavy rainfall in place of the area. For example, there was a torrential from 50mm to over 100mm per hour with gust 35 Kts since 31 July 2015 in Phnom Penh, it was caused some trees fall down and some infrastructure were damaged and a flash flood in Phnom Penh (Image1, Fig2)

**Image1: Local Thunderstorm occur in Phnom Penh at 16:01 local time, 31 July 2015**





**Fig.2: Flash Flood and Flooding during and after Heavy Rainfall**



From September to October, 2015, there was one Tropical Storm impacted to the Cambodia.

The disturbance formed in the South China Sea on 10 October, 2015 and develop as a tropical depression by the JMA at 12 UTC on 13 September and become to Tropical Storm Vamco (1519) at 18 UTC on 13 September 2015. It was moving NW and Westward with speed of 7 Kts and Maximum wind speed near the center of 35 Kts. At 12 UTC on 14 September, TS Vamco was reached the Coast of Vietnam and Land fall south of Danang Vietnam, it was continue to moving westward over southern of Lao PDR. It was become to the Tropical Depression after landfall over South of Lao PDR at 00 UTC on 15 September, 2015. During the life time of TS Vamco (1519) from 13-15 September 2015, on 13-15 September, heavy rains affected to the Northern part and Southern part of Cambodia. Heavy rainfall with affected the coastal area including inshore and offshore of Cambodia (Image 3,4,5). Department of Meteorology has provided the early warning and announcement to the public before 3 days ahead of the Tropical Storm made landfall and kept updated every 15 minutes on the website ([cambodiameteo.com](http://cambodiameteo.com)) and keep in touch with the National Radio and TV through phone and Fax. After made landfall, 16-17 October 2015, there were continuous heavy rain fall with Maximum wind 13.5 m/s in the coastal area that caused some provinces were flash flood and flooded, especially in Kampot Province (Chart 3, 4 and Fig.3)

**Ministry of Water Resources and Meteorology Announcement on the weather situation related Tropical Storm Vamco (1519)**



**ព្រះរាជាណាចក្រកម្ពុជា**  
**ជាតិ សាសនា ព្រះមហាក្សត្រ**  
២០២១

**ក្រសួងធនធានទឹក និងឧតុនិយម**

លេខ **២៦៤** ប្រ.ជ.ប  
ស្រីរាជធានីភ្នំពេញ

**សេចក្តីជូនដំណឹង**

**ស្តីពី ស្ថានភាពអាកាសធាតុ នៅព្រះរាជាណាចក្រកម្ពុជា**

បន្ទាប់ពីបានធ្វើការតាមដានលើស្ថានភាពអាកាសធាតុ រួមមក ក្រសួងធនធានទឹក និងឧតុនិយម សូមជម្រាបជូនដំណឹងដល់សាធារណជនមេត្តាជ្រាបថា : បច្ចុប្បន្នព្រះរាជាណាចក្រកម្ពុជា បាន និងកំពុងទទួលបានឥទ្ធិពលពីប្រព័ន្ធសមុទ្រចិនខាងត្បូង ដែលអូសកាត់លើភាគឦសាននៃប្រទេស និងទទួលបានឥទ្ធិពលពីខ្យល់មូសុងនិរតីខ្លាំង ។

យោងតាមការព្យាករ នៅថ្ងៃទី 12 ខែកញ្ញា ឆ្នាំ 2015 ខាងមុខនេះ នឹងមានព្យុះមួយកើតឡើងនៅក្នុងសមុទ្រចិនខាងត្បូង ។ ព្យុះនេះ នឹងធ្វើដំណើរឆ្ពោះទៅតំបន់ឆ្នេរភាគកណ្តាល នៃប្រទេសវៀតណាម ។

ស្ថានភាពអាកាសធាតុបែបនេះ នឹងបង្កឱ្យមានភ្លៀងធ្លាក់ច្រើនជាបន្តបន្ទាប់ ចាប់ពីថ្ងៃទី 09 ដល់ថ្ងៃទី 13 ខែកញ្ញា ឆ្នាំ 2015 នៅក្នុងក្របខ័ណ្ឌទូទាំងប្រទេស និងអាចបណ្តាលឱ្យរាជធានី-ខេត្ត មួយចំនួន ដូចជា : រាជធានីភ្នំពេញ ខេត្តកំពង់ស្ពឺ កណ្តាល តាកែវ កំពត ព្រះសីហនុ កំពង់ធំ និងខេត្តសៀមរាប ប្រឈមនឹងជំនន់ទឹកភ្លៀង ។

នៅលើផ្ទៃសមុទ្រមានភ្លៀង និងខ្យល់បក់បោកខ្លាំង ។ រលកសមុទ្រអាចមានកម្ពស់ 1,00 - 2,50 ម៉ែត្រ ។

យោងលើស្ថានភាពអាកាសធាតុ ដូចបានជម្រាបជូនខាងលើ សូមសាធារណជនមេត្តាជ្រាបជាព័ត៌មាន ពិសេសចំពោះបងប្អូនប្រជានេសាទសមុទ្រ និងអ្នកធ្វើដំណើរតាមសមុទ្រ សូមបង្កើនការយកចិត្តទុកដាក់ខ្ពស់ ដើម្បីចៀសវាងនូវគ្រោះថ្នាក់ផ្សេងៗ ដែលអាចកើតមានឡើងជាយថាហេតុ ។

ក្រសួងធនធានទឹក និងឧតុនិយម បាន និងកំពុងបន្តតាមដានស្ថានភាពលើអាកាសធាតុនេះជាប្រចាំ និងធ្វើសេចក្តីជូនដំណឹងបន្ថែម ក្នុងករណីចាំបាច់ ។

រាជធានីភ្នំពេញ ថ្ងៃទី ១២ ខែកញ្ញា ឆ្នាំ ២០១៥



**លីម គាន់ហោ**

- Sample of Weather Warning for 3 days outlook on the website (cambodiameteo.com)

MARINE

► Marine Forecast

LINKS

- Ministry of Water Resources and Meteorology
- Tonle Sap Authority
- Ministry of Public Works and Transport
- Ministry Tourism

Visitors

6042993

WARNINGS

3 days outlook

Tuesday

Wednesday

Thursday

Tuesday 15 September 2015

Heavy rain associated with gusty wind will occur at time and place over the colored areas.  
Strong wind blow over the sea.  
Wave height from 1.50m to 2.0m.  
Please strong attention to flash flood and strong gust that can occur eventually.

Wednesday 16 September 2015

Expected heavy rain associated with gusty wind will occur at time and place over the colored areas.  
Strong wind blow over the sea.  
Wave height from 1.50m to 2.0m.  
Please strong attention to flash flood and strong gust that can occur eventually.

Thursday 17 September 2015

Expected heavy rain associated with gusty wind will occur at time and place over the colored areas.  
Strong wind blow over the sea.  
Wave height from 1.50m to 2.0m.  
Please strong attention to flash flood and strong gust that can occur eventually.

ដែនសមុទ្រ

► ព្យាករណ៍ដែនសមុទ្រ

ភ្ជាប់ទៅគេហទំព័រផ្សេង

- ក្រសួងធនធានទឹក និងឧតុនិយម
- អាជ្ញាធរទន្លេសាប
- ក្រសួងសាធារណការ និងដឹកជញ្ជូន
- ក្រសួងទេសចរណ៍

Visitors

6043426

Warnings

3 days outlook

Tuesday

Wednesday

Thursday

Tuesday 15 September 2015

រៀងរាល់ថ្ងៃនឹងមានភ្លៀងធ្លាក់ និងកើតមានភ្លៀងទៅតាមពេល និងទីកន្លែងក្នុងតំបន់ដែលមានពណ៌។  
ខ្យល់បក់ខ្លាំងនៅលើផ្ទៃសមុទ្រ។ លេកសមុទ្រអាចមានកំពស់ចាប់ពី ១.៥០ ម៉ែត ទៅ ២.០០ម៉ែត។  
**សូមប្រុងប្រយ័ត្នខ្ពស់ ជាមួយជំនន់ទឹកភ្លៀង ដែលអាចកើតមានឡើងជាប្រចាំប្រចាំ។**

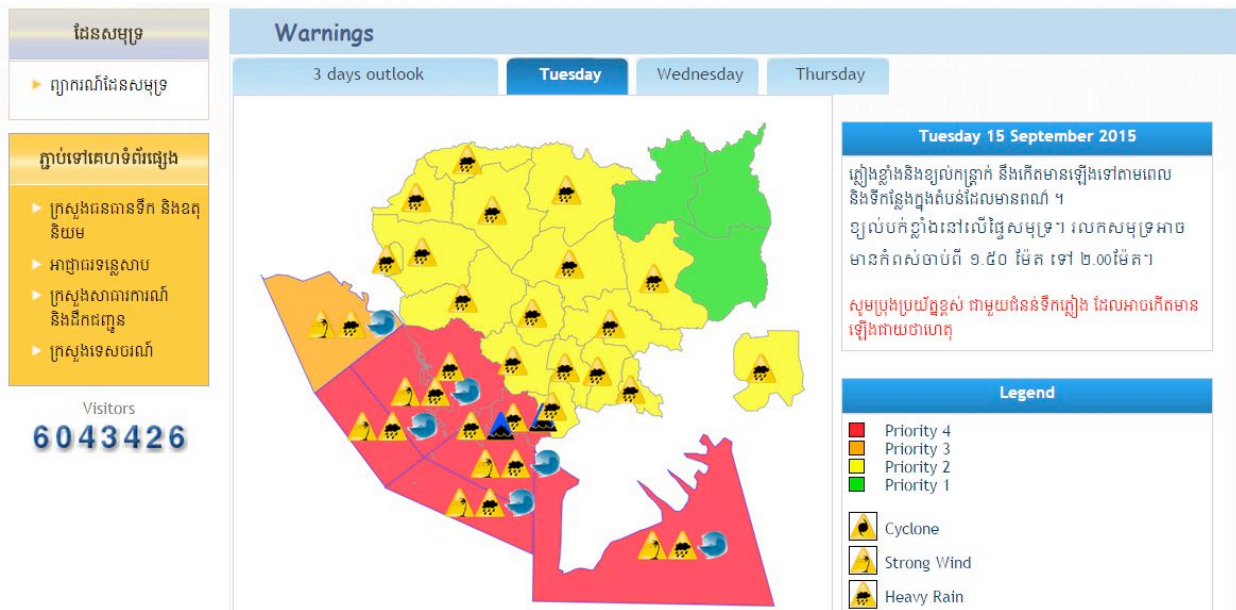
Wednesday 16 September 2015

រំពឹងថា រៀងរាល់ថ្ងៃនឹងមានភ្លៀងធ្លាក់ និងកើតមានភ្លៀងទៅតាមពេល និងទីកន្លែងក្នុងតំបន់ដែលមានពណ៌។  
ខ្យល់បក់ខ្លាំងនៅលើផ្ទៃសមុទ្រ។ លេកសមុទ្រអាចមានកំពស់ចាប់ពី ១.៥០ ម៉ែត ទៅ ២.០០ម៉ែត។  
**សូមប្រុងប្រយ័ត្នខ្ពស់ ជាមួយជំនន់ទឹកភ្លៀង ដែលអាចកើតមានឡើងជាប្រចាំប្រចាំ។**

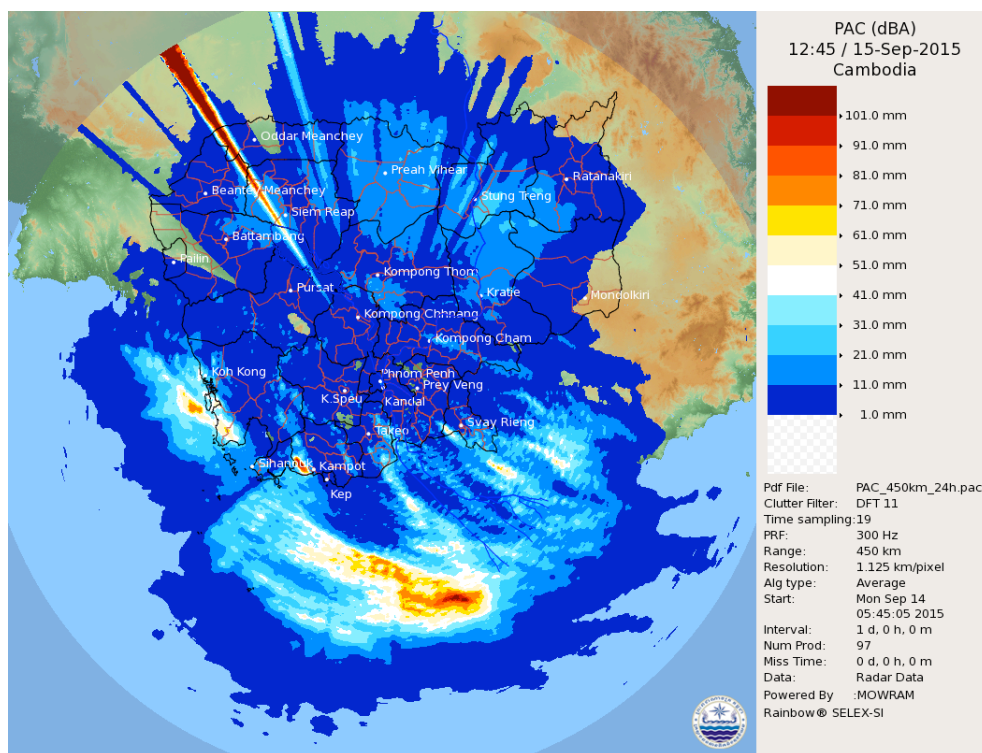
Thursday 17 September 2015

រំពឹងថា រៀងរាល់ថ្ងៃនឹងមានភ្លៀងធ្លាក់ និងកើតមានភ្លៀងទៅតាមពេល និងទីកន្លែងក្នុងតំបន់ដែលមានពណ៌។  
ខ្យល់បក់ខ្លាំងនៅលើផ្ទៃសមុទ្រ។ លេកសមុទ្រអាចមានកំពស់ចាប់ពី ១.៥០ ម៉ែត ទៅ ២.០០ម៉ែត។  
**សូមប្រុងប្រយ័ត្នខ្ពស់ ជាមួយជំនន់ទឹកភ្លៀង ដែលអាចកើតមានឡើងជាប្រចាំប្រចាំ។**

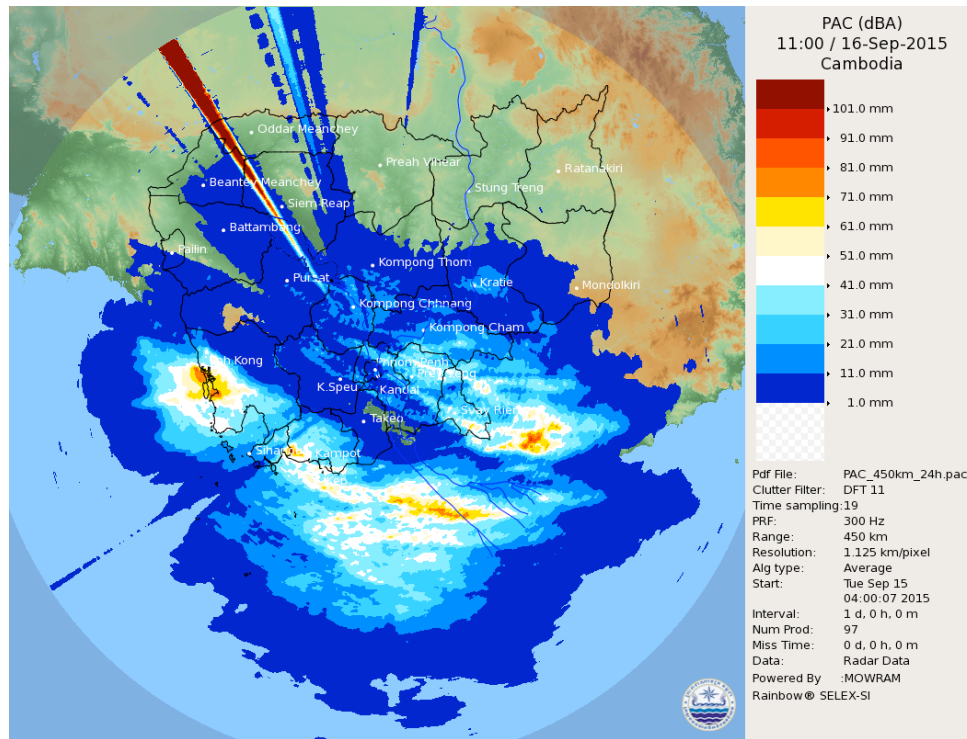




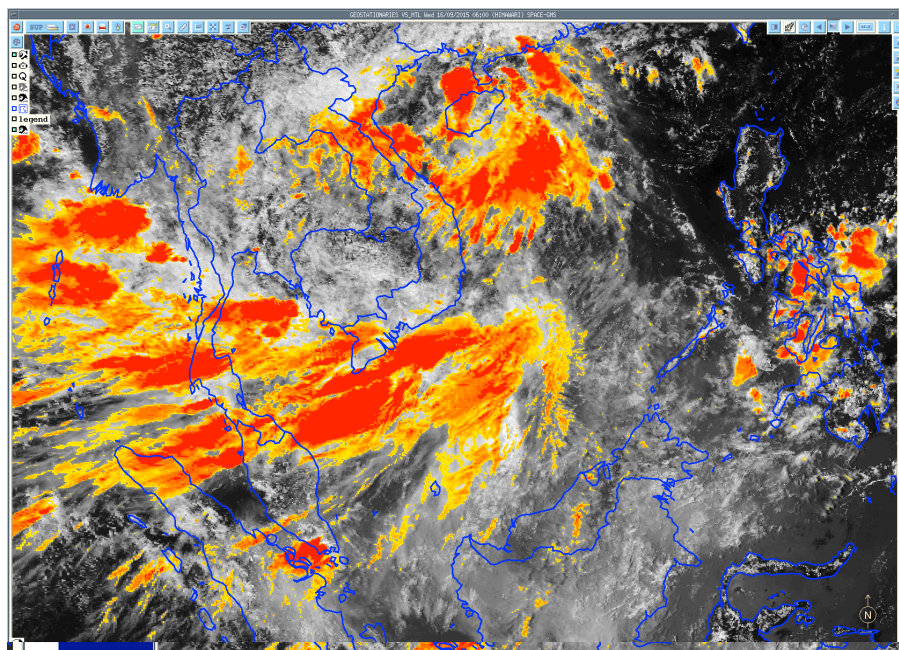
**Image3. Accumulative Rainfall 24 hours from 5:45 UTC, 14 Sep to 5:45 UTC, 15 Sep, 2015.**



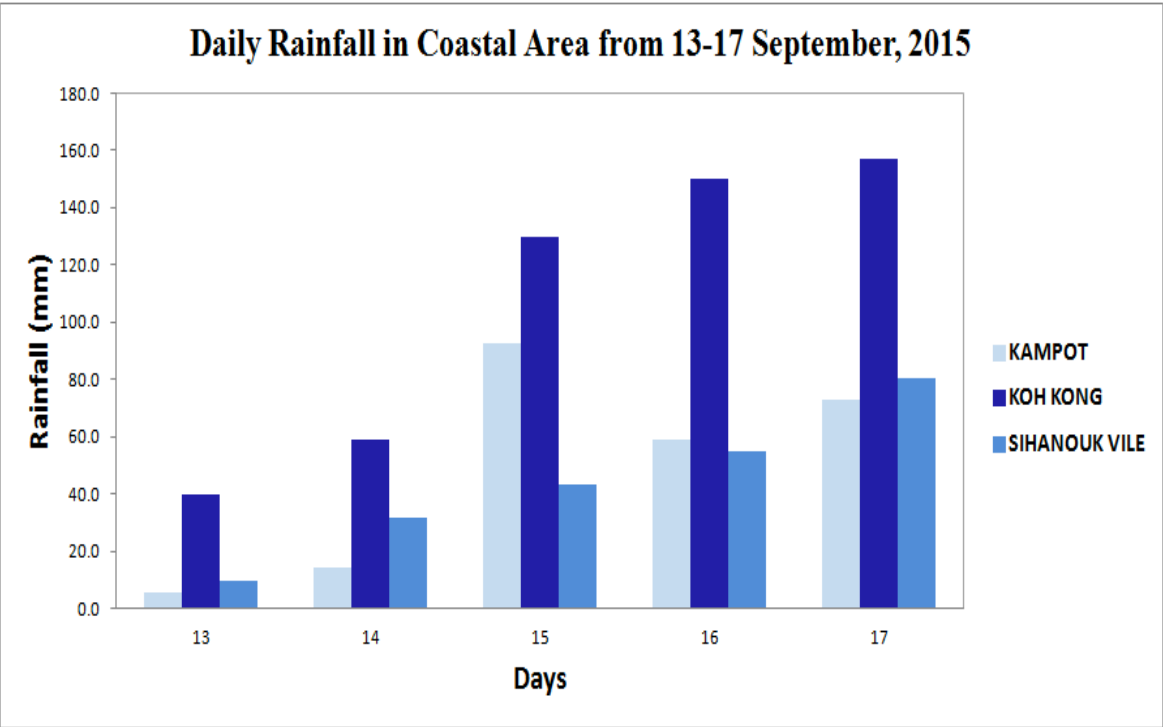
**Image4. Accumulative Rainfall 24 hours from 4:00 UTC, 15 Sep to 4:00 UTC, 16 Sep, 2015.**



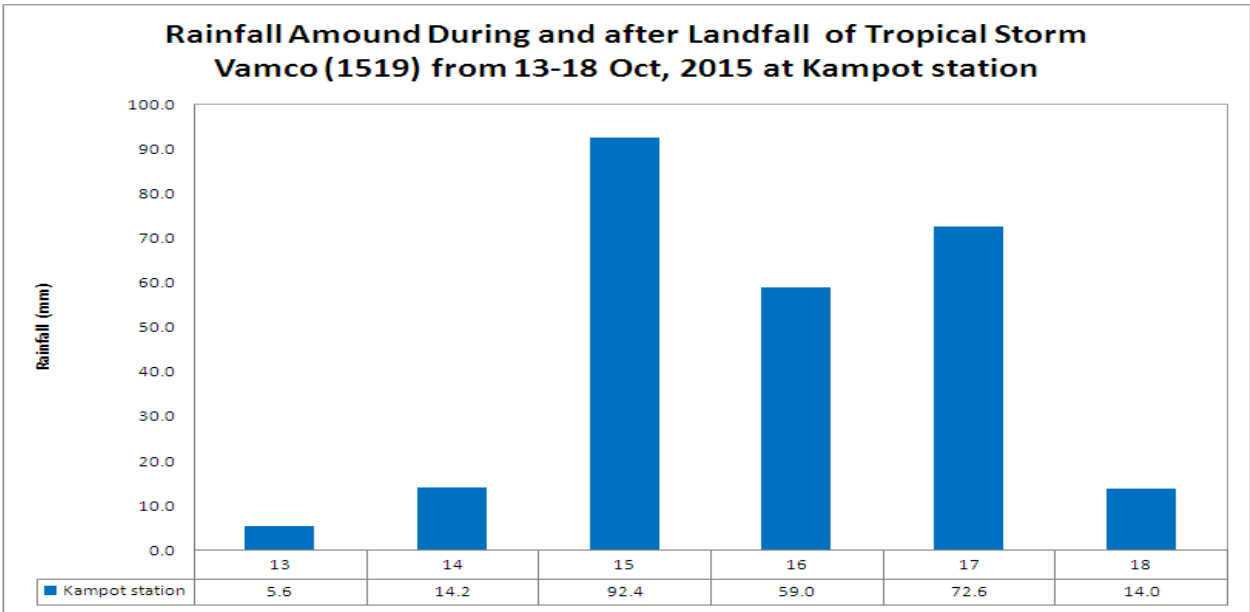
**Image5: IR Satellite Image from Himawari-8 of Japan at 06:00UTC on 16<sup>th</sup> Sep, 2015**



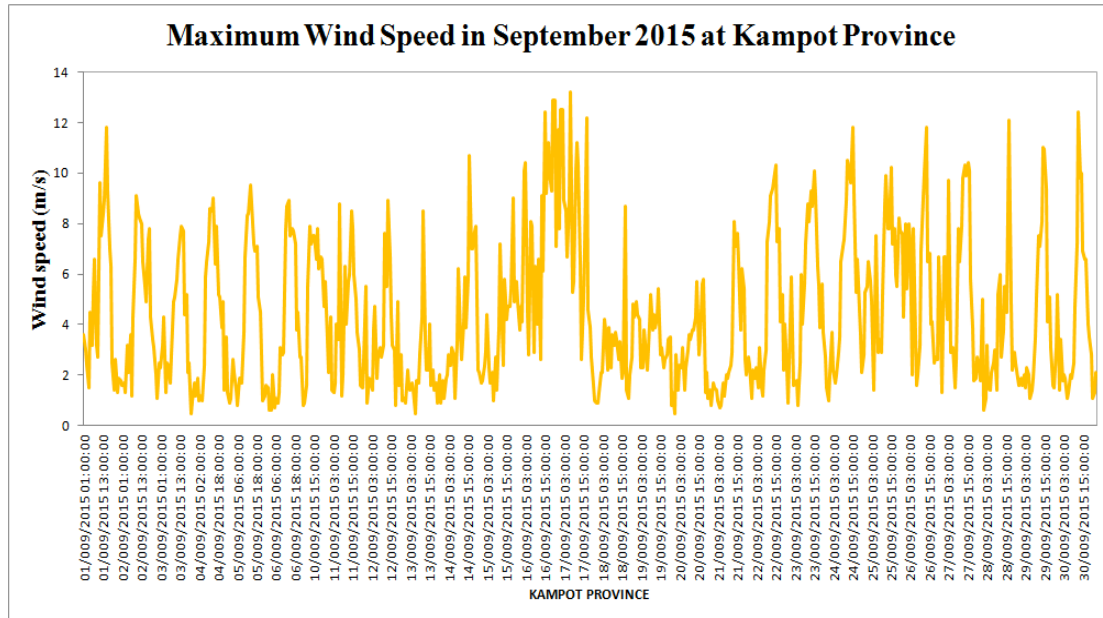
**Chart 2: Rainfall amount at Coastal Area from 13-17 September, 2015**



**Chart 3: Rainfall in Kampot Province from 13-18 September, 2015**



**Chart 4: Maximum Wind Speed at Kampot Province in September, 2015**



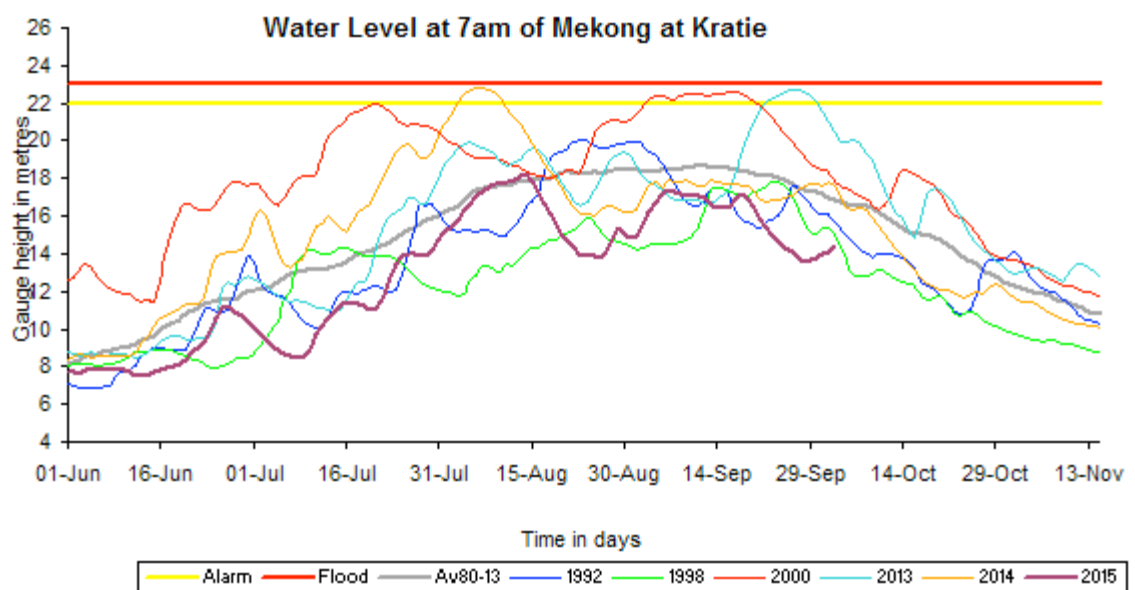
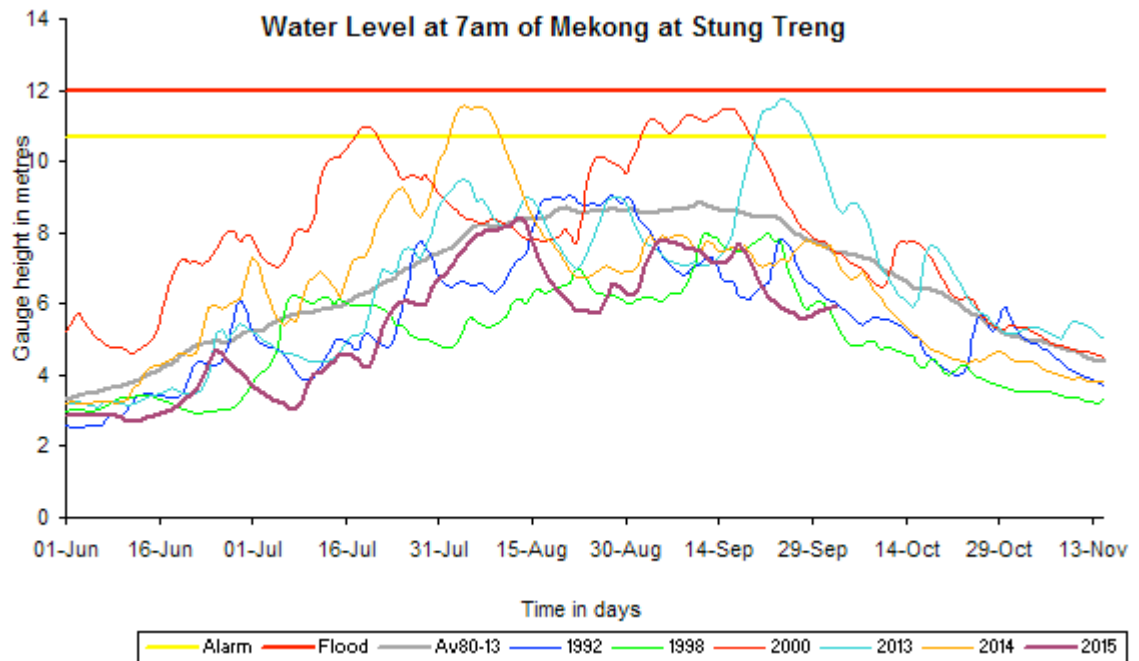
**Fig. 3: Kampot flood after affected by heavy rainfall during Tropical Storm Vamco**



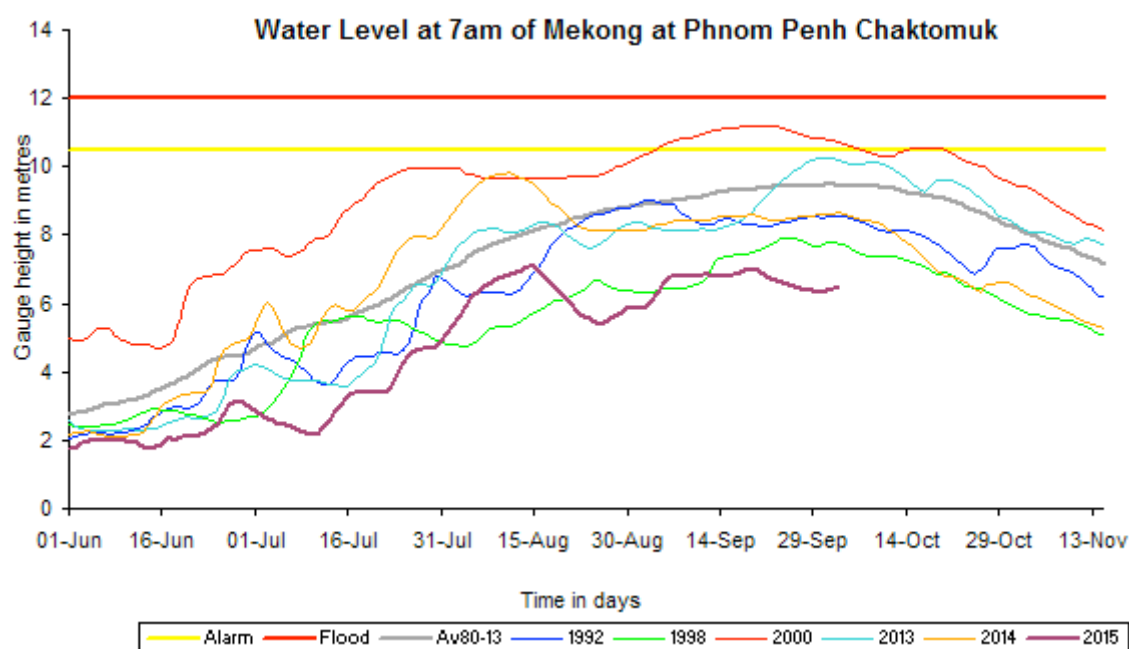
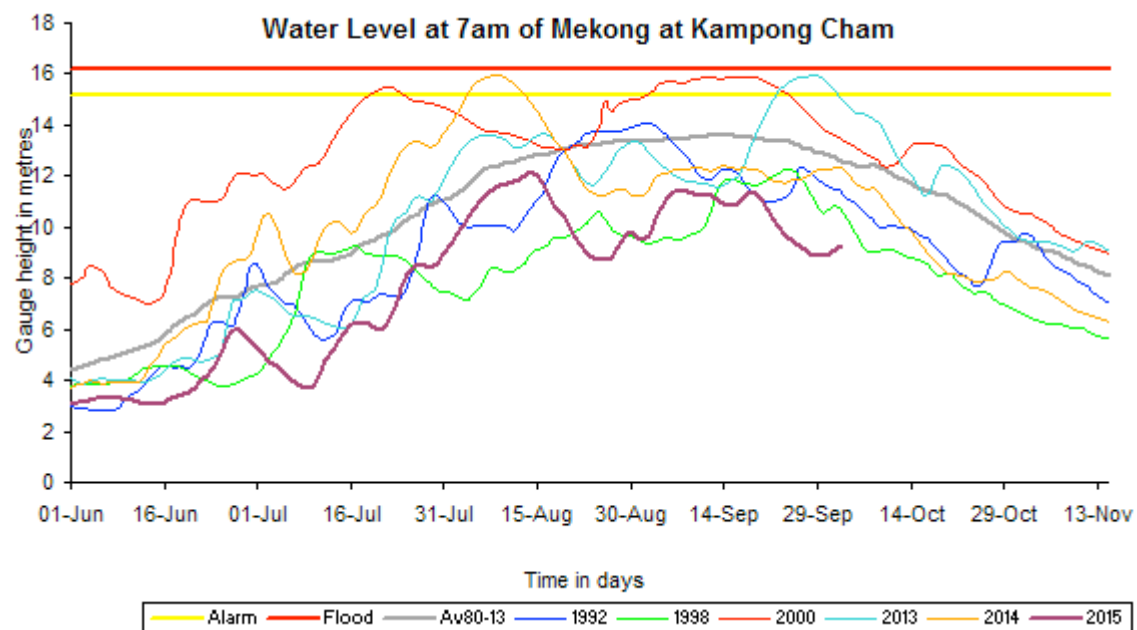


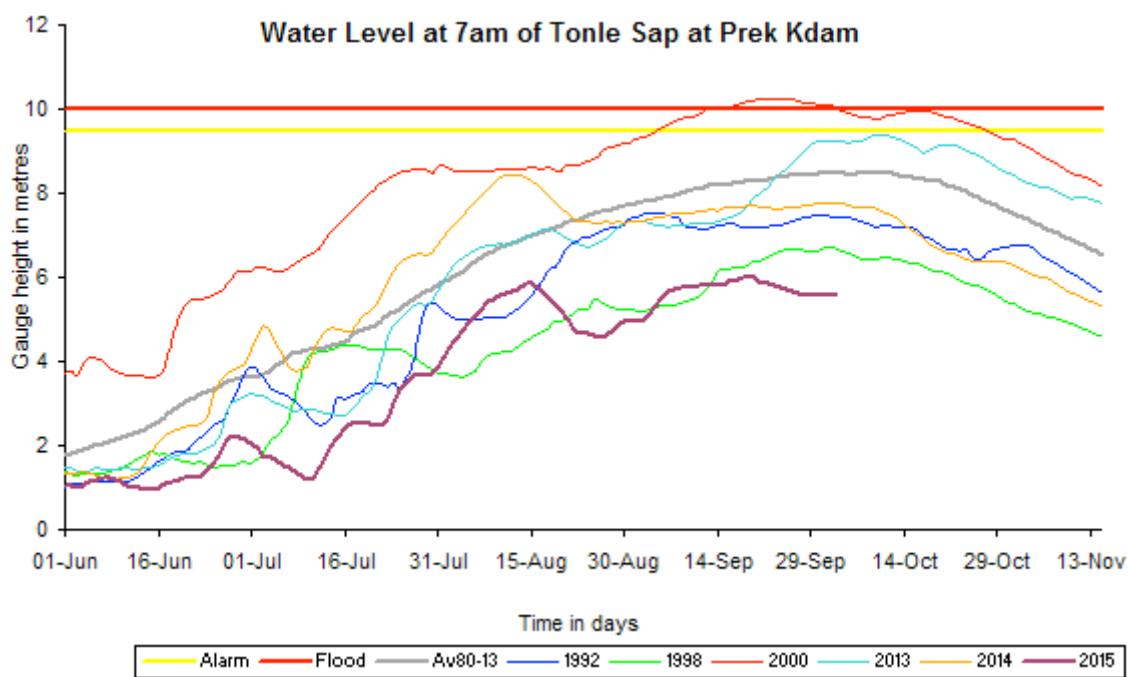
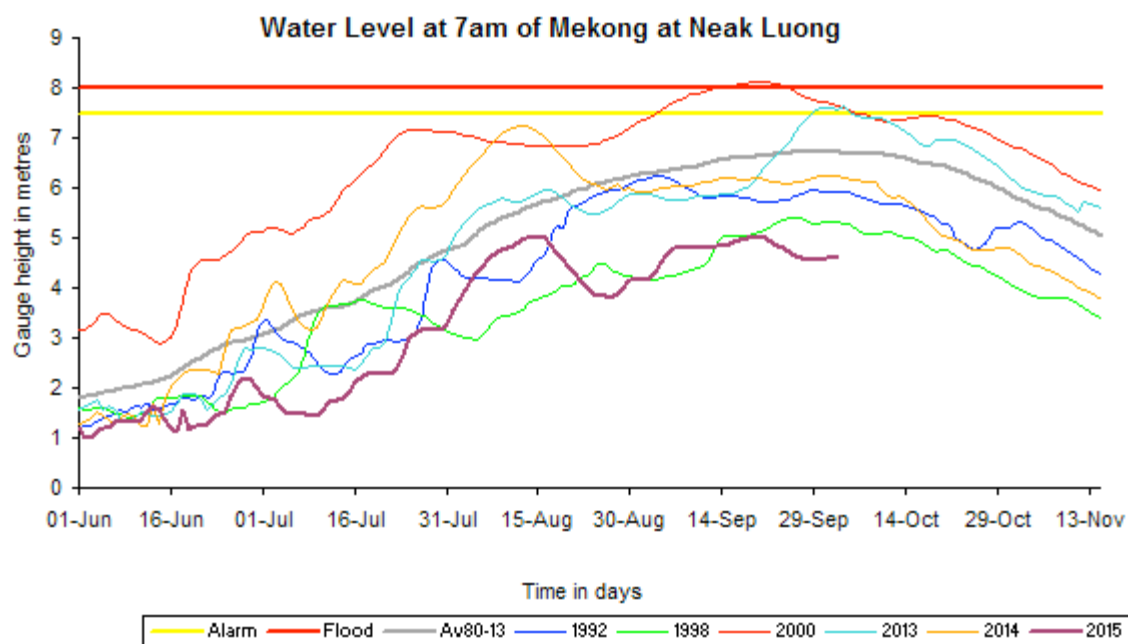
## 2- Hydrological Assessment (highlighting water-related issues/impact)

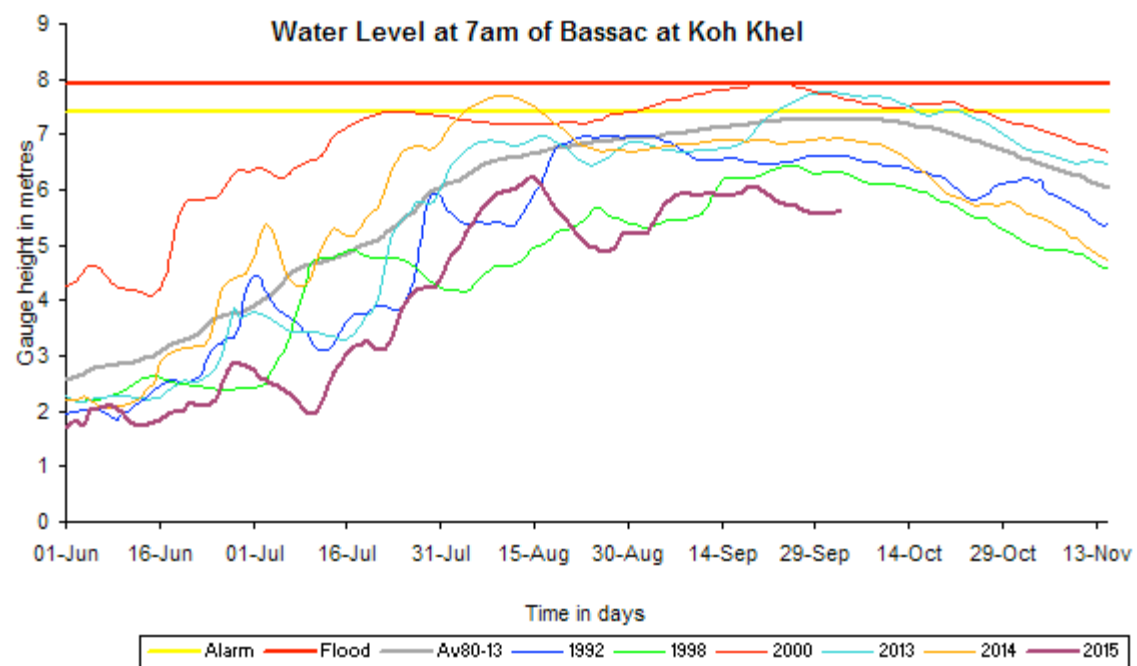
According to the data and Hydrology graph below indicated that the graph of water level in 2015 is under the graph of Water Alarm, so that there is no flood in the areas of Cambodia that are along the Mekong River and are also nor flooding in the area around Tonle Sap, but there was flash flood in Phnom Penh City that caused by heavy rainfall. Kampot Province was flash flood and flooded during and after Tropical Storm Vamco (1519) landfall Vietnam and Lao PDR.











### 3- Socio-Economic Assessment (highlighting socio-economic and DRR issues/impacts)

According to the report of National Committee for Disaster and Management Cambodia indicated that during the first 6 months from January to June 2015, there were many damages and loss of life by gusty wind and lightning that were a result of thunderstorm:

Nº	CITY/PROVINCE	HOME FALL	HOME DAMAGE	DEATH	WOUNDER	SCHOOL DAMAGE	PEOPLE DEATH	ANIMAL DEATH	PEOPPLE WOUNDER
1	PHNOM PENH	6	19			1	2		
2	KANDAL	69	204				6	1	
3	TAKEO	65	366	1	7		2	5	13
4	SVAY RIENG	22	50	3	9			1	1
5	KAMPONG SPEU	45	287				5		
6	PREY VENG	27	124	1	9		3	4	2
7	RATANAKIRI	22	58		1		1		2
8	MONDOL KIRI	4	10					1	
9	STUNG TRENG	25	75			1			
10	KRATIE	3	70	1	13		4		
11	KAMPONG CHAM	169	658		9	1	3	2	2
12	KAMPONG THOM	33	293	2	7	4	1	6	1
13	KAMPONG CHHNANG	48	188		3		3		21
14	PURSAT	38	133		2		2	2	1
15	BATTAMBANG	120	492	3	6	5	1	1	2
16	SIEM REAP	308	512	1	18	2	2		2
17	BANTEAY MEANCHEY	209	681	8	10	13	4	8	
18	ODDAR MEANCHEY	129	458	2	12	2		1	4
19	PREAH VIHEAR	30	129						
20	KOH KONG		28				5		
21	PREAH SIHANOUK								
22	KAMPOT	24	211					3	
23	KEP	1	9		1				
24	PAILIN	32	94	2	7	1			
25	TBONG KHMUM	12	45	1	1	4			
	<b>TOTAL</b>	<b>1441</b>	<b>5194</b>	<b>25</b>	<b>115</b>	<b>34</b>	<b>44</b>	<b>35</b>	<b>51</b>

The coastal area was battered when Vamco dropped “hundreds of millimeters” of rain, resulting in widespread flooding, which affected 20,000 people and damaged at least 4,000 homes in Kampot province, the military and the Cambodian Red Cross – as well as municipal and provincial authorities – have been providing emergency relief to families located in the worst affected areas of Kampot, Koh Kong and Preah Sihanouk provinces.

#### **Officials and police inspect flooded areas of Kampot province**



#### **4- Regional Cooperation Assessment (highlighting regional cooperation successes and challenges)**

In 2015, Department of Meteorology Cambodia has sent:

- 1 participants attended in international training course on Weather Radar Operation and Data Utilization from 10 to 23 May 2015 at the KMA headquarters, Seoul, Republic of Korea.
- 1 participants attended in international training course on Weather forecasting for Operational Meteorologist from 7 to 27 June 2015 at the KMA headquarters, Seoul, Republic of Korea.
- TCC Training Seminar on One-month Forecast to be held in Tokyo, Japan from 16 to 20 November 2015.
- 1 participant attended in the International Training Workshop on Tropical Cyclone Forecasting will be held on 3-14 August 2015 at RSMC New Delhi.

- 1 participant attended in Training Workshop on Severe Weather Forecasting and Warning Services Bangkok, Thailand, 21-25 September 2015
- 2 participants attended in the Factory Acceptance Test and Training on the Installation of Himawari-Cast **Receiving System from 02-04 September 2015 at Kyotanabe in Kyoto, Japan.**
- 2 Delegations to participated in THE 37TH MEETING OF THE ASEAN SUB-COMMITTEE ON METEOROLOGY AND GEOPHYSICS (SCMG) from 25-27 August 2015 at Kuala Lumpur, Malaysia.

## **II. Summary of progress in Key Result Areas**

- Weather Forecasting Skill is improved
- 20 Automatic Weather Stations are installed.