

### Weekly Flood Situation Report for the Mekong River Basin

Prepared at: 25/08/2014, covering the week from the 18<sup>th</sup> to 25<sup>th</sup> August 2014

#### Weather Patterns, General Behaviour of the Mekong River and Flood Situation

##### General weather patterns

During the week of 18<sup>th</sup> to 25<sup>th</sup> August 2014 three weather bulletins were issued by the Department of Meteorology (DOM) of Cambodia. The weather maps of the 18<sup>th</sup> August and 22<sup>nd</sup> August 2014 are presented in the Figures 1 and 2 below:

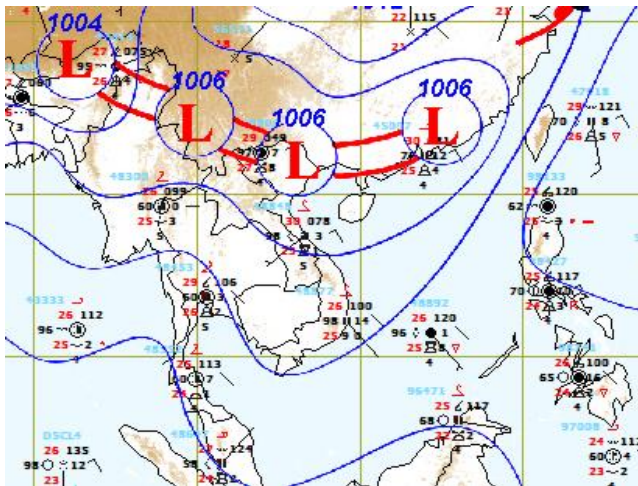


Figure 1: Weather map for 18<sup>th</sup> August 2014

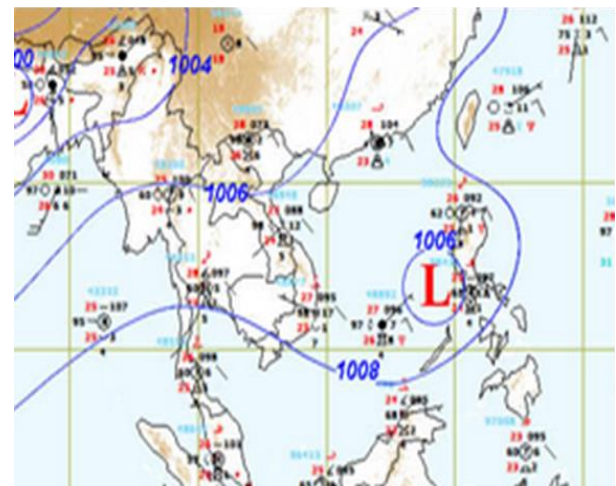


Figure 2: Weather map for 22<sup>nd</sup> August 2014

##### Moderate South-West (SW) Monsoon

During last week, the Southwest monsoon was prevailed over Myanmar, the Andaman Sea, the Gulf of Thailand, Thailand and Indochina Peninsular (Figure 1 and Figure 2)

##### Inter Tropical Convergence Zone (ITCZ)

During last week, the Inter Tropical Convergence Zone (ITCZ) lies across the lower North of Myanmar, Lao PDR and the middle Viet Nam.

##### Tropical depressions (TD), tropical storms (TS) or typhoons (TY)

No TD, TS or TY was observed during last week.

##### Over weather situation

During last week, there are two factors weather affecting to LMB; the Inter Tropical Convergence Zone (ITCZ) and moderate Southwest Monsoon (SW). However, their influencing on rainfall was not much. The accumulative weekly rainfall greater than 100 mm are at Nongkhai (115 mm) and Savannakhet (122.5 mm). See Table A2 and Figure 3.

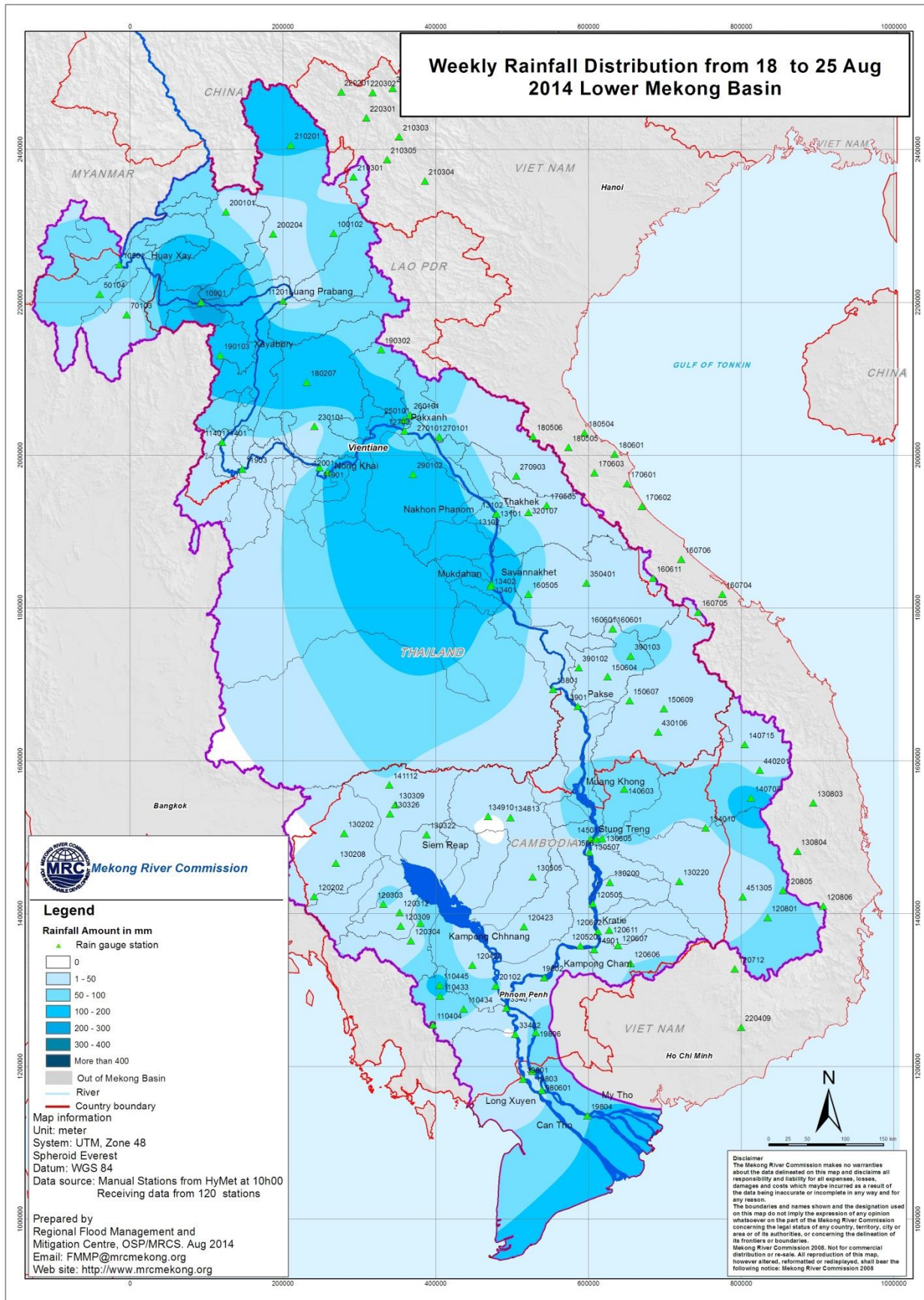


Figure 3: Weekly Rainfall Distribution from 18<sup>th</sup> – 25<sup>th</sup> August 2014 over the LMB

### **General behaviour of the Mekong River**

During last week, the water levels at most stations from upper reach of the LMB to Pakse were fluctuating below the Long Term Average (LTA); from Stung Treng to Kompong Cham were decreasing below the LTA and from Phnom Penh to Chau Doc were decreasing and just above/below the LTA.

#### ***For stations from Chiang Saen and Luang Prabang***

Compared to the long term average (LTA), the water levels at these stations were fluctuating below the LTA.

#### ***For stations from Chiang Khan, Vientiane and Nongkhai and Paksane***

Compared to the long term average (LTA), the water levels at these stations were fluctuating below the LTA.

#### ***For stations from Thakhet/Nakhon Phanom to Pakse***

Compared to the long term average (LTA), the water levels at these stations were fluctuating below the LTA.

#### ***For stations from Stung Treng to Kompong Cham***

Compared to the long term average (LTA), the water levels at these stations were decreasing below the LTA.

#### ***For stations from Phnom Penh to Koh Khel/Neak Luong***

Compared to the long term average (LTA), the water levels at these stations were decreasing; however at Phnom Penh (Bassac) and Neak Luong, the water levels were just above the LTA, at Phnom Penh Port and Prek Kdam were just below the LTA from mid – last week.

#### ***Tan Chau and Chau Doc***

Compared to the long term average (LTA), the water levels at both stations were decreasing; however, the water level at Chau Doc was just above the LTA, while at Tan Chan was below the LTA from mid – last week.

**Note:** For areas between forecast stations, please refer to the nearest forecast station.

### **Flood Situation**

#### ▪ Flood stage or alarm stage:

No alarm stage (where the forecast is expected to reach flood level within the next three days) was reported anywhere on the mainstream of the Mekong River during the last week. Water levels were still significantly below flood levels (as defined by the national agency) at all forecast stations.

#### ▪ Damage or victims:

No damage or loss of life due to river flooding was recorded anywhere along the Mekong River during the last week.

For more details see the following annexes:

- tables and graphs for water level and rainfall for the last week in Annex A
- a graph for accuracy in Annex B
- a table of forecast achievement in Annex B
- tables and graphs for performance in Annex B
- the water level graphs showing the observed water level for the season in Annex C

**Annex A: Graphs and Tables**

Table A1: observed water levels

Unit in m

2014	Jinghong	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Thakhek	Mukdahan	Savannakhet	Khong Chiam	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Phnom Penh Port	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc
18/08	535.3	5.27	12	10.66	6.56	7.38	8.89	8.26	9.3	8.16	7.2	10.04	8.3	7.76	18.32	13.38	8.91	8.05	7.22	6.72	7.89	3.5	2.91
19/08	535.29	5.07	11.7	11.19	7.4	8.45	9.57	7.96	9.09	7.88	6.75	9.53	7.87	7.49	17.96	13.04	8.76	7.9	7.14	6.61	7.78	3.42	2.87
20/08	535.3	4.58	11.48	11.09	7.8	8.96	10.13	8.2	9.25	7.74	6.7	9.08	7.42	7.19	17.48	12.67	8.59	7.73	7.06	6.48	7.64	3.36	2.83
21/08	535.3	4.48	11.36	11.09	7.7	8.93	10.4	8.46	9.45	7.92	6.9	8.91	7.22	6.9	16.91	12.24	8.42	7.42	6.93	6.33	7.51	3.28	2.81
22/08	535.26	5.34	11.14	11.02	7.78	9	10.44	8.54	9.6	8.1	7.02	8.97	7.2	6.77	16.42	11.82	8.28	7.29	6.84	6.2	7.39	3.22	2.81
23/08	535.26	5.19	10.96	10.75	7.63	8.9	10.47	8.62	9.63	8.17	7.09	9	7.28	6.73	16.16	11.51	8.2	7.21	6.78	6.12	7.32	3.17	2.78
24/08	535.25	4.68	11.1	10.5	7.38	8.63	10.32	8.62	9.6	8.17	7.16	9.04	7.34	6.75	16.08	11.34	8.16	7.17	6.75	6.08	7.33	3.11	2.7
25/08	535.25	4.35	10.65	10.55	7.18	8.43	10.16	8.4	9.43	8	7.24	8.97	7.3	6.86	16	11.23	8.14	7.15	6.72	6.04	7.29	3.04	2.65

Table A2: observed rainfall

Unit in mm

2014	Jinghong	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Thakhek	Mukdahan	Savannakhet	Khong Chiam	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Phnom Penh Port	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc
18/08	0	5.2	nr	0	nr	0	4	0	nr	0	nr	0	nr	nr	nr	nr	nr	nr	nr	24.6	nr	6.6	5
19/08	2	19.5	nr	0	nr	7.8	nr	6.1	13.7	0	3	29.5	0.6	nr	nr	20.3	nr	nr	nr	2.4	3.2	3.4	0.5
20/08	8.5	4.3	35	0	5.6	2	27.5	0	nr	0	nr	1	nr	nr	nr	0.3	nr	nr	nr	nr	37.5	34.7	1
21/08	10.5	5.5	0.4	3.8	4.8	37.5	2.6	28.8	31.5	72.5	122.5	0	nr	nr	nr	nr	13	nr	0	nr	nr	8.6	11.8
22/08	0	0	4.8	11	47.5	64.8	5.8	3.4	2.5	0	nr	0	nr	nr	2	nr	nr	nr	0.2	11.6	14.4	nr	nr
23/08	0	0	nr	3.2	nr	2.6	2.7	9.8	25.1	1	nr	0	nr	4.5	nr	nr	nr	nr	nr	14.2	nr	1.4	0.1
24/08	0	0	nr	0.9	nr	0	nr	0	nr	17.2	7	0	nr	2	nr	nr	nr	nr	0	0	nr	nr	nr
25/08	8	31.8	nr	3.3	nr	0	6.5	0	nr	4.5	48	0	5	79	3.2	0	5.2	nr	2.7	30.2	nr	0	nr

Figure A1: Water level and rainfall for Jinghong, Chiang Saen, and Luang Prabang





Figure A2: Water level and rainfall for Chiang Khan, Vientiane, Nongkhai, and Paksane

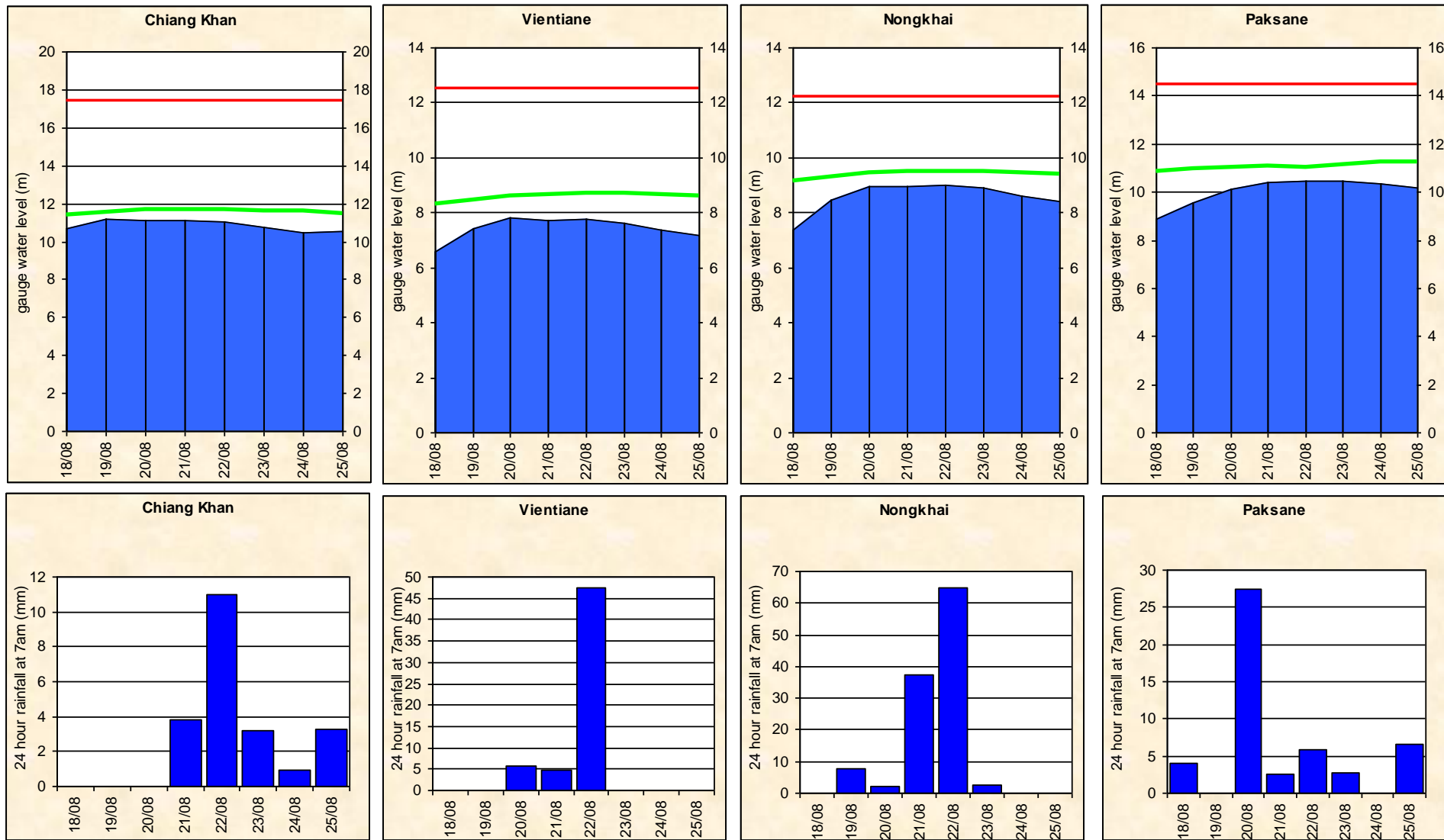


Figure A3: Water level and rainfall for Nakhon Phanom, Thakhek, Mukdahan and Savannakhet

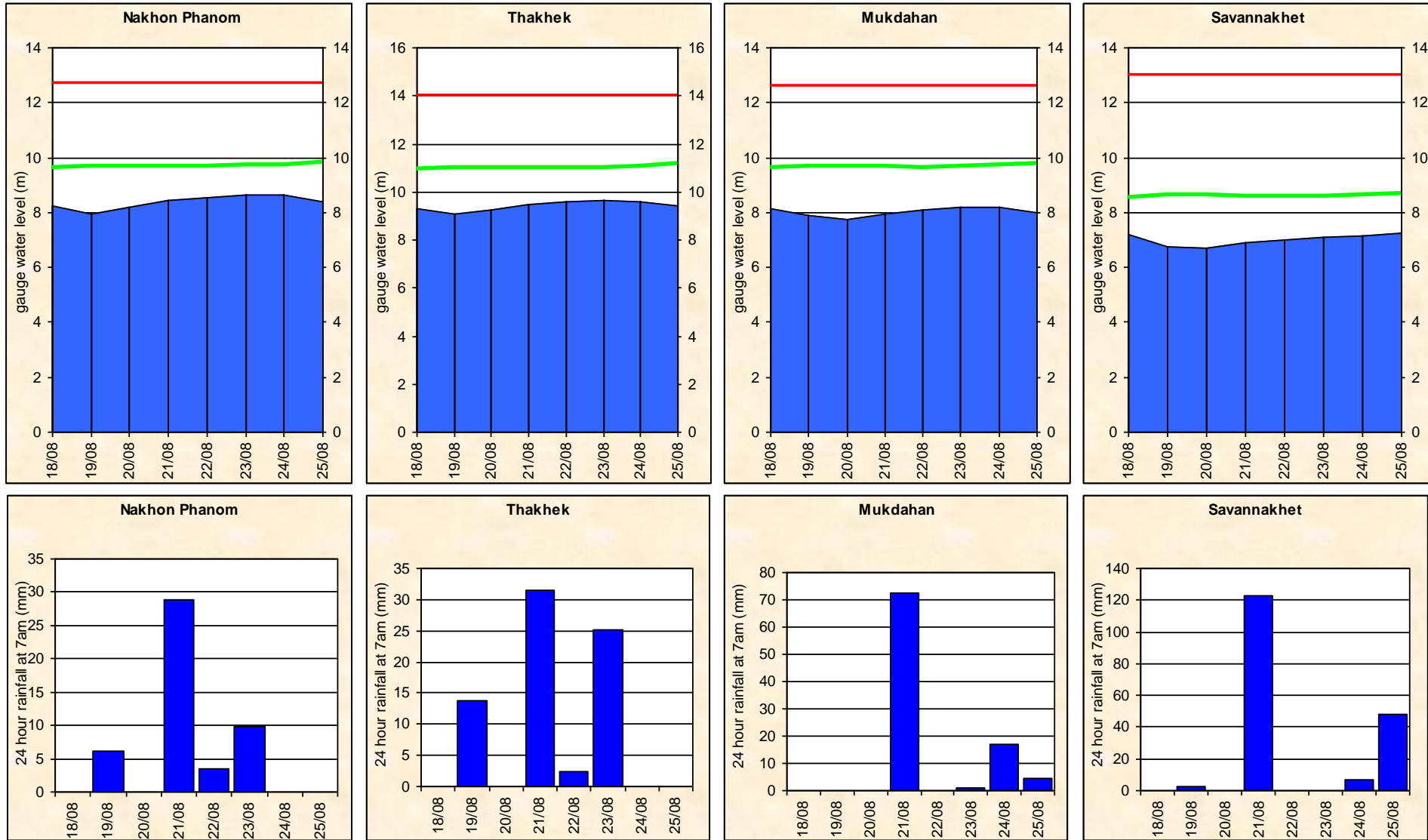


Figure A4: Water level and rainfall for Khong Chiam, Pakse, Stung Treng, and Kratie

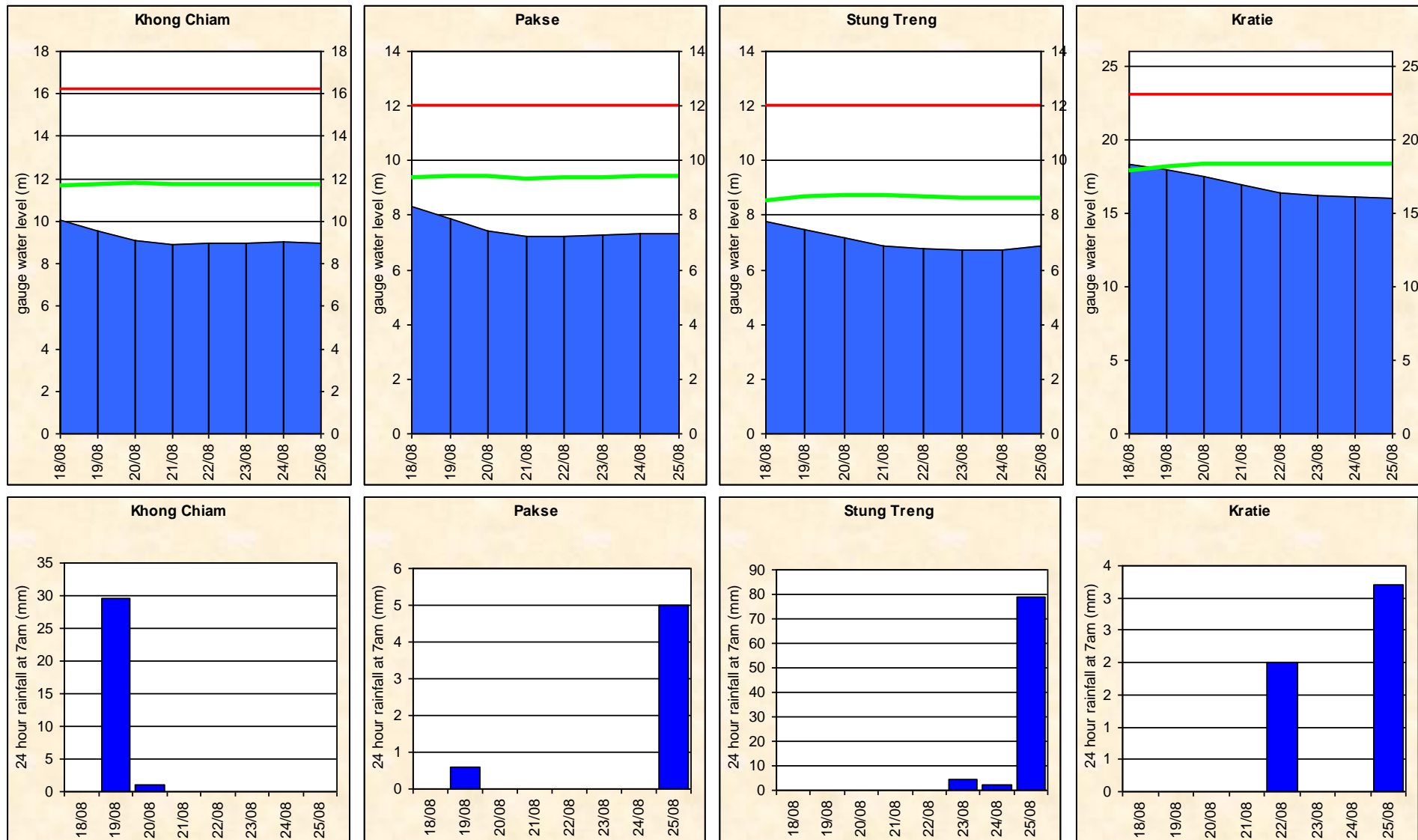




Figure A5: Water level and rainfall for Kompong Cham, Phnom Penh (Bassac and Port), and Koh Khei

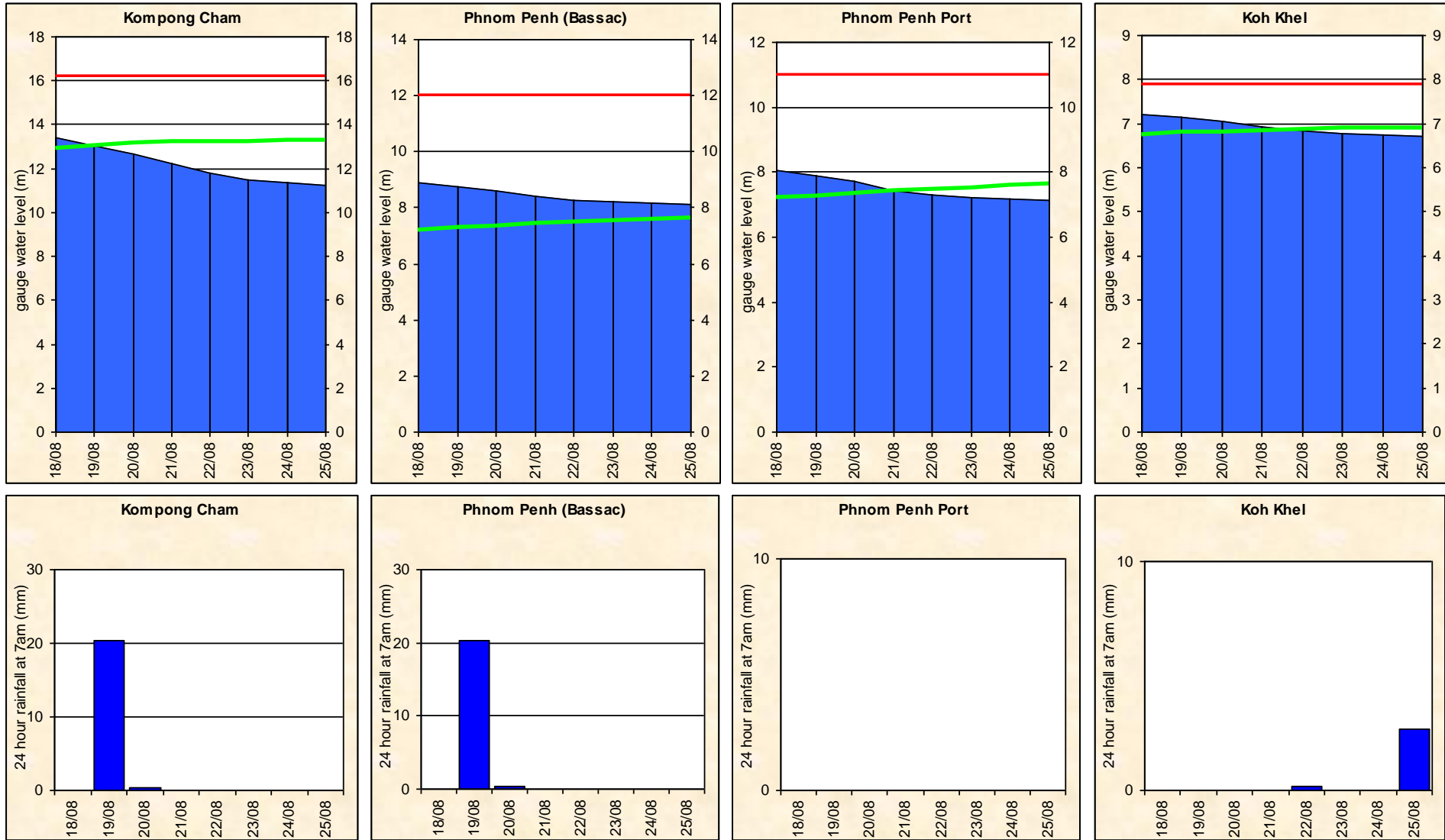
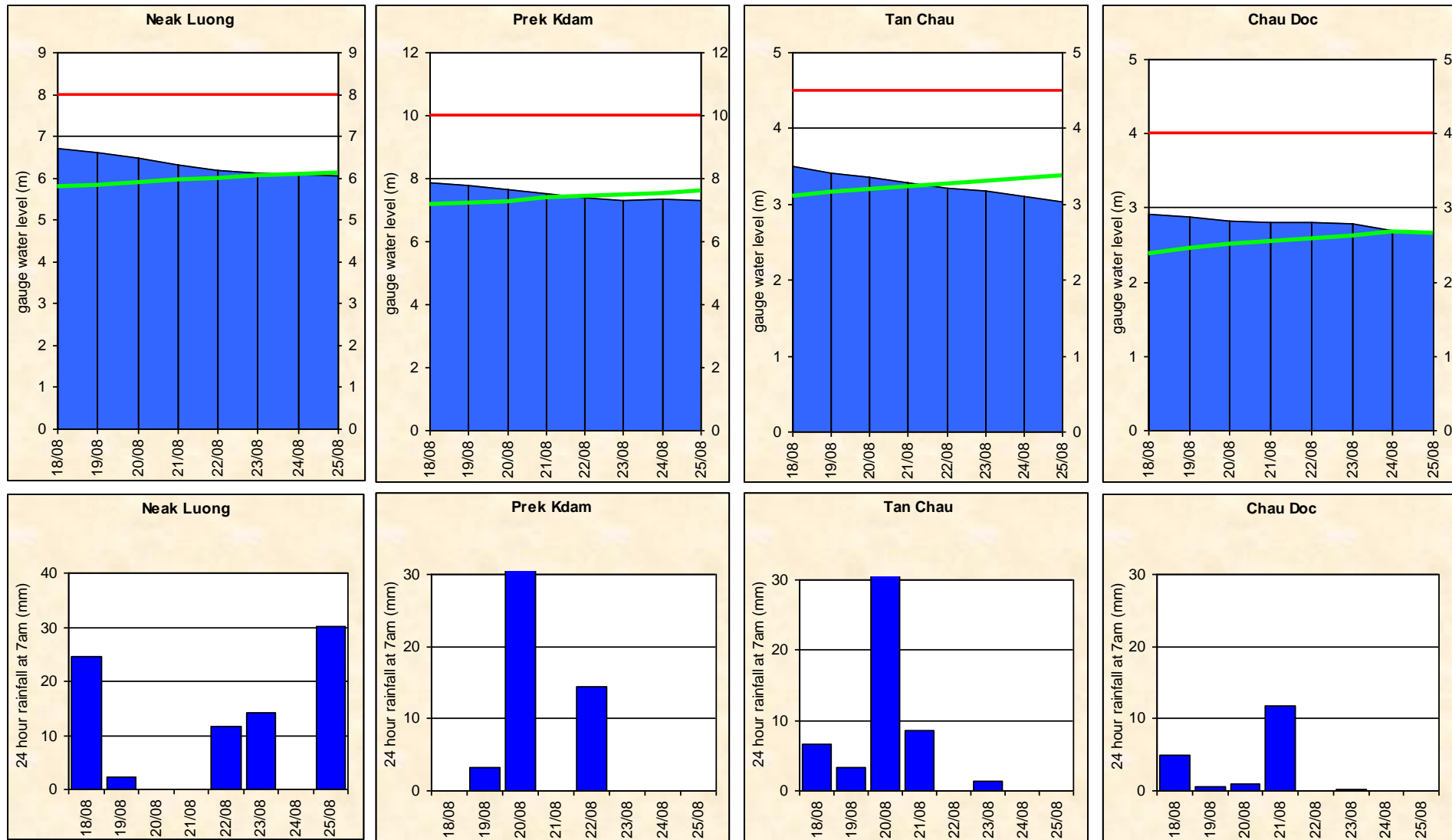


Figure A6: Water level and rainfall for Neak Luong, Prek Kdam, Tan Chau and Chau Doc



## Annex B: Accuracy and performance

### Accuracy

“Accuracy” describes the accuracy of the adjusted and published forecast, based on the results of the MRC Mekong Flood Forecasting System, which are then adjusted by the Flood Forecaster in Charge taking into consideration known biases in input data and his/her knowledge of the response of the model system and the hydrology of the Mekong River Basin. The information is presented as a graph below, showing the average flood forecasting accuracy along the Mekong mainstream.

In general, the overall accuracy is fairly good for 1-day to 5-day forecast lead time at stations

in the lower parts of the LMB. However, the accuracies at Nakhon Phanom, Khong Chiam, Kratie, Kompong Cham for 3 -day to 5-day forecast were less than expected.

The above differences due to two main factors: (1) internal model functionality in forecasting; for which the parameter adjustment in the model is not possible especially at stations in the upper part and in the Mekong delta where are affected by tidal; (2) the adjustment by utilizing the practical knowledge and experience of flood forecaster-in-charge.

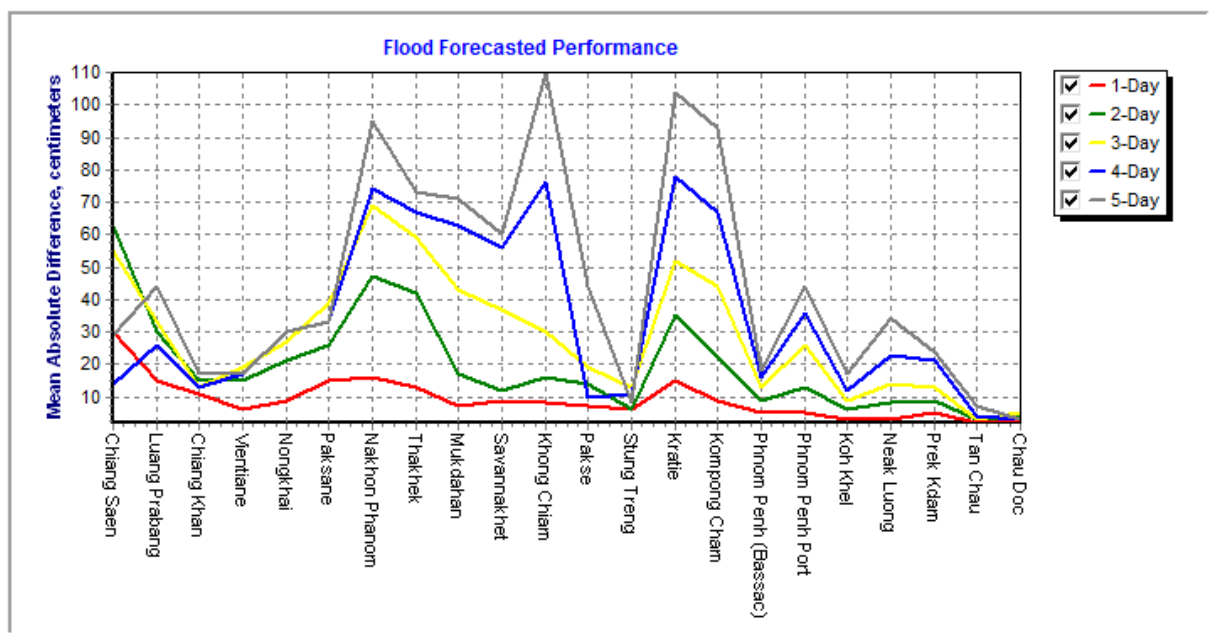


Figure B1: Average flood forecast accuracy along the Mekong mainstream

**Forecast Achievement**

The forecast achievement indicates the % of days that the forecast at a particular station for a lead-time is successful against a respective benchmark (Table B2).

Table B1: Achievement of daily forecast against benchmarks

	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Thakhek	Mukdahan	Savannakhet	Khong Chiam	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Phnom Penh Port	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc	Average	
1-day	57.1	85.7	100.0	85.7	71.4	71.4	42.9	28.6	71.4	71.4	57.1	85.7	100.0	28.6	57.1	85.7	71.4	100.0	100.0	100.0	100.0	100.0	100.0	76.0
2-day	33.3	66.7	100.0	83.3	66.7	66.7	50.0	50.0	83.3	83.3	100.0	83.3	100.0	33.3	83.3	83.3	66.7	66.7	66.7	66.7	100.0	100.0	100.0	74.2
3-day	40.0	80.0	100.0	80.0	80.0	40.0	20.0	20.0	20.0	60.0	40.0	80.0	80.0	20.0	40.0	60.0	40.0	60.0	40.0	60.0	100.0	80.0	100.0	56.4
4-day	100.0	100.0	100.0	100.0	100.0	75.0	50.0	50.0	50.0	75.0	25.0	100.0	100.0	25.0	25.0	50.0	25.0	50.0	50.0	75.0	100.0	100.0	100.0	69.3
5-day	100.0	100.0	100.0	100.0	66.7	66.7	33.3	33.3	33.3	66.7	0.0	66.7	100.0	0.0	0.0	66.7	0.0	66.7	33.3	33.3	100.0	100.0	100.0	57.6

Unit in %

Table B2: Benchmarks of success (Indicator of accuracy in mean absolute error)

	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Thakhek	Mukdahan	Savannakhet	Khong Chiam	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Phnom Penh Port	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc	
1-day	25	25	25	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
2-day	50	50	50	25	25	25	25	25	25	25	25	25	25	25	25	10	10	10	10	10	10	10	10
3-day	50	50	50	25	25	25	25	25	25	25	25	25	25	25	25	10	10	10	10	10	10	10	10
4-day	75	75	50	50	50	50	50	50	50	50	50	50	50	50	50	10	25	10	25	25	10	10	10
5-day	75	75	50	50	50	50	50	50	50	50	50	50	50	50	50	25	25	25	25	25	25	25	25

Unit in cm

**Note:** An indication of the accuracy given in the Table B2 is based on the performance of the forecast made in 2008 from the new flood forecasting system and the configuration for the 2009 flood season and is published on the website of MRC (<http://ffw.mrcmekong.org/accuracy.htm>).

A new set of performance indicators that is established by combining international standards and the specific circumstances in the Mekong River Basin, is applied officially for the flood season of 2011 onward.

**Performance**

Performance is assessed by evaluating a number of performance indicators, see table and graphs below:

Table B3: Overview of performance indicators for the past 5 days including the current report date

2014	Flood Forecast: time sent				Arrival time of input data (average)							Missing data (number)						
	FF completed and sent (time)	stations without forecast	FF2 completed and sent (time)	Weather information available (number)	NOAA data	China	Cambodia - DHRW	Cambodia - DOM	Lao PDR - DMH	Thailand - DWR	Viet Nam - NCHMF	NOAA data	China	Cambodia - DHRW	Cambodia - DOM	Lao PDR - DMH	Thailand - DWR	Viet Nam - NCHMF
<i>week</i>	10:07	00:00	-	07:34	08:12	07:46	07:13	07:07	07:36	07:31	07:03	0	0	0	0	98	0	0
<i>month</i>	10:04	00:00	-	07:46	08:13	07:53	07:15	07:11	07:43	07:43	07:10	1	4	0	0	376	1	0
<i>season</i>	10:17	00:00	-	07:21	08:10	07:56	07:11	07:14	08:04	07:34	07:13	4	8	46	10	1562	1	161

*Week* is the week for which this report is made; *Month* is actually the last 30 days (or less if the flood season has just begun); *Season* is the current flood season up to the date of this report.

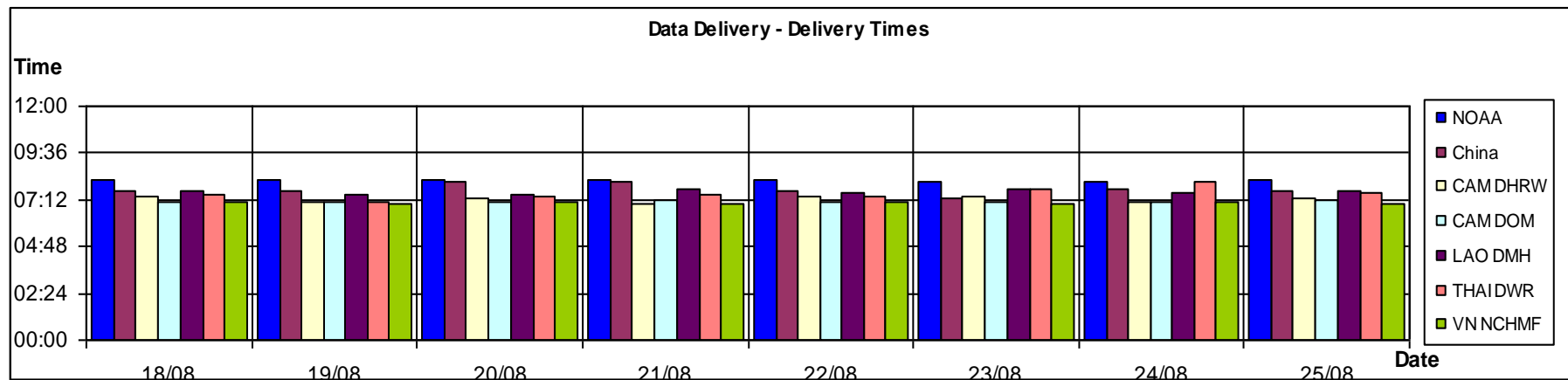


Figure B2: Data delivery times for the past 8 days including the current report date

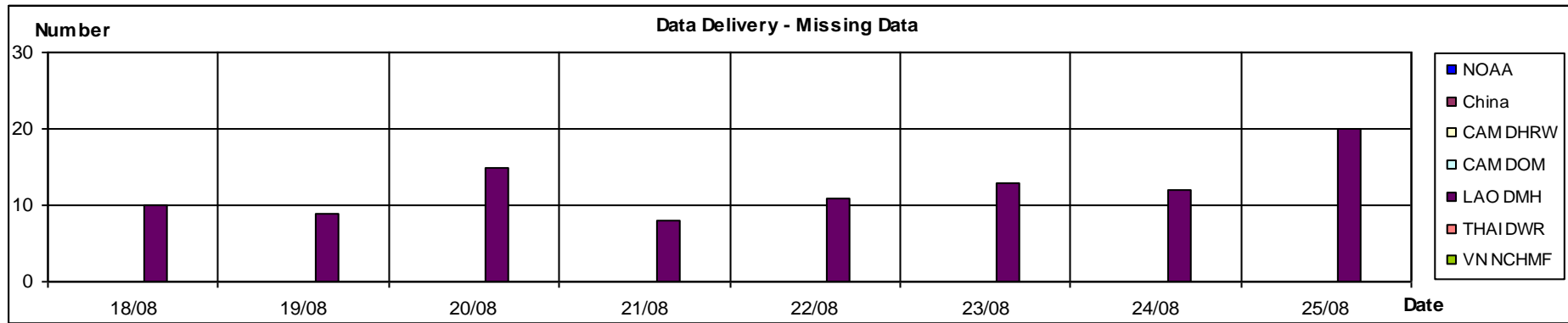


Figure B3: Missing data for the past 8 days including the current report date

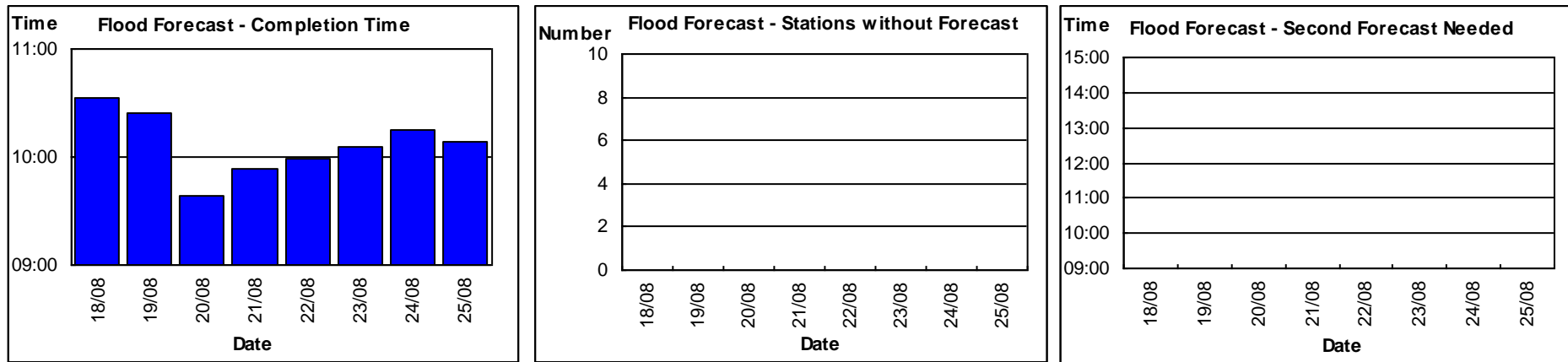


Figure B4: Flood forecast completion time

Figure B5: Flood forecast stations without forecast

Figure B6: Second forecast needed

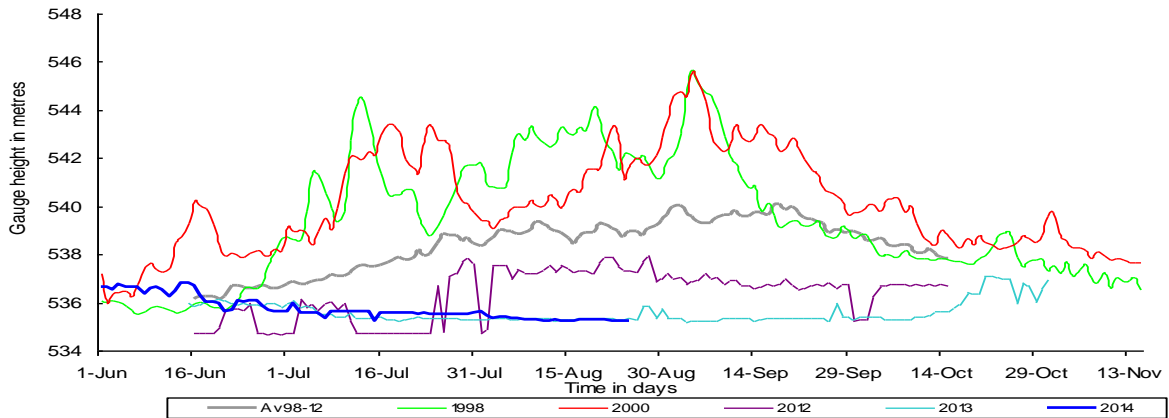


## Annex C: Season Water Level Graphs

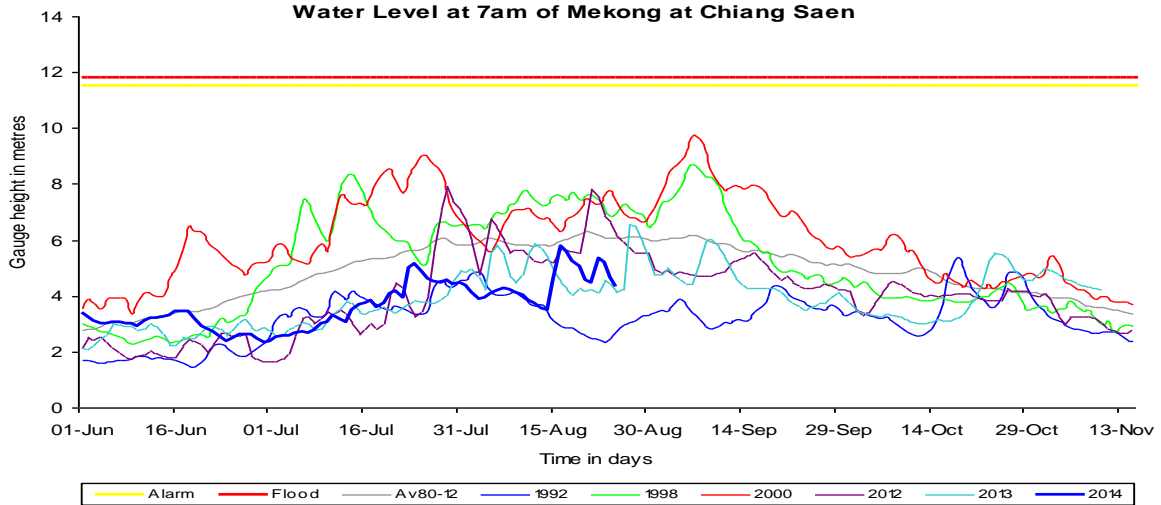
This Annex has the water level graphs of the report date. These graphs are distributed daily by email together with the Flood Bulletins.

### HYDROGRAPHS OF THE MEKONG AT MAINSTREAM STATIONS IN FLOOD SEASON FROM 1 JUNE TO 31 OCTOBER

Water Level at 7am of Mekong at Jing Hong



Water Level at 7am of Mekong at Chiang Saen



Water Level at 7am of Mekong at Luang Prabang

