

Weekly Flood Situation Report for the Mekong River Basin

Prepared at: 11/06/2013, covering the week from the 3rd June to the 10th June 2013

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

General weather patterns

During the week of 03rd June to 10th June 2013 three weather bulletins were issued by the Department of Meteorology (DOM) of Cambodia. The weather charts of the 02nd June and 06th June are presented in the figures below:

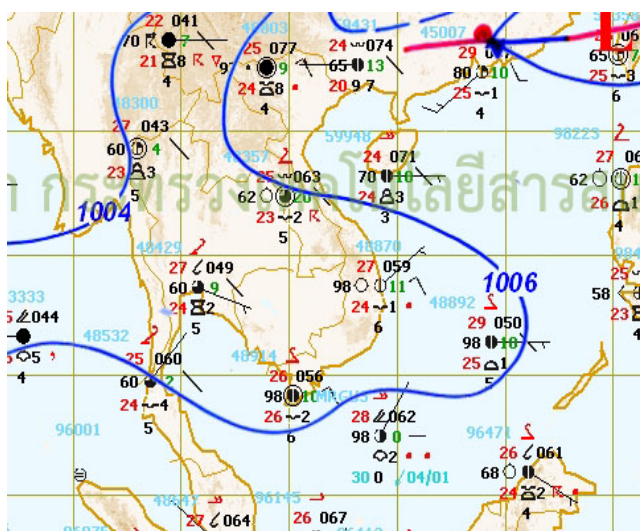


Figure 1: Weather map for 2nd June 2013

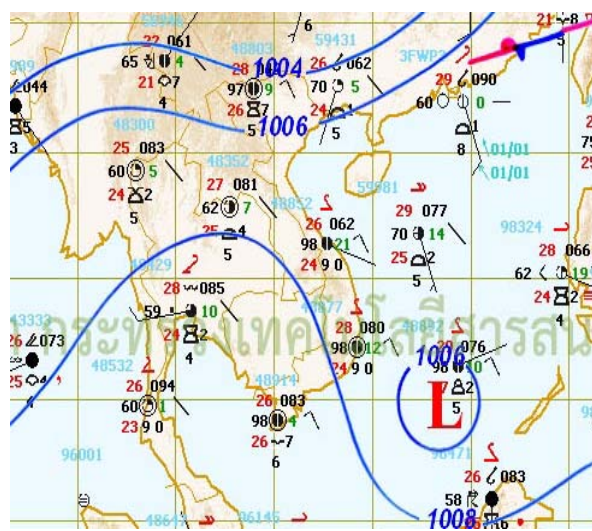


Figure 2: Weather map for 06th June 2013

Moderate South-West (SW) Monsoon

The SW monsoon prevailed over Myanmar, Andaman Sea the Gulf of Thailand, Cambodia, the South of Lao PDR and Viet Nam. The south-westerly wind prevails over Myanmar, Thailand and Indochina Peninsular (Figure 1 and 2).

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

No TD, TS or TY have significantly influenced the LMB during the last week.

Other weather phenomena that affect the discharge

No other weather phenomena affecting the discharge were observed.

Over weather situation

The SW monsoon continued prevailing over the Andaman Sea, the Gulf of Thailand and Indochina Peninsular. Therefore, heavy rain occurred in Thailand, Lao PDR from beginning to mid last week. The amount of rainfall from 03rd to 06th June were recorded at Vientiane (128,5 mm), at NongKhai (75,1mm), at Paksane (203 mm). See Figure 3.

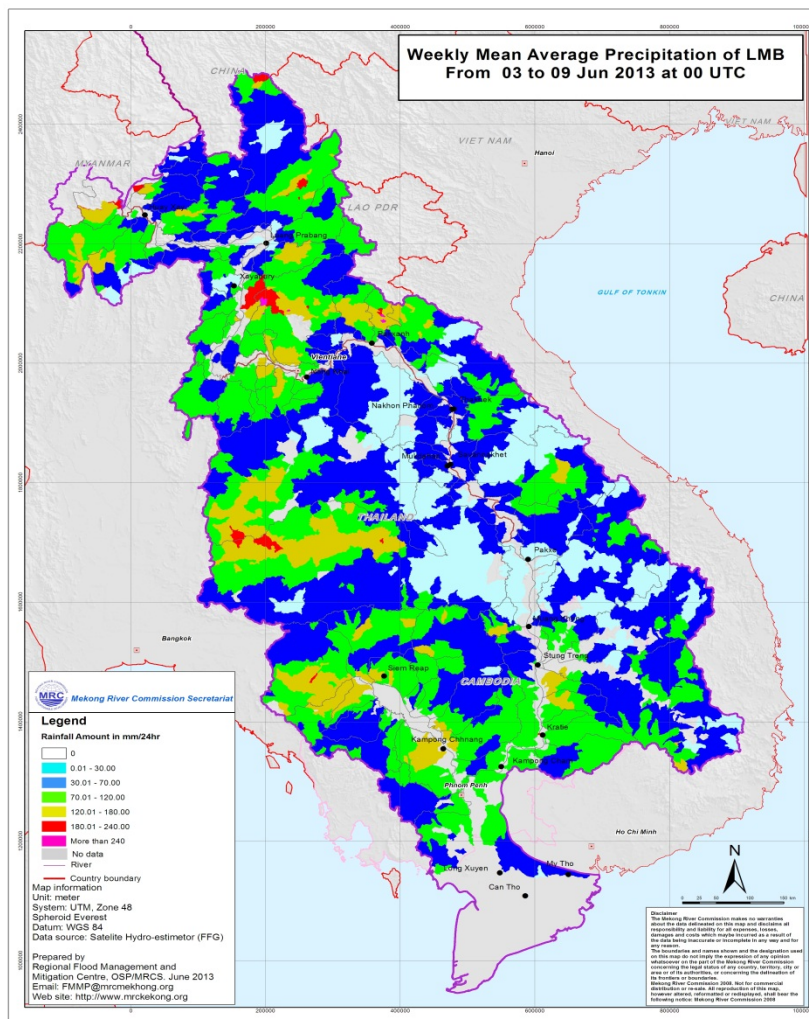


Figure 3: Rainfall distribution over the LMB, covering the week 03rd – 10th June, 2013

General behaviour of the Mekong River

During last week, the water levels at most stations in the upper and middle reaches were below the water level of the average period. However, two stations in downstream at Tan Chau and Chau Doc, water levels at those 2 stations were higher than the long term average during the same period.

For stations from Chiang Saen and Luang Prabang

In general, the water levels at Chiang Saen and Luang Prabang did not fluctuate significantly over the last week; as a result of rainfall in the middle reach, the water level at Luang Prabang was slightly higher during the weekend of 8th and 9th June.

For stations from Chiang Khan, Vientiane and Nong Khai and Paksane

Water levels were falling at the beginning of the week and continued falling towards the end of the week. Three those stations were recording water levels that were somewhat below the long-term average for this time of the year.

For stations from Thakhet/Nakon Phanom to Pakse

Water levels at Thakhet/Nakon Phanom, Mukdahan, Khong Cham and Pakse increased slightly from the beginning of the week until the weekend, but most stations were recording water levels that were below the long-term average for this time of the year. See Figure 4.

For stations from Stung Treng to Kampong Cham

Water levels at these stations were more-or-less stable, showing a slightly rising trend during the week somewhat around the long-term average for this time of the year.

For stations from Phnom Penh to Koh Khel/Neak Luong

Water levels were more or less stable during last week. Most stations were recording levels that were somewhat around the long-term average for this time of the year.

Tan Chau and Chau Doc

Water levels showed a rising trend in mid last week. Both stations recorded water levels that were somewhat above the long-term average for this time of the year, and that were significantly affected by the tide.

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 three days) was reported anywhere on the mainstream of the Mekong River during the past 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 past week.

For more details see the following annex:

- 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

2013	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
03/06		2.26	4.25	4.54	1.82	2.62	4.25	2.39	3.65	2.68	1.61	3.09	2.27	3.24	8.59	3.87	2.32	1.45	2.18	1.68	1.39	0.43	0.37
04/06		2.46	4.18	4.55	1.73	2.48	4.29	2.43	3.70	2.72	1.62	3.01	2.09	3.23	8.69	3.95	2.28	1.38	2.17	1.76	1.37	0.72	0.73
05/06		2.63	4.29	4.52	1.67	2.36	4.27	2.46	3.73	2.76	1.68	3.01	2.06	3.14	8.73	4.03	2.27	1.37	2.20	1.58	1.39	0.93	0.98
06/06		3.00	4.68	4.52	1.75	2.46	4.28	2.51	3.77	2.82	1.74	3.03	2.06	3.12	8.62	4.06	2.31	1.40	2.25	1.64	1.46	0.91	0.99
07/06		2.96	4.88	4.60	1.75	2.46	4.36	2.61	3.87	2.85	1.76	3.10	2.13	3.24	8.57	4.01	2.30	1.40	2.24	1.57	1.44	0.86	0.91
08/06		2.94	5.16	4.74	1.78	2.58	4.39	2.71	4.04	2.91	1.81	3.10	2.16	3.27	8.64	3.98	2.30	1.41	2.26	1.36	1.43	0.77	0.63
09/06		2.92	5.27	4.98	1.77	2.52	4.48	2.73	3.99	2.96	1.83	3.15	2.16	3.83	8.56	4.02	2.25	1.39	2.28	1.87	1.45	0.39	0.63
10/06		2.76	5.28	5.26	1.90	2.58	4.50	2.77	4.01	2.97	1.87	3.18	2.18	3.20	8.63	4.02	2.32	1.43	2.27	1.40	1.47	0.02	0.37
Flood level		11.80	18.00	17.40	12.50	12.20	14.50	12.70	14.00	12.60	13.00	16.20	12.00	12.00	23.00	16.20	12.00	11.00	7.90	8.00	10.00	4.20	3.50

Unit in m

Table A2: observed rainfall

2013	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
03/06		30.2	2.4	3.2		nr	32.8	14.5	40.6	nr		nr	nr	10	2.2	0.2	5.1		nr	0	40.5	nr	
04/06		5		2.2	52.4	18.7	95.1	1.5	1.3	3.1		5.1	nr	nr	1	2.1	12.9		5.8	2.2	nr	2.5	24
05/06		7.9	3.8	3.3	13.6	0.8	70.8	3.5	0.1	3.5		5.8	nr	5	25	18.3	nr		30.6	2.2	nr	0	4.6
06/06		nr	12.4	33.4	62.5	55.6	5.1	2.4	4.1	28	17.6	1.4	nr	nr	8.6	nr	0.1		2.5	nr	nr	2	1.4
07/06		nr	nr	nr	nr	0.8	nr	12.1	16.5	nr	nr	nr	nr	nr	nr	nr	0.1		nr	nr	3.2	0.8	
08/06		14.4	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	-	-	-		-	-	-	nr	-
09/06		0.2	6	nr	nr	nr	2	nr	8.7	nr	nr	nr	nr	-	-	-	-		-	-	-	1.4	-
10/06		nr		nr	nr	nr	nr	nr	7.2	nr	3.2	nr	nr	nr	nr	32.0	nr		nr	nr	nr	nr	

Unit in mm

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

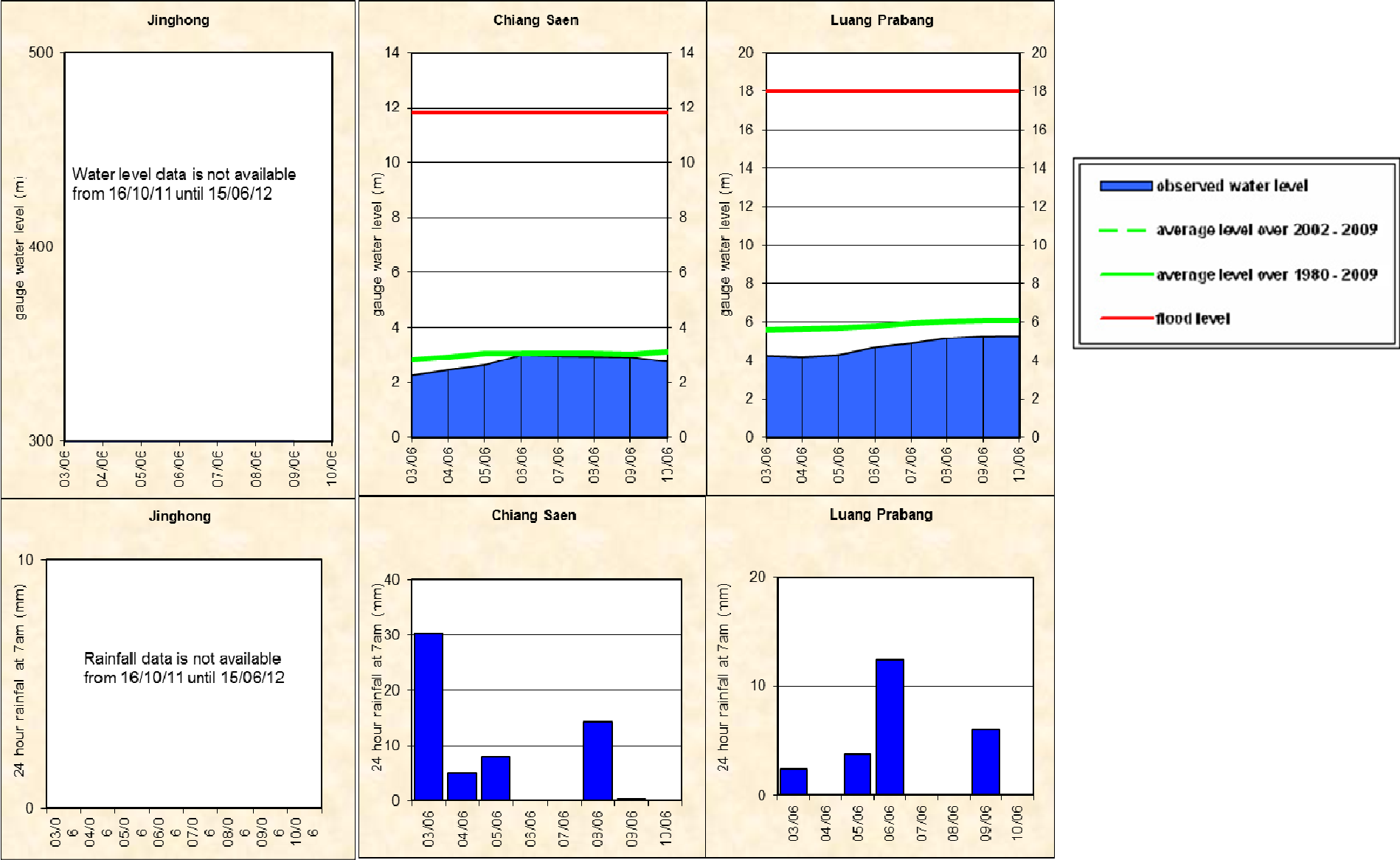


Figure A2: Water level and rainfall for Chiang Khan, Vientiane, Nongkhai, and Paksane

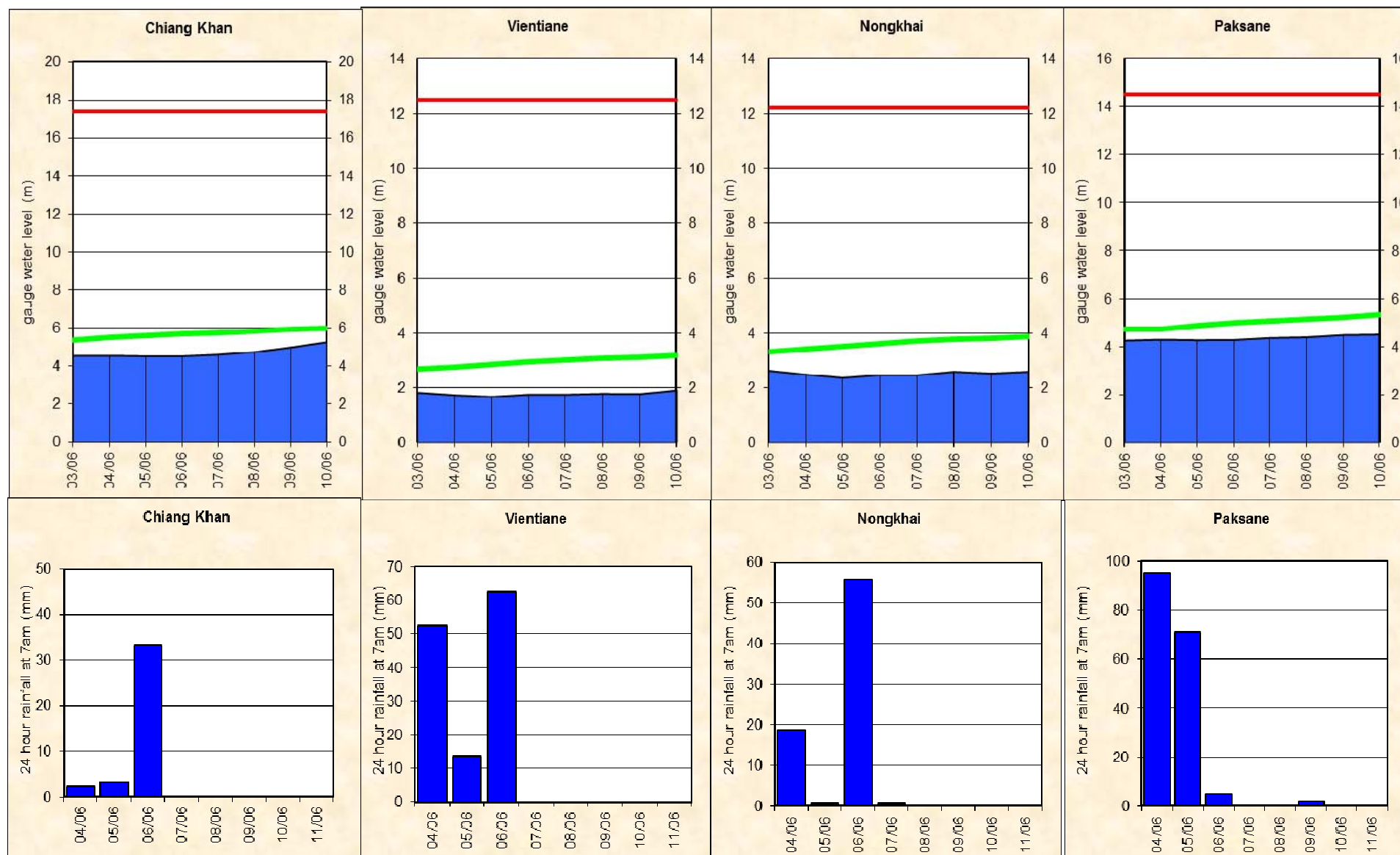


Figure A3: Water level and rainfall for Nakhon Phanom, Thakhek, Mukdahan and Savannakhet

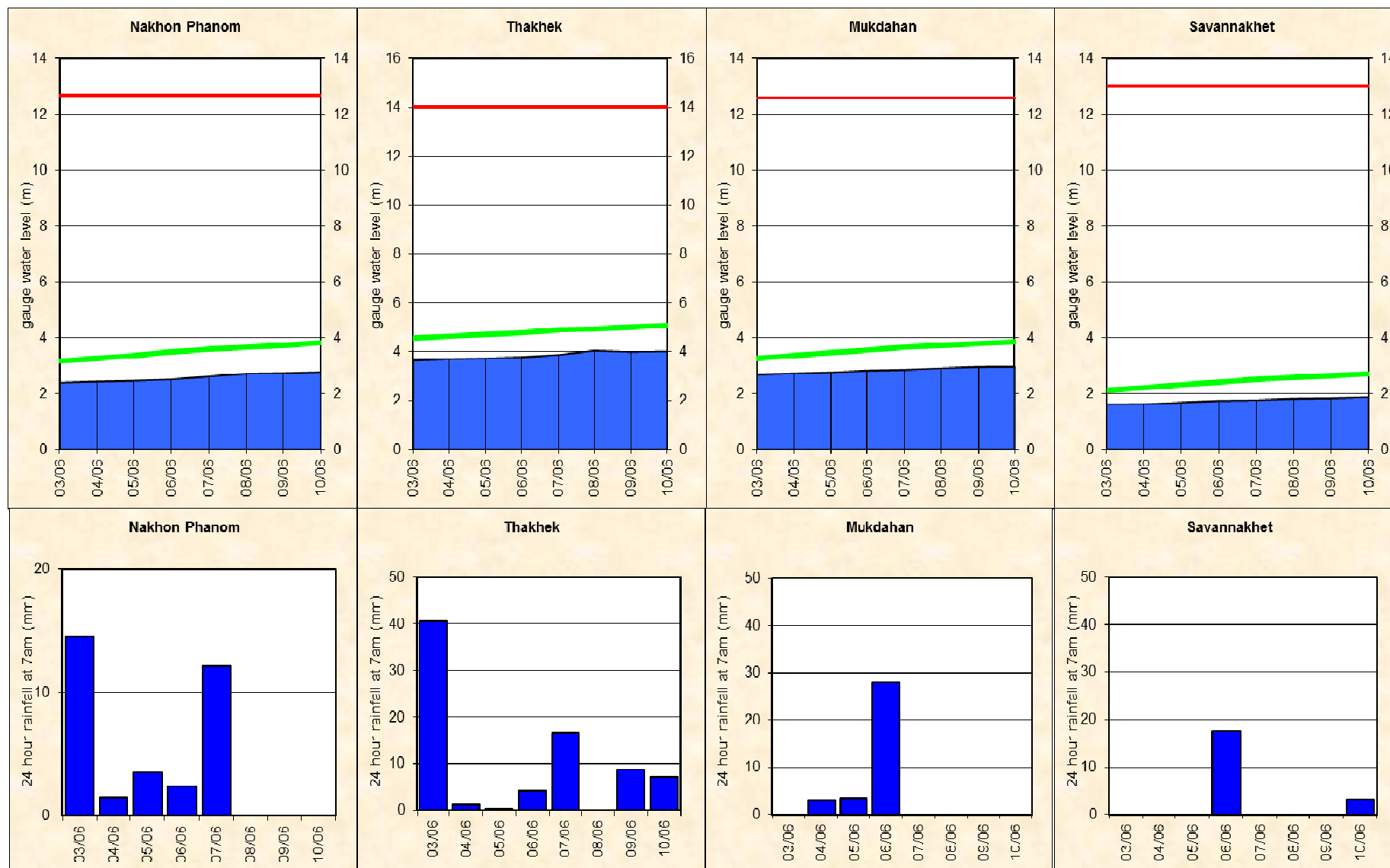


Figure A4: Water level and rainfall for Khong Chiam, Pakse, Stung Treng, and Kratie

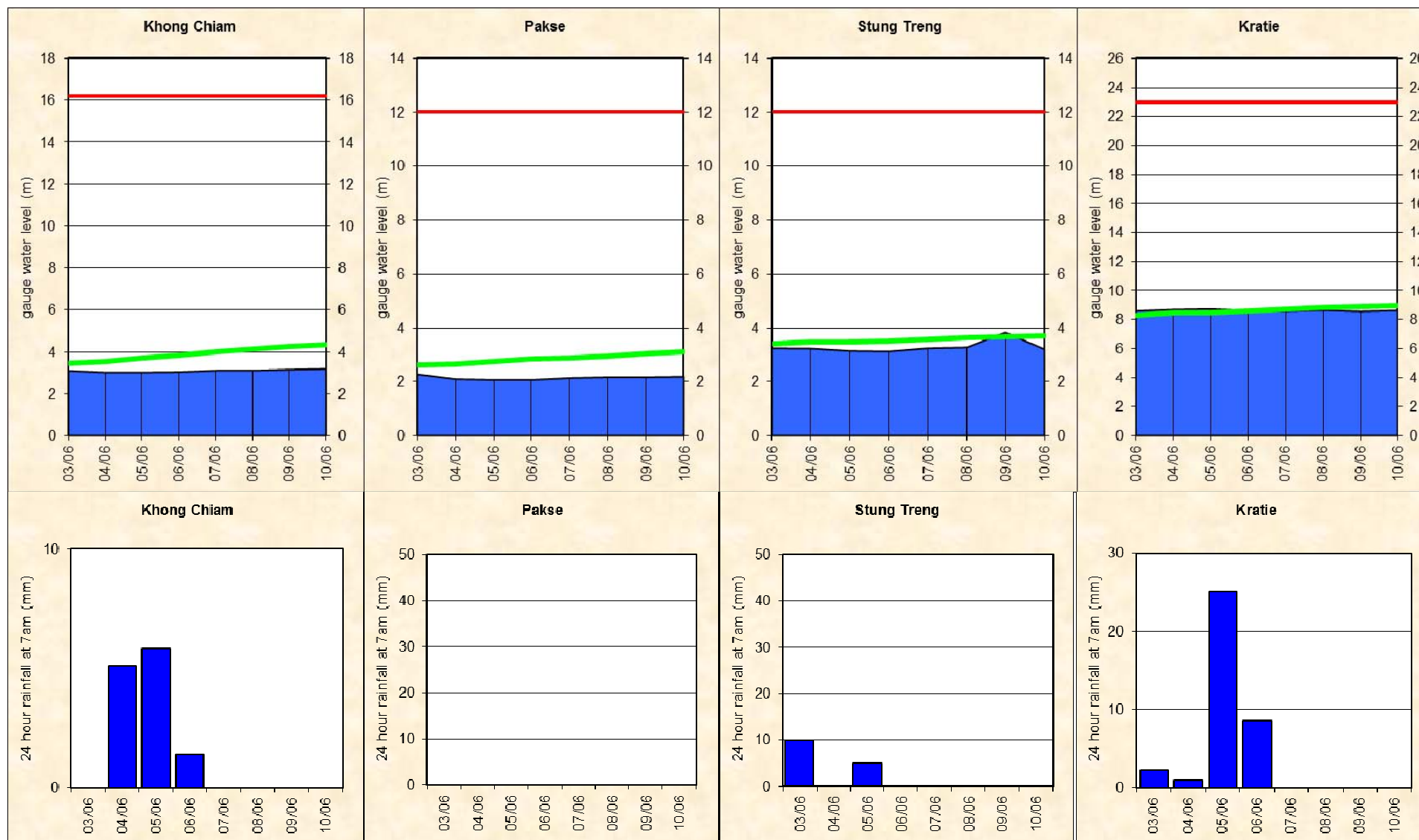


Figure A5: Water level and rainfall for Kampong Cham, Phnom Penh (Bassac and Port), and Koh Khel

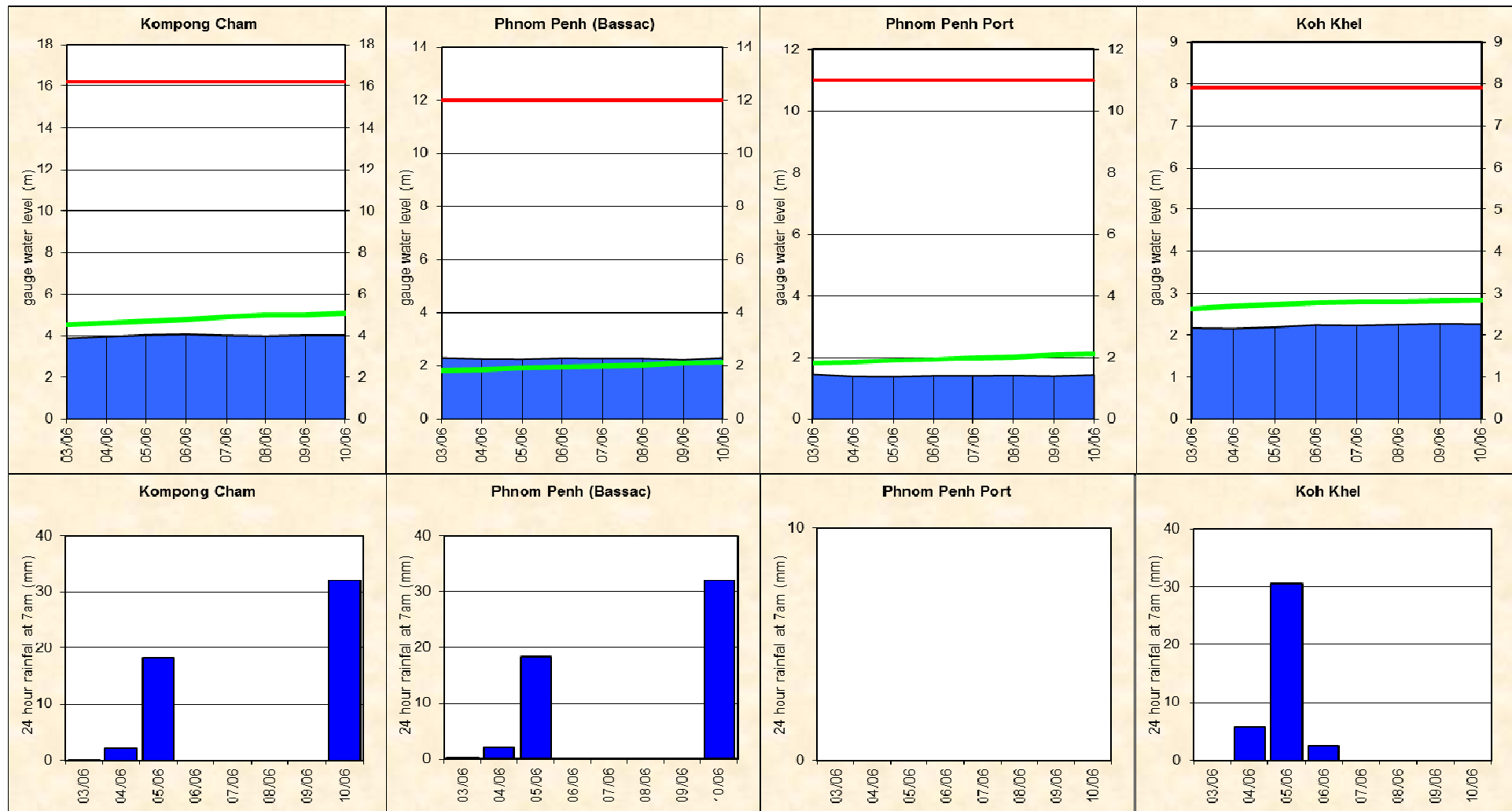


Figure A6: Water level and rainfall for Neak Luong, Prek Kdam, Tan Chau and Chau Doc

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 4-day forecast lead time at stations in the upper and middle parts of the LMB.

However, the accuracies at upper part stations as Phnom Penh Port, Neak Luong and two tidal affected stations Tan Chau, Chau Doc for 4-day and 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.

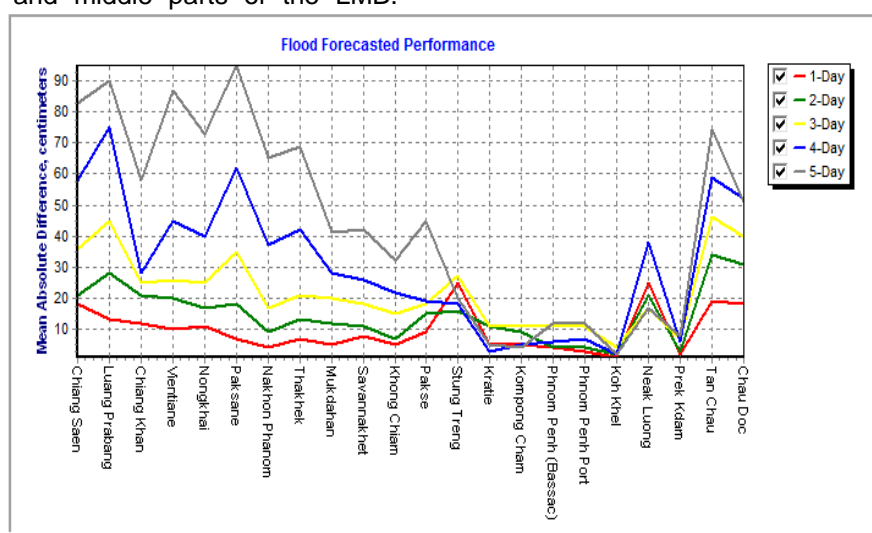


Figure B1: Average flood forecast accuracy along the Mekong mainstream

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	85.7	85.7	100.0	71.4	57.1	85.7	100.0	85.7	100.0	85.7	100.0	71.4	57.1	85.7	100.0	100.0	100.0	100.0	28.6	100.0	42.9	42.9	81.2
2-day	100.0	100.0	100.0	83.3	83.3	83.3	83.3	83.3	100.0	100.0	100.0	83.3	83.3	83.3	100.0	83.3	100.0	100.0	16.7	100.0	16.7	16.7	81.8
3-day	60.0	40.0	100.0	60.0	60.0	40.0	80.0	80.0	80.0	80.0	80.0	60.0	60.0	80.0	80.0	80.0	40.0	80.0	40.0	80.0	0.0	20.0	62.7
4-day	75.0	50.0	75.0	75.0	50.0	50.0	75.0	50.0	75.0	75.0	100.0	100.0	75.0	100.0	100.0	75.0	100.0	100.0	25.0	100.0	0.0	0.0	69.3
5-day	33.3	33.3	33.3	33.3	33.3	0.0	33.3	33.3	33.3	66.7	100.0	33.3	100.0	100.0	100.0	100.0	100.0	100.0	66.7	100.0	33.3	33.3	59.1

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
1-day	25	25	25	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
3-day	50	50	50	25	25	25	25	25	25	25	25	25	25	25	25	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
5-day	75	75	50	50	50	50	50	50	50	50	50	50	50	50	50	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

	Flood Forecast: time sent				Arrival time of input data (average)							Missing data (number)						
2013	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>	10:45	0	-	7	08:14	-	07:27	06:31	09:10	07:25	07:23	0	-	20	82	213	0	54
<i>month</i>	10:35	3	-	5	08:13	-	07:24	14:31	09:10	07:20	07:28	0	-	25	150	297	0	118
<i>season</i>	10:35	3	-	5	08:13	-	07:24	14:31	09:10	07:20	07:28	0	-	25	150	297	0	118

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.

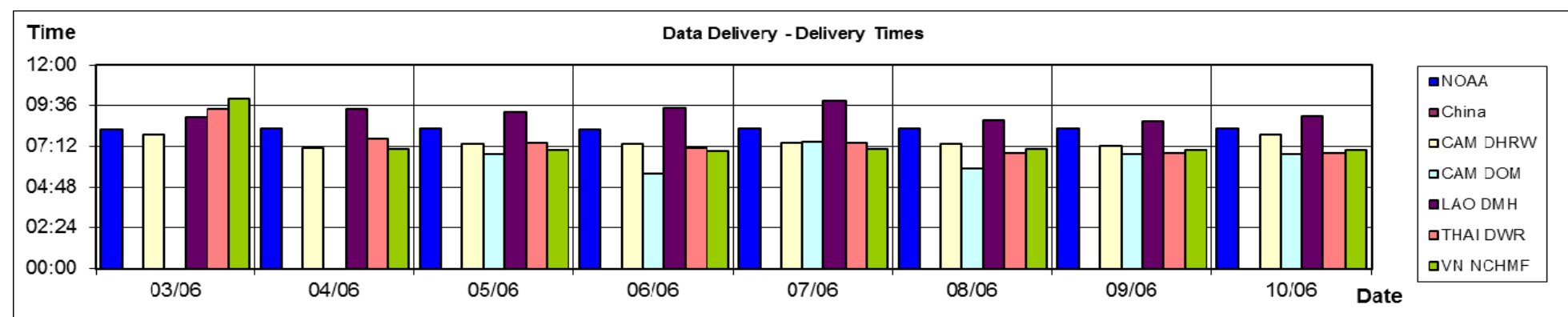


Figure B2: Data delivery times for the past 8 days including the current report date

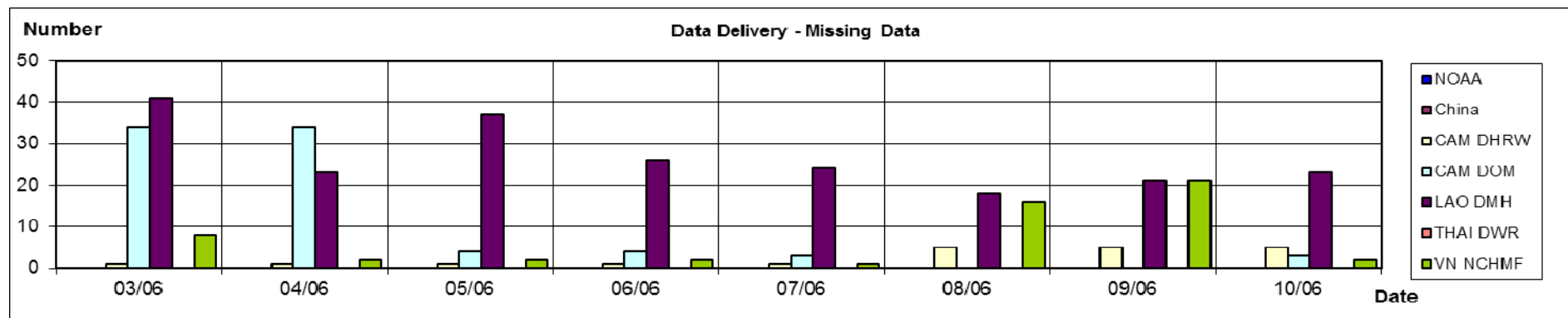


Figure B3: Missing data for the past 8 days including the current report date

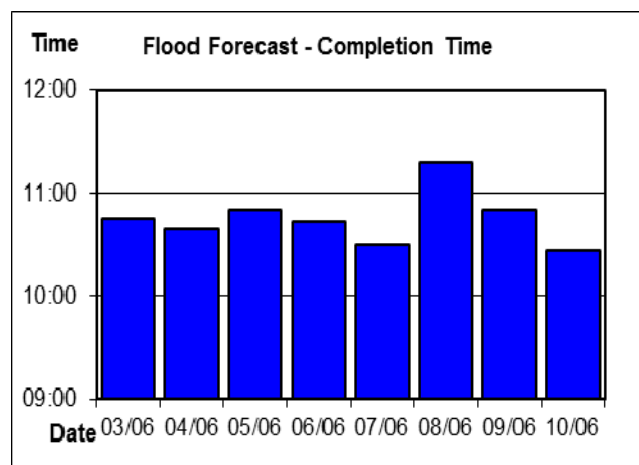


Figure B4: Flood forecast completion time

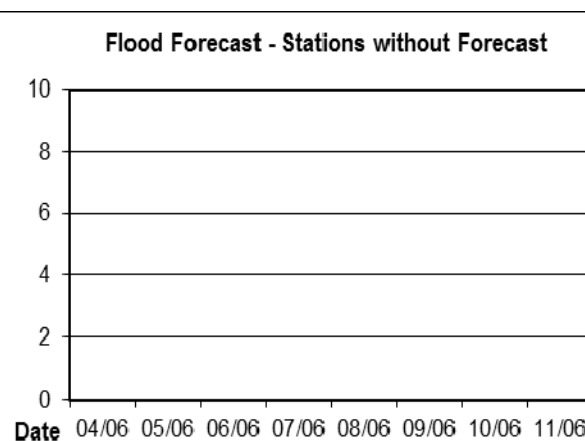


Figure B5: Flood forecast stations without forecast

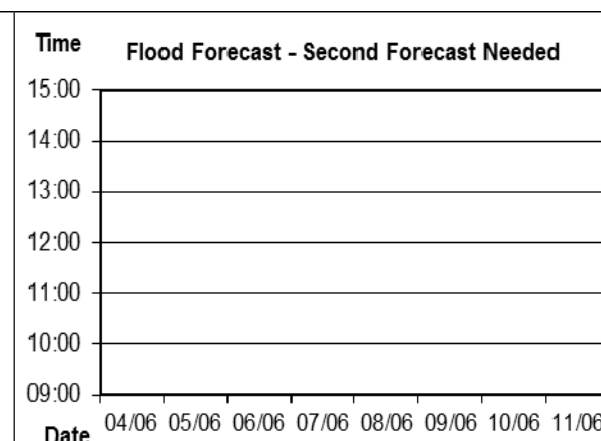


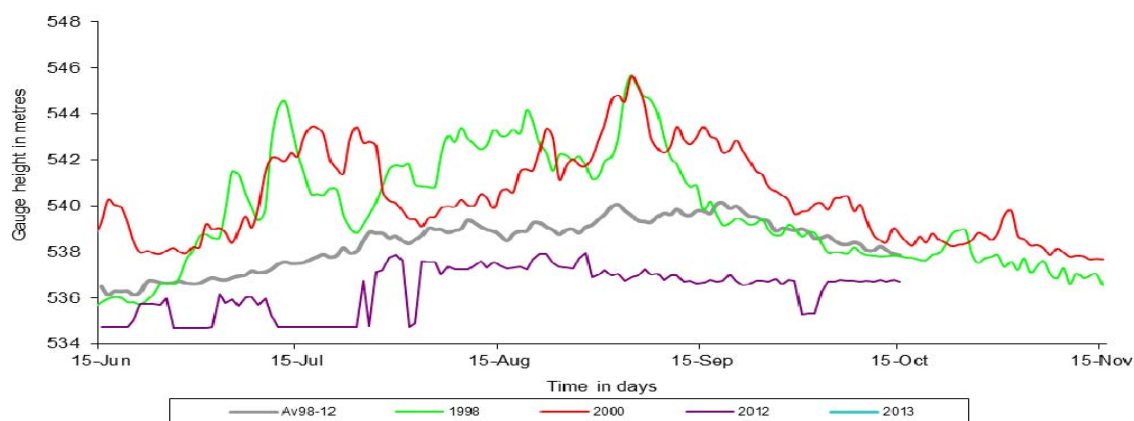
Figure B6: Second forecast needed

Annex C: Season Water Level Graphs

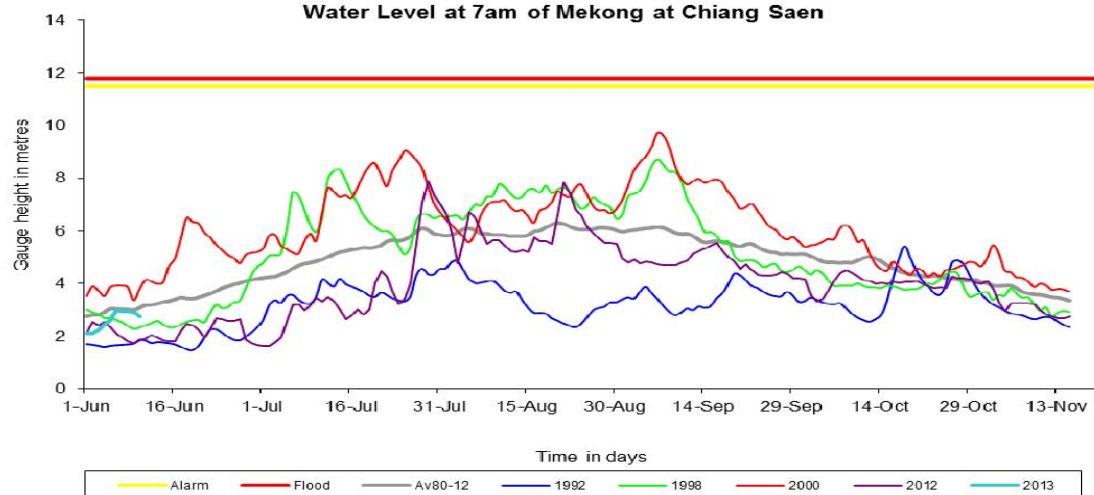
This Annex has the water level graphs of the report date. These graphs are distributed daily by email together with the Flood Bulletins.

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

