

Weekly Flood Situation Report for the Mekong River Basin

Prepared at: 14/10/2013, covering the week from the 07th October to the 14th October 2013

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

General weather patterns

During the week of 07th October to 14th October 2013 eight weather bulletins were issued by the Department of Meteorology (DOM) of Cambodia. The weather charts of the 07th October and 13th October are presented in the figures below:



Figure 1: Weather map for 07th October 2013

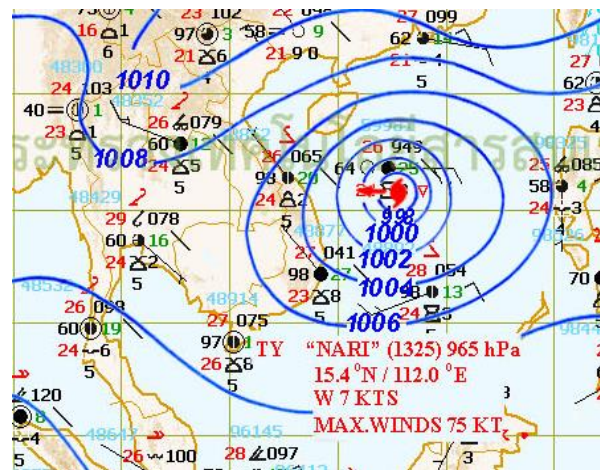


Figure 2: Weather map for 13th October 2013

Moderate South-West (SW) Monsoon

The SW monsoon was prevailing over Andaman Sea the Gulf of Thailand, Thailand and Indochina Peninsular while the active low pressure over the South of Thailand (Figure 1)

Inter Tropical Convergence Zone (ITCZ)

The ITCZ was active laid across the lower North of Myanmar, the South of Thailand, Cambodia and Viet Nam while the active low pressure overs the South of Thailand (Figure 1).

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

On the October 12 2013, Typhoon (TY) "NARI" Centered over the Central part of Philippines with maximum speed about 120 km/h, the TY was moving with the speed at 33 km/h, and on the October 14 2013, the TY in the middle of West Sea, about 370 km East of Da Nang province, Viet Nam at the latitude 15.4°N and longitude 112°E with the maximum wind speed about 140 km/h. (Figure 2 and 3).

Source: <http://www.nchmf.gov.vn/web/>

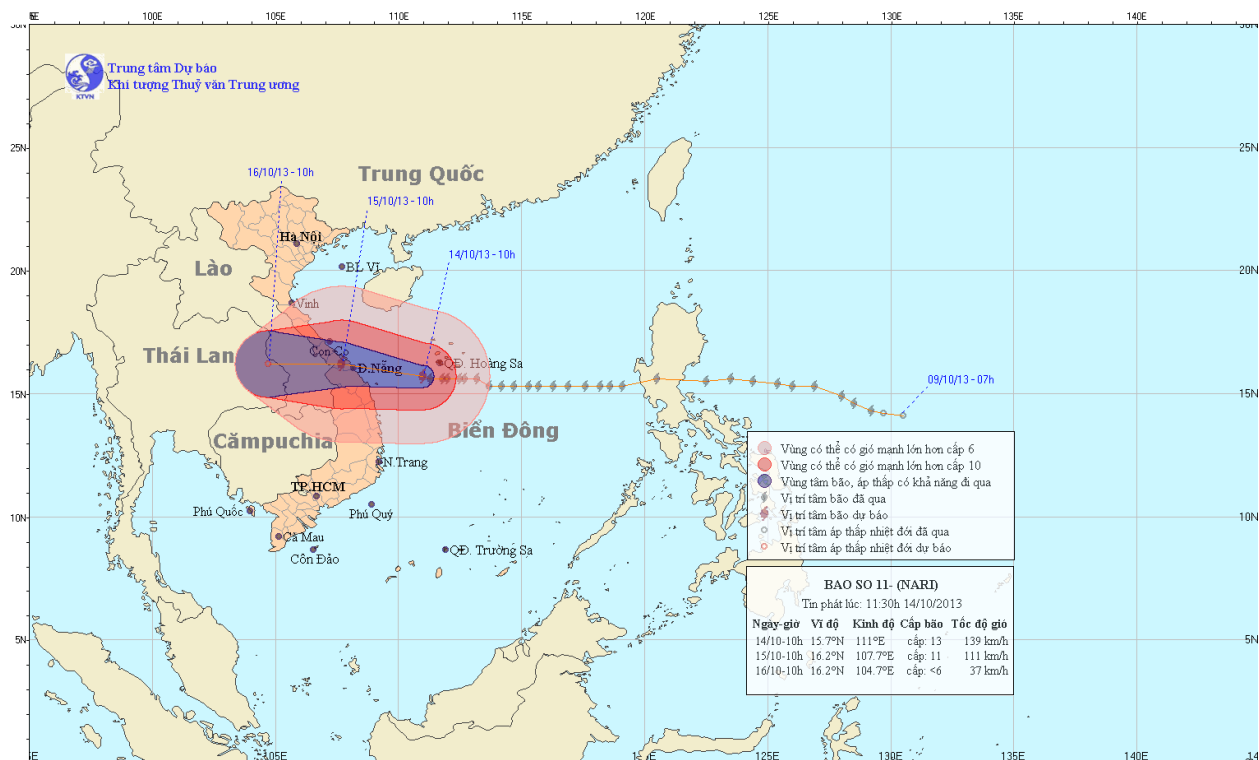


Figure 3: Storm Track and Forecast of TY “NARI”

Other weather phenomena that affect the discharge

No other weather phenomena affecting the discharge were observed.

Over weather situation

During the last week, ITCZ was active laid across the lower North of Myanmar, the South of Thailand, Cambodia and Viet Nam while the active low pressure overs the South of Thailand. As a result, the rainfall was concentrated at downstream areas (Cambodia, Viet Nam) of LMB. The amount of rainfall from 07th October to 14th October 2013 was recorded at Stung Treng (54.5 mm), Phnom Penh - Bassac (113 mm), Koh Khel (66 mm) and Tan Chau (51.4 mm). See Figure 4 for Weekly Rainfall Distribution covering the week 07th October – 14th October 2013.

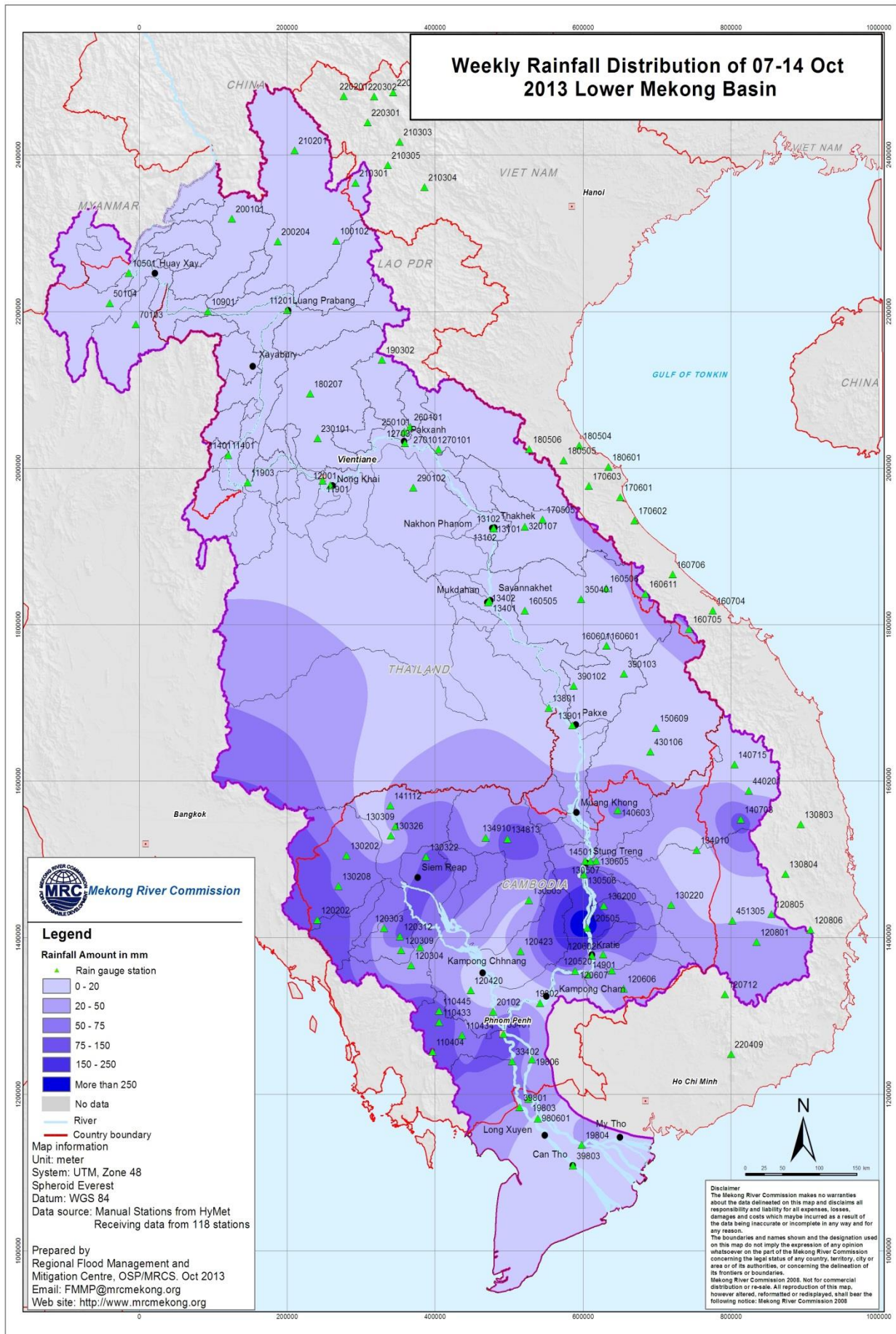


Figure 4: Weekly Rainfall Distribution covering the week 07th October – 14th October 2013

General behaviour of the Mekong River

During last week, water levels at most mainstream stations in upper and middle part of LMB recessed below the long-term average water level (LTA); except in from Kratie to Chau Doc which were above LTA.

For stations from Chiang Saen and Luang Prabang

Water levels of these stations were recessing during last week lower than the LTA.

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

Water levels of these stations recessing during last week, remained lower than the LTA.

For stations from Thakhet/Nakhon Phanom to Pakse

During the last week, water level (WL) of these stations with along the LMB from Thakhet to Savannakhet recessed lower than the LTA, while at Khong Chiam and Pakse the WL recessed and remained above the LTA at the first haft of last week then recessed lower than the LTA.

For stations from Stung Treng to Kompong Cham

Water levels of these stations recessing during last week, remained lower than the LTA, except at Stung Treng that recessed above than the LTA at the halt of last week then recessed lower than the LTA.

For stations from Phnom Penh to Koh Khel/Neak Luong

Water levels at these stations were slowly recessing above the LTA.

Tan Chau and Chau Doc

Water levels at these stations were slowly recessing above the LTA.

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

Flood Situation

Flood stage or alarm stage:

No flood stages

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

Unit in m

	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 Khei	Neak Luong	Prek Kdam	Tan Chau	Chau Doc	
2013																								
07/10	535.29	3.36	7.60	8.01	5.10	5.88	7.65	6.07	7.20	6.24	5.18	9.39	7.80	8.60	19.89	14.38	10.06	9.11	7.68	7.41	9.23	4.22	3.70	
08/10	535.28	3.31	7.54	7.84	4.74	5.52	7.31	5.76	6.95	5.85	4.82	8.94	7.30	8.22	19.33	14.25	10.11	9.18	7.69	7.41	9.29	4.22	3.71	
09/10	535.29	3.26	7.45	7.69	4.53	5.23	7.00	5.47	6.66	5.58	4.56	8.37	6.86	7.61	18.96	14.04	10.11	9.18	7.70	7.42	9.38	4.20	3.72	
10/10	535.39	3.17	7.46	7.62	4.40	5.06	6.90	5.18	6.36	5.29	4.24	7.98	6.48	7.03	18.18	13.68	10.09	9.15	7.68	7.40	9.39	4.19	3.71	
11/10	535.39	3.07	7.32	7.57	4.32	4.94	6.20	4.82	6.00	4.98	3.90	7.65	6.16	6.82	17.40	13.21	10.01	9.08	7.66	7.34	9.38	4.16	3.70	
12/10	535.48	3.03	7.16	7.50	4.27	4.87	6.30	4.75	5.80	4.72	3.63	7.29	5.83	6.53	16.80	12.76	9.90	8.98	7.60	7.27	9.34	4.13	3.68	
13/10	535.64	3.01	7.00	7.38	4.20	4.82	6.25	4.46	5.68	4.53	3.44	6.98	5.55	6.23	16.15	12.32	9.77	8.81	7.56	7.21	9.29	4.10	3.66	
14/10	535.65	3.08	6.92	7.24	4.08	4.69	6.20	4.39	5.62	4.43	3.35	6.69	5.28	6.10	15.95	12.04	9.66	8.70	7.51	7.13	9.22	4.06	3.62	

Table A2: observed rainfall

Unit in mm

	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 Khei	Neak Luong	Prek Kdam	Tan Chau	Chau Doc	
2013																								
07/10	0.5	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	4.5	nr	5.5	24.5	8.6	22.2	-	0.2	3.6	12.4	8.0	12.2	
08/10	0.0	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	35.0	nr	2.0	0.5	-	16.8	3.8	3.2	22.9	11.8	
09/10	0.0	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	4.0	1.6	48.2	-	16.4	20.6	6.5	nr	nr	
10/10	0.5	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	2.5	nr	nr	-	18.5	0.4	nr	20.5	16.4	
11/10	0.0	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	1.0	3.4	nr	-	nr	nr	nr	nr	0.0	
12/10	0.0	nr	nr	nr	nr	nr	nr	3.5	nr	nr	nr	nr	nr	nr	nr	0.5	nr	-	nr	nr	nr	nr	nr	
13/10	0.0	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	nr	14.0	nr	nr	42.1	-	14.2	2.8	3.5	nr	0.1	
14/10	0.0	nr	nr	nr	2.8	12.3	nr	0.1	nr	nr	nr	nr	nr	nr	nr	nr	nr	-	nr	nr	nr	nr		

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

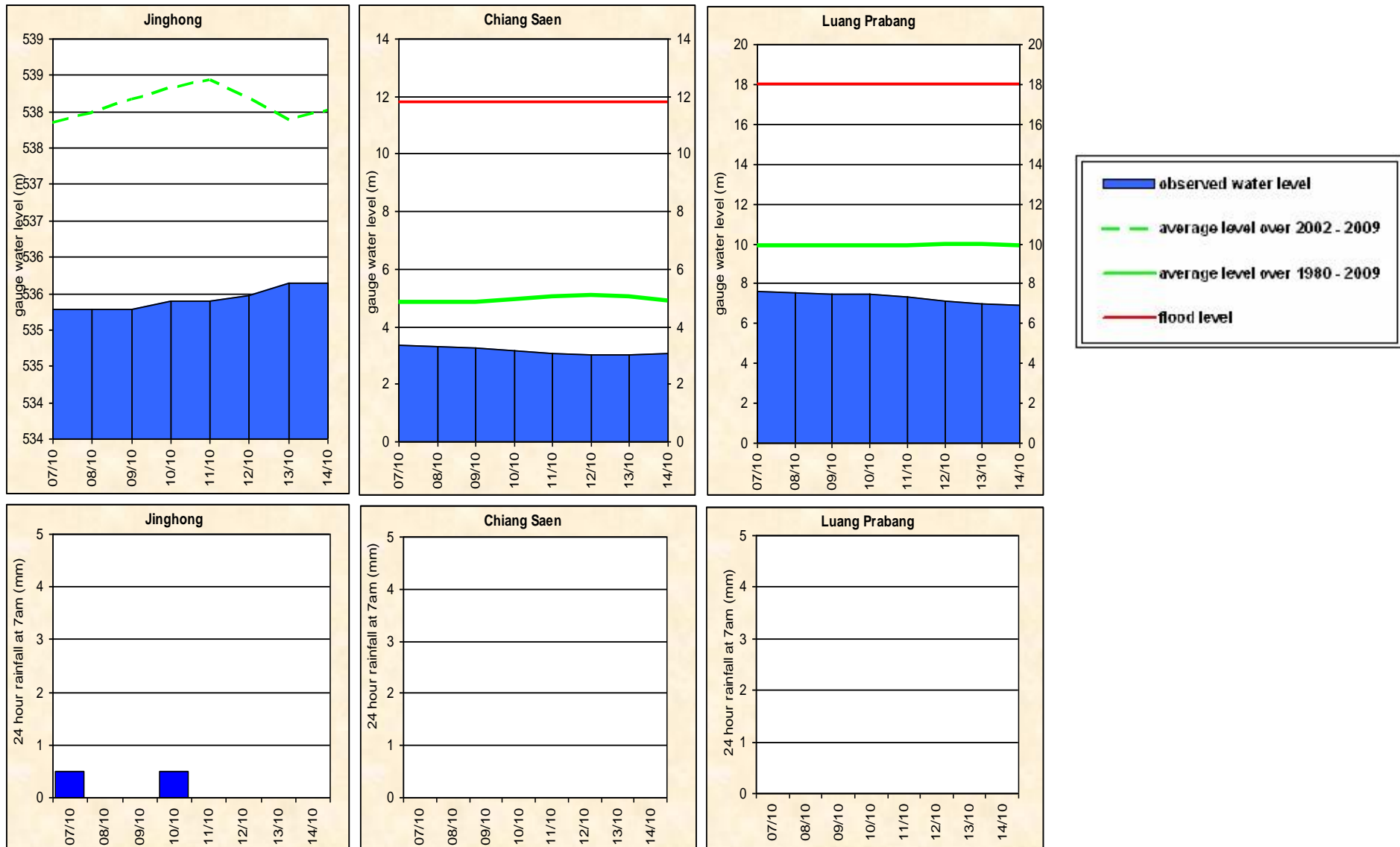


Figure A2: Water level and rainfall for Chiang Khan, Vientiane, Nongkhai, and Paksane

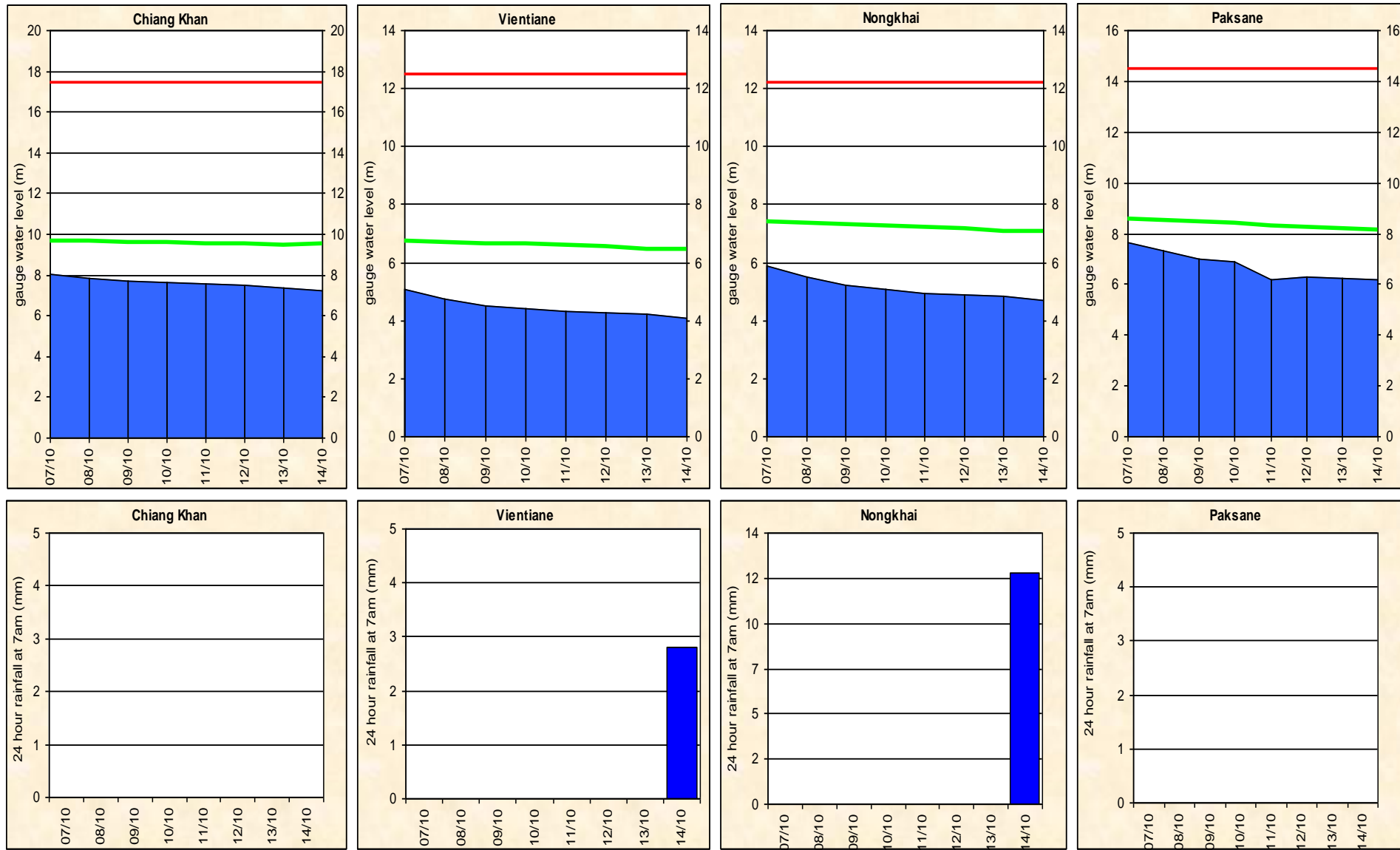


Figure A3: Water level and rainfall for Nakhon Phanom, Thakhek, Mukdahan and Savannakhet

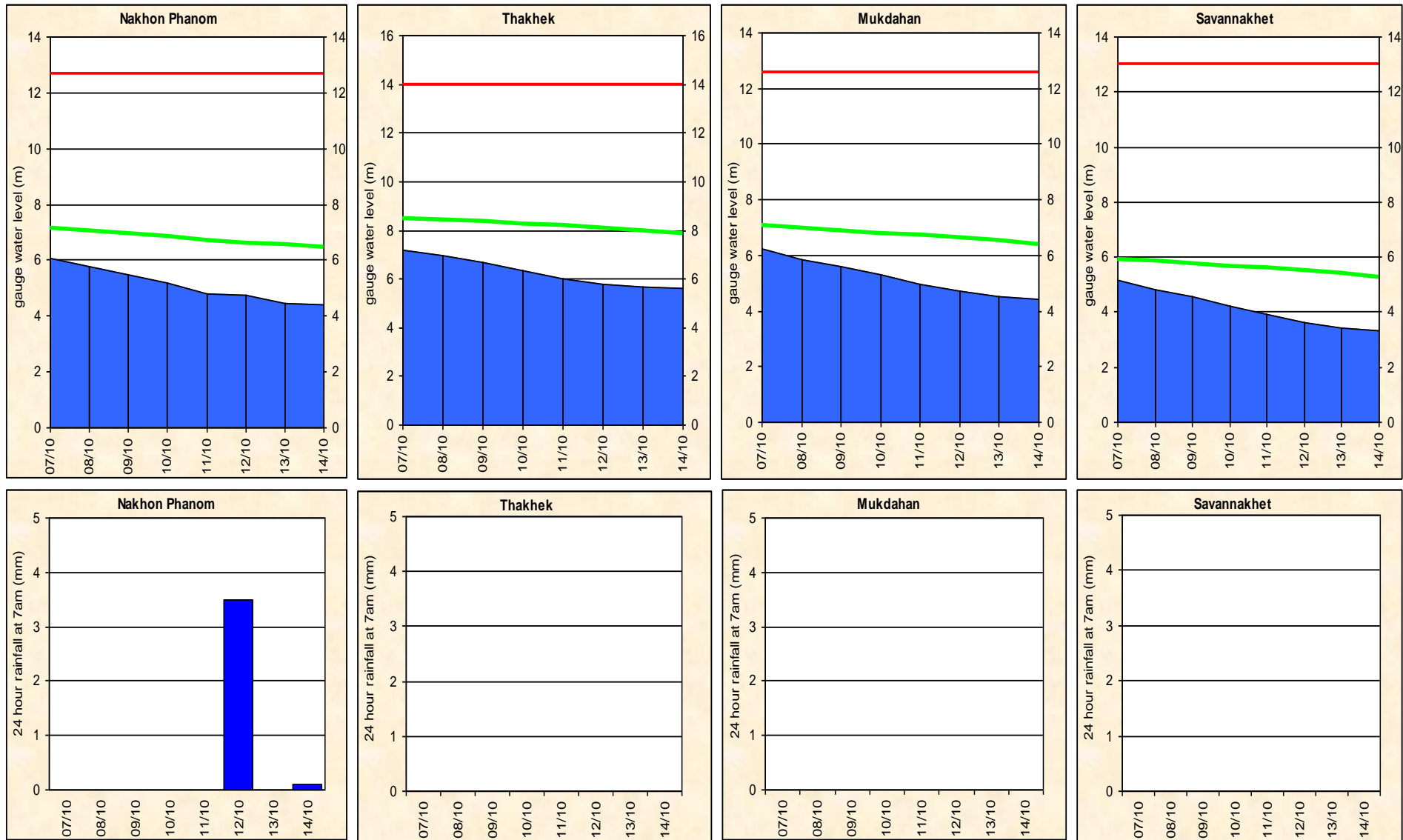


Figure A4: Water level and rainfall for Khong Chiam, Pakse, Stung Treng, and Kratie

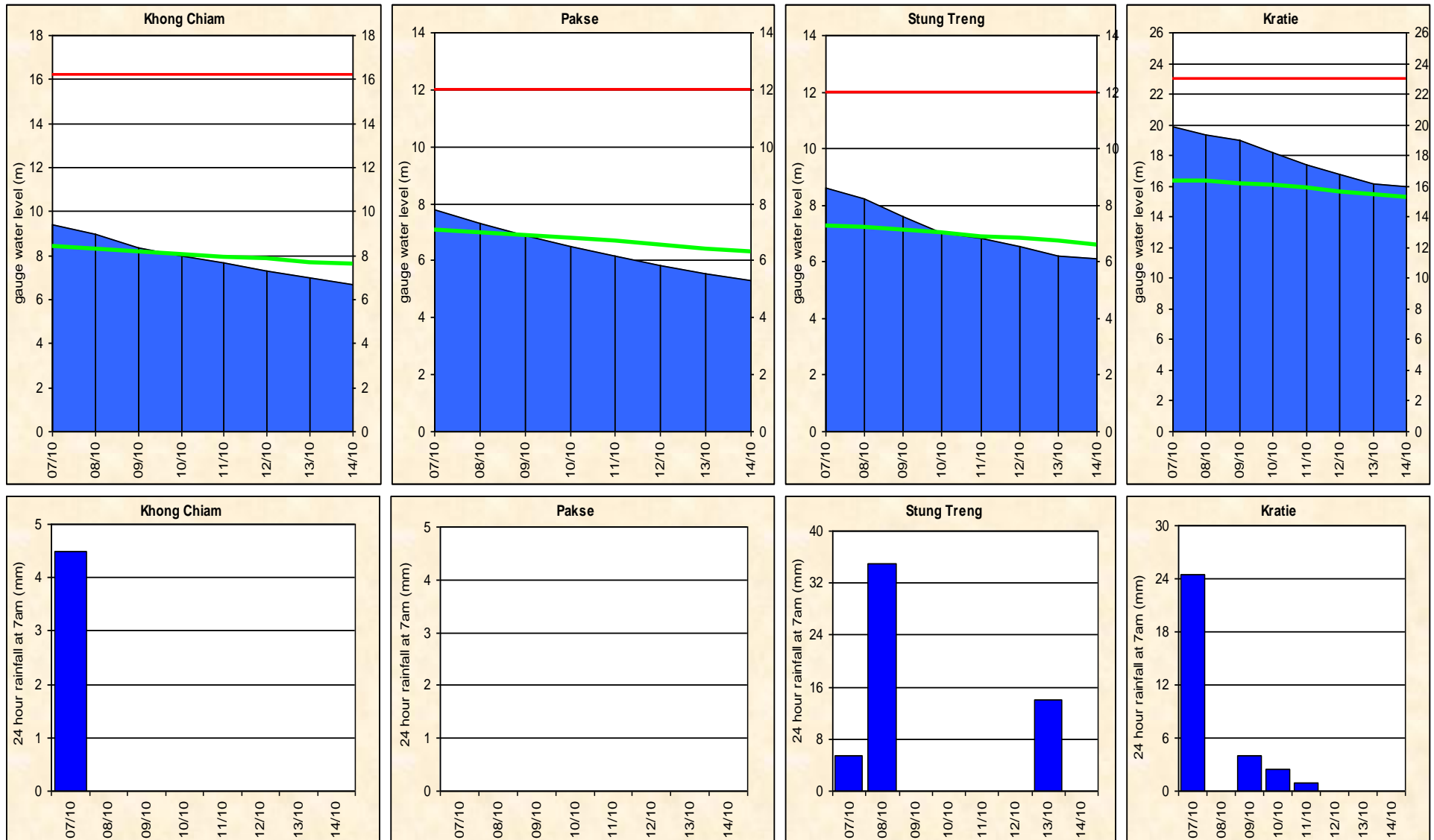


Figure A5: Water level and rainfall for Kompong Cham, Phnom Penh (Bassac and Port), and Koh Khel

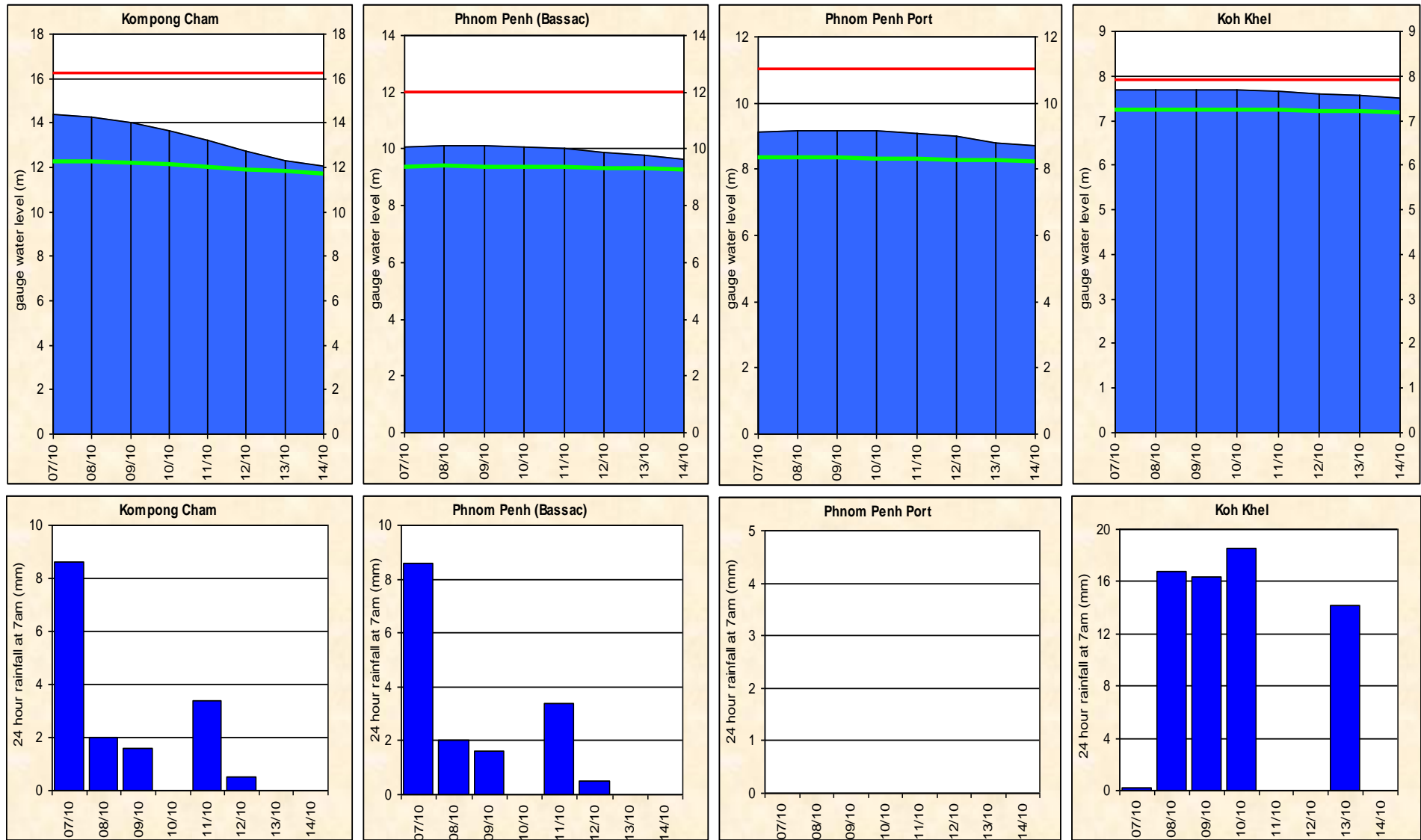
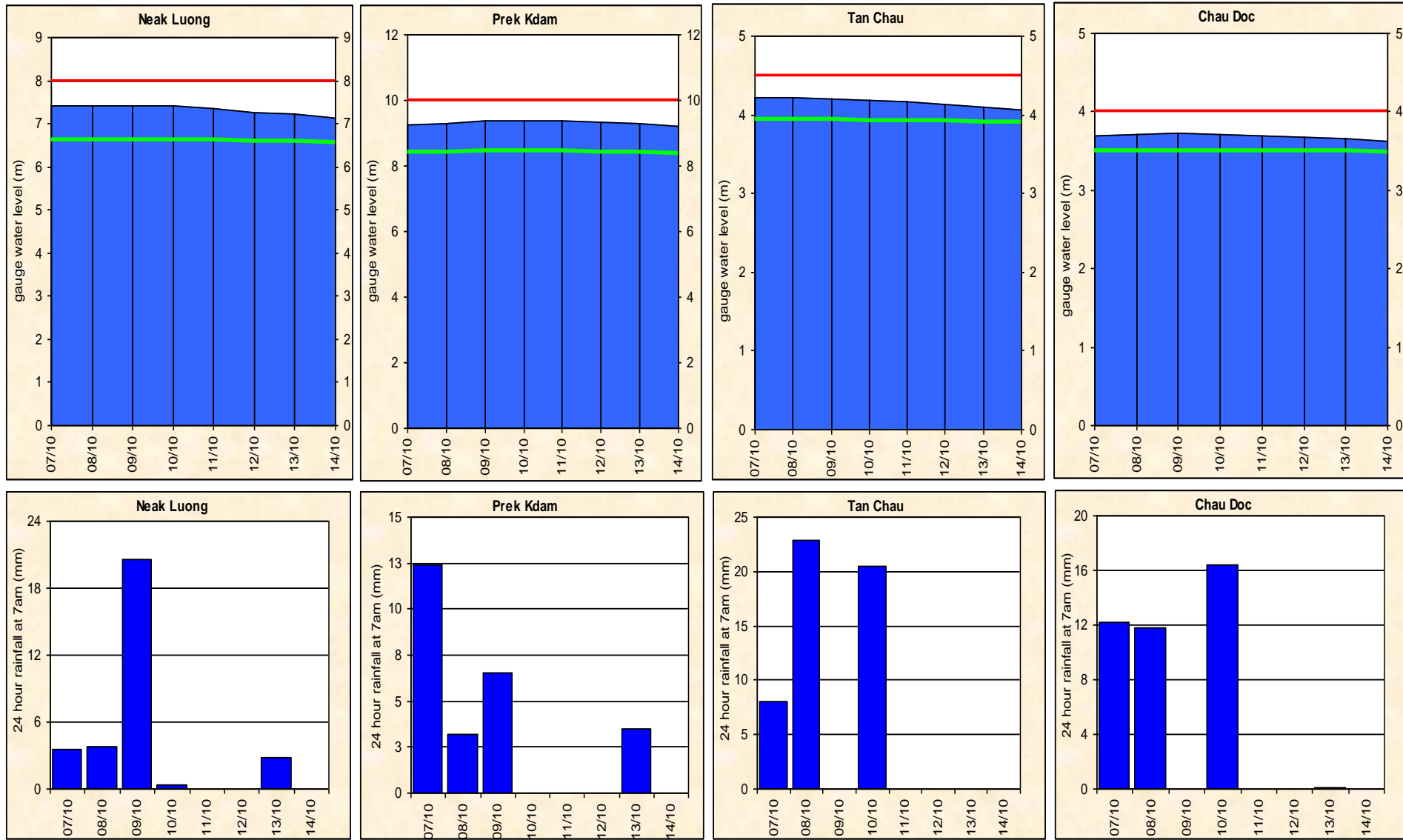


Figure A6: Water level and rainfall for Neak Luong, Prek Kdam, Tan Chau and Chau Doc



Annex B: Accuracy and performance

Accuracy

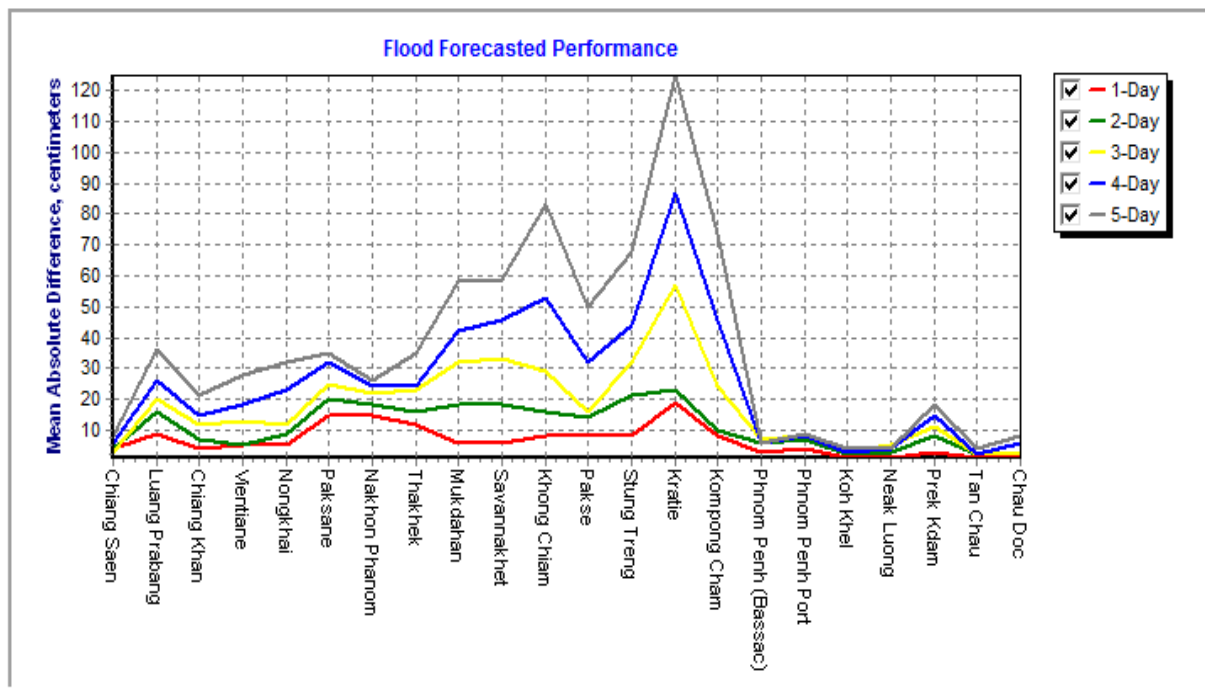
“Accuracy” describes the accuracy of the adjusted and published forecast, based on the results of the MRC Mekong Flood Forecasting System, which are then adjusted by the Flood Forecaster in Charge taking into consideration known biases in input data and his/her knowledge of the response of the model 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 good for 1-day to 5-day forecast lead time at all stations in

LMB. However, the accuracies at Kompong Cham, Kratie, and Khong Chiam, for 3-day to 5-day forecast were less than expected.

The above differences due to three main factors: (1) internal model functionality in forecasting; for which the parameter adjustment in the model is not possible; (2) the adjustment by utilizing the practical knowledge and experience of flood forecaster-in-charge; (3) scattered local heavy rainfall induced by ITCZ happened in many tributaries and resulted in rapid rising water levels.

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

Unit in %

	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	100.0	100.0	100.0	85.7	85.7	57.1	57.1	57.1	71.4	100.0	71.4	71.4	85.7	28.6	57.1	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	83.1
2-day	100.0	100.0	100.0	100.0	100.0	66.7	66.7	83.3	66.7	100.0	83.3	100.0	66.7	66.7	100.0	83.3	83.3	100.0	100.0	66.7	100.0	100.0	100.0	87.9
3-day	100.0	100.0	100.0	80.0	80.0	60.0	60.0	60.0	40.0	0.0	40.0	80.0	60.0	0.0	60.0	80.0	80.0	100.0	100.0	60.0	100.0	100.0	100.0	70.0
4-day	100.0	100.0	100.0	100.0	100.0	75.0	100.0	100.0	75.0	50.0	75.0	100.0	50.0	25.0	75.0	75.0	100.0	100.0	100.0	75.0	100.0	100.0	100.0	85.2
5-day	100.0	100.0	100.0	100.0	100.0	66.7	100.0	100.0	33.3	33.3	0.0	33.3	33.3	0.0	0.0	100.0	100.0	100.0	100.0	66.7	100.0	100.0	100.0	71.2

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

Unit in cm

	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	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	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	10
4-day	75	75	50	50	50	50	50	50	50	50	50	50	50	50	50	10	25	10	25	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	25

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			Weather information available (number)	Arrival time of input data (average)							Missing data (number)						
	FF completed and sent (time)	stations without forecast	FF2 completed and sent (time)		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
2013																		
<i>week</i>	10:18	0	-	8	-	08:15	07:06	06:44	08:57	07:04	07:17	16	0	1	97	156	0	25
<i>month</i>	10:18	0	-	14	08:15	11:40	07:13	06:45	08:53	07:33	07:11	22	0	8	291	269	0	43
<i>season</i>	10:23	5	-	81	08:14	08:50	07:12	05:52	08:49	07:29	07:09	35	17	91	1293	3398	29	663

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.

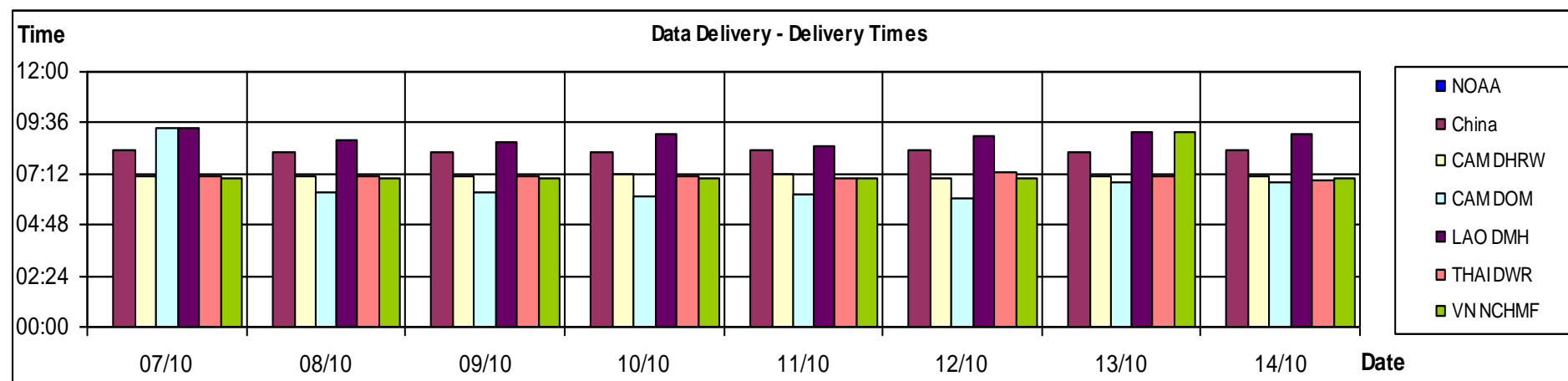


Figure B2: Data delivery times for the past 8 days including the current report date

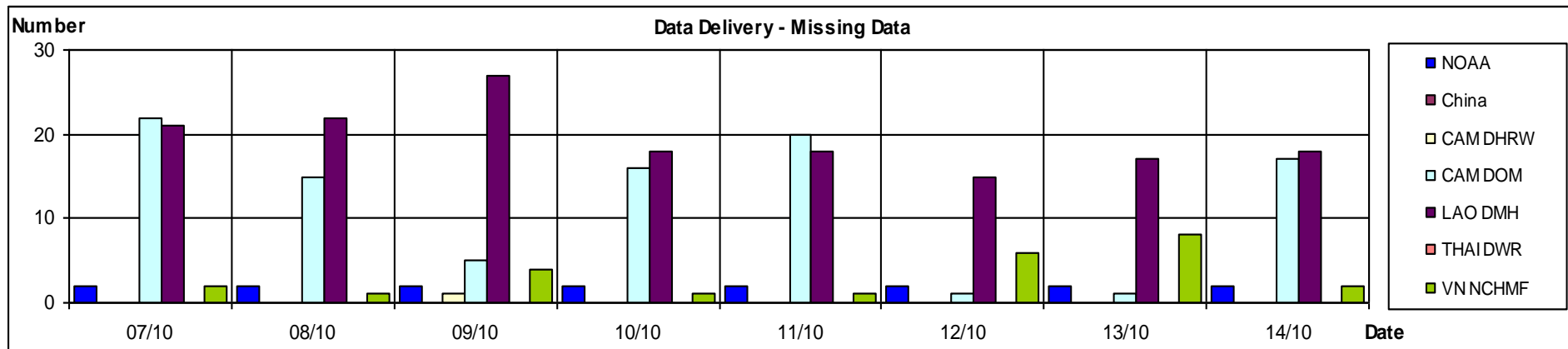


Figure B3: Missing data for the past 8 days including the current report date

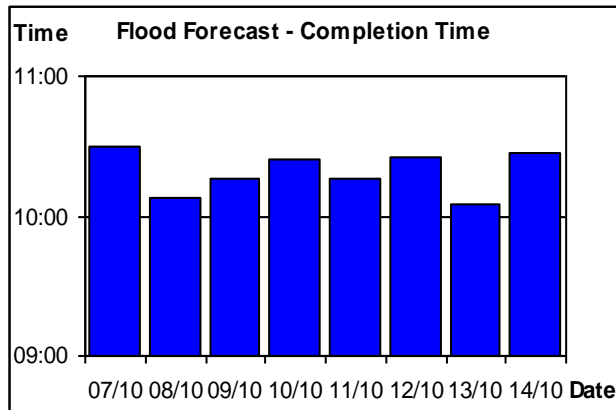


Figure B4: Flood forecast completion time

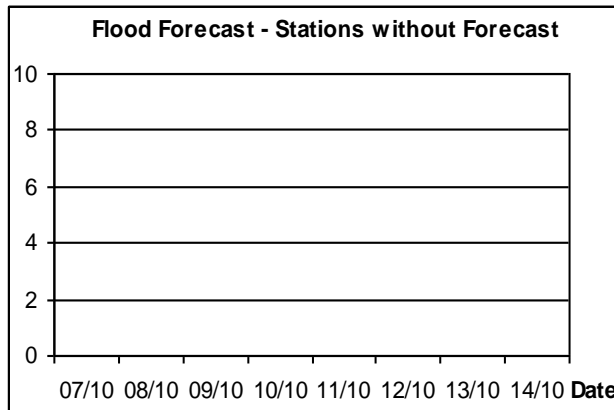


Figure B5: Flood forecast stations without forecast

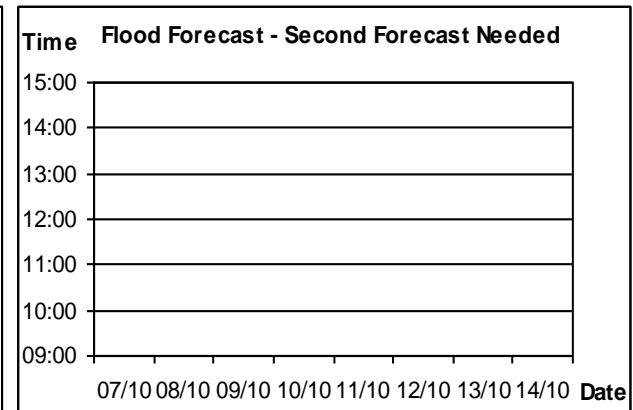


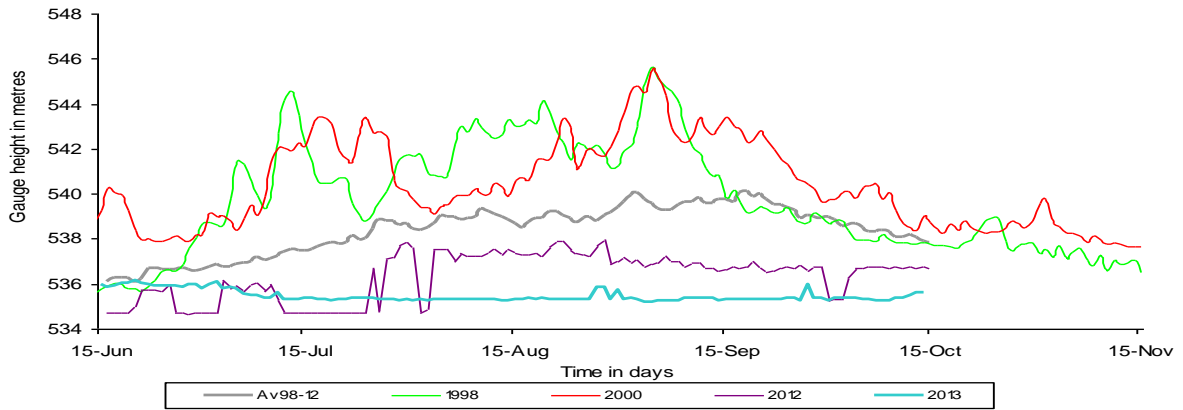
Figure B6: Second forecast needed

Annex C: Season Water Level Graphs

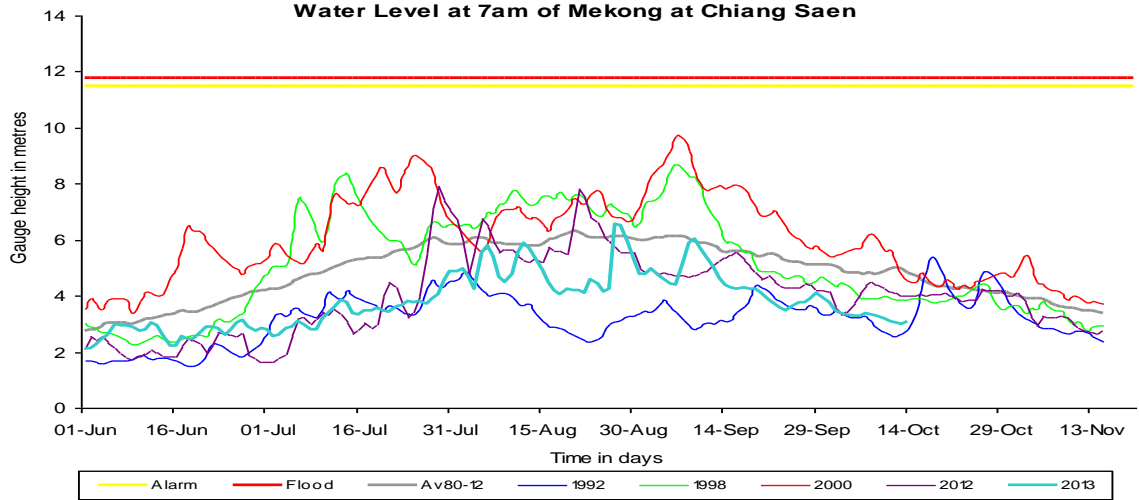
This Annex has the water level graphs of the report date. These graphs are distributed daily by email together with the Flood Bulletins.

**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

