

Weekly Flood Situation Report for the Mekong River Basin

Prepared on: 23/08/2010, covering the week from the 16th to the 22nd August 2010

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

General weather patterns

During the week of the 16th to the 22nd August 2010, seven weather bulletins were issued by the Department of Meteorology (DOM) of Cambodia and made available to the MRC-RFMMC. The weather patterns of the 16th to the 22nd August bulletins are shown below:

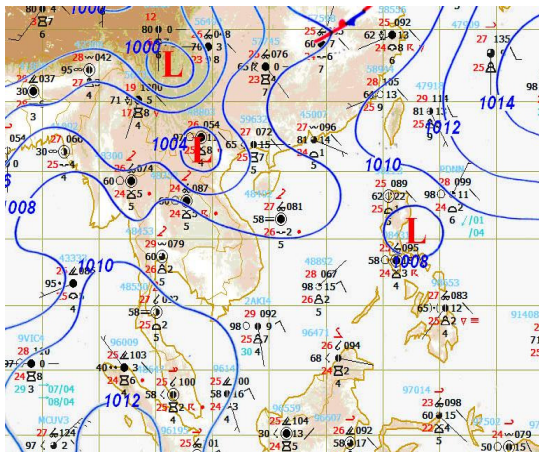


Figure 1: Weather map for 16 August 2010

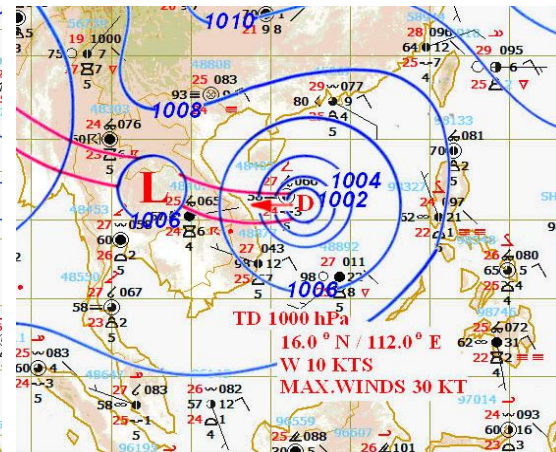


Figure 2: Weather map for 22 August 2010

Moderate to weak South-West (SW) Monsoon

Moderate SW monsoon prevailed over Andaman Sea, the Gulf of Thailand, Myanmar, Thailand, Cambodia, Lao PDR and Viet Nam during the beginning to the mid of the week and then was weakening from 19th August 2010.

Inter Tropical Convergence Zone (ITCZ)

From 22nd August, ITCZ laid across upper Myanmar, Thailand and the central part of Indochina Peninsular and was almost stationary.

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

A Tropical Depression (TD) with its central pressure of 1000 hPa located at latitude 16.0°N and longitude 112.0°E on 22nd August, which was over the South China Sea, was moving to Westward with its speed of 15 km/h and maximum sustained wind near the centre of the TD was 55.56 km/h (Figure 2).

Other weather phenomena that affect the discharge

No other weather phenomena affecting the discharge were observed.

Overall weather situation

Moderate to weak Southwest monsoon and ITCZ occurred during last week. The active stream line trough laid across Thailand, Lao PDR, Cambodia, Viet Nam and the whole Lower Mekong Basin (LMB) at the height of 850h Pa. As the result of these phenomena, moderate thundershowers to heavy rain occurred in Thailand, Lao PDR, Cambodia, Viet Nam.

General behaviour of the Mekong River

Water levels of most stations along the Lower Mekong River were somewhat below long-term average except Nong Khai and Paksane where water levels were around long-term average. Water levels in upper reach was slightly rising to the end of the week while water levels at stations in the middle and the lower reaches of the LMB from Nakon Phanon/Thakhet to Phnom Penh were more or less stable during the monitoring period. The water levels in downstream at Tan Chau and Chau Doc monitoring stations were affected by tide with different fluctuation during last week.

For stations from Chiang Saen to Nong Khai

Water levels were rising during the week. The stations were recording levels that were somewhat below long-term average for this time of the year except Nong Khai where water level was around long-term average.

For stations from Paksane to Pakse

Water levels were more or less stable during the monitoring period. The stations were recording levels that were somewhat below long-term average for this time of the year except Paksane where water level was around long-term average.

For stations from Strung Treng to Kampong Cham

Water levels were more or less stable during last week. The stations were recording levels that were around 2 meters below long-term average for this time of the year.

For stations from Phnom Penh Bassac to KohKhel/Neak Luong

Water levels were more or less stable during monitoring period. All stations were recording levels that are somewhat below the long-term average level for this time of the year.

Stations Tan Chau and Chau Doc

Water levels at these stations, which have been significantly affected by sea tide. Water level at Tan Chau was more or less stable in last week while water level at Chau Doc was rising from the beginning to the mid of the week and then more or less stable at the end of the week. The stations were recording levels that are around 1.5 meters below the long-term average for this time of the year.

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

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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 are 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

unit in m

2010	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
16/08	536.41	4.93	10.06	10.45	7.62	8.80	10.86	8.91	9.98	8.54	7.75	9.40	7.77	7.03	16.11	10.55	6.23	5.36	5.54	4.27	5.08	1.82	1.39
17/08	536.54	4.71	10.08	10.23	7.65	8.90	11.04	9.09	10.15	8.66	7.74	9.39	7.74	6.90	16.02	10.53	6.23	5.36	5.55	4.28	5.09	1.84	1.42
18/08	536.81	4.71	10.94	10.22	7.45	8.72	11.32	9.22	10.28	8.84	7.97	9.57	7.84	6.91	15.84	10.43	6.23	5.36	5.53	4.26	5.08	1.86	1.48
19/08	536.57	5.51	11.56	10.86	7.62	8.84	11.20	9.29	10.35	8.94	8.39	9.76	8.03	6.93	15.94	10.37	6.17	5.28	5.48	4.22	5.06	1.91	1.56
20/08	537.29	6.11	11.36	11.33	8.42	9.52	11.08	9.11	10.16	8.82	8.32	9.65	8.00	6.96	15.89	10.43	6.23	5.36	5.50	4.22	5.09	1.96	1.64
21/08	537.32	6.15	11.82	11.12	8.62	9.32	11.20	8.94	10.00	8.60	8.80	9.62	8.05	6.90	15.88	10.40	6.23	5.36	5.50	4.21	5.13	1.91	1.65
22/08	536.65	6.11	11.72	11.54	8.55	9.70	11.20	8.94	10.00	8.56	8.80	9.81	8.01	6.88	15.80	10.38	6.23	5.36	5.51	4.20	5.15	1.91	1.62
23/08	536.61	5.70	11.68	11.56	8.88	9.97	11.12	8.89	9.96	8.53	8.72	9.74	7.97	7.04	15.86	10.35	6.23	5.36	5.51	4.20	5.16	1.90	1.59
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

Table A2: observed rainfall

Unit in mm

2010	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
16/08	3.0	0.0	0.0	65.2	8.0	5.9	117.8	25.7	33.6	0.0	0.0	0.0	0.0	0.0	15.3	50.2	0.0		0.0	0.0	7.4	28.0	0.0
17/08	17.0	0.0	10.4	4.8	34.5	33.4	10.2	13.3	19.6	15.8	9.2	2.4	0.0	16.5	15.8	0.3	0.0		0.0	0.0	0.0	0.0	11.0
18/08	19.0	17.0	42.0	6.6	11.2	6.3	72.2	16.0	8.6	0.0	0.0	6.7	7.5	19.0	1.3	7.0	0.2		0.0	0.2	0.0	22.9	0.0
19/08	18.0	21.6	6.8	24.2	9.5	33.3	0.3	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
20/08	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	24.5	4.3	0.0	12.6	0.0		18.7	46.8	14.3	5.1	0.0
21/08	0.0	0.0	0.0	15.5	5.4	12.7	1.0	7.3	8.2	27.6	17.8	3.6	28.9	0.0	0.0	0.0	0.0		18.5	3.5	0.0	0.0	34.2
22/08	5.0	4.8	0.0	1.6	26.5	27.2	4.8	19.4	24.3	9.0	11.3	54.0	0.6	1.0	77.4	10.8	20.0		4.5	0.0	22.3	0.0	0.0
23/08	13.0	1.5	26.0	33.5	45.3	62.1	2.4	13.3	8.4	0.0	0.0	0.0	0.0	6.0	3.5	11.4	53.9		3.8	8.2	8.5	1.6	0.9

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

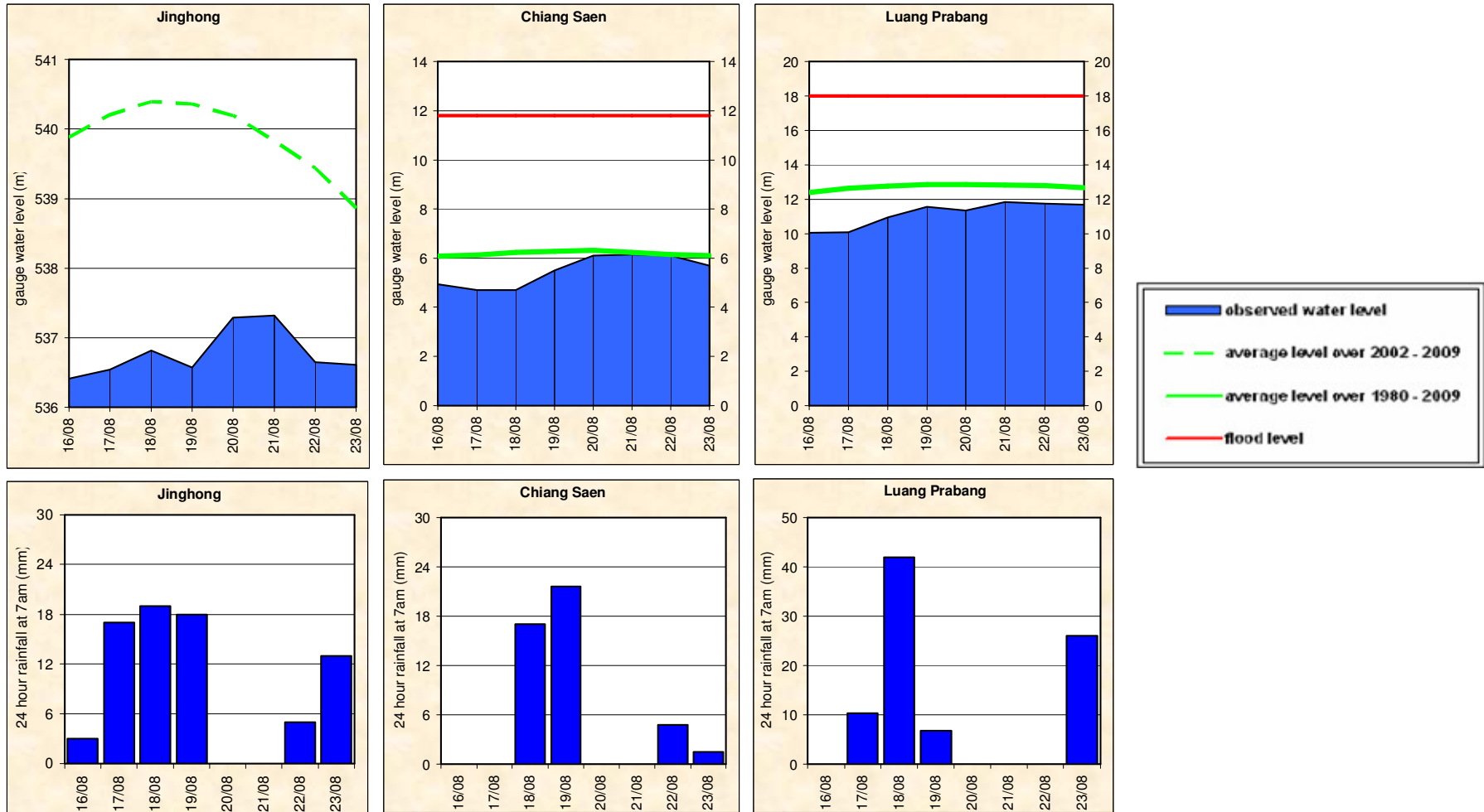
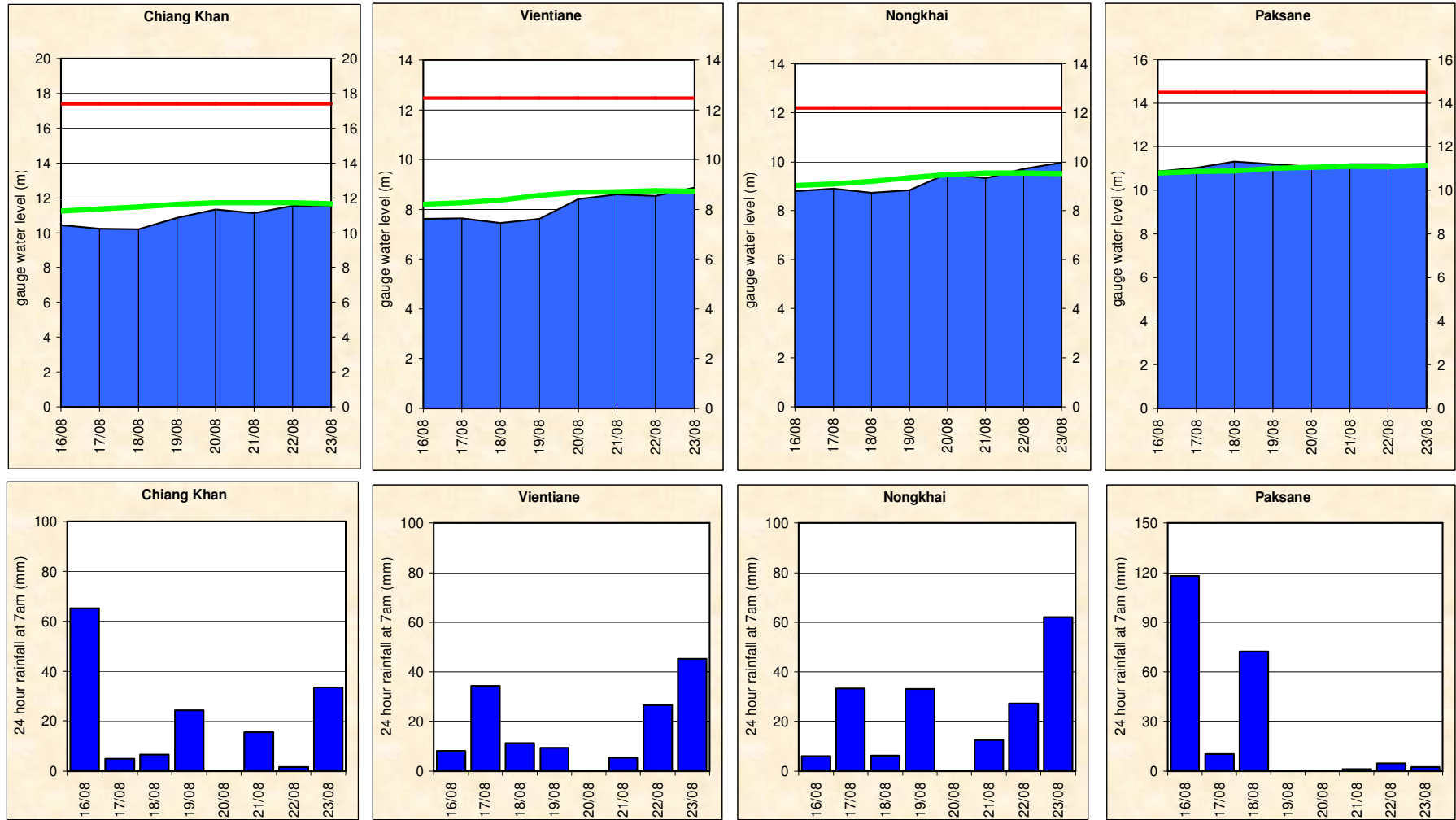


Figure A2: Water level and rainfall for Chiang Khan, Vientiane, Nongkhai, and Paksane



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

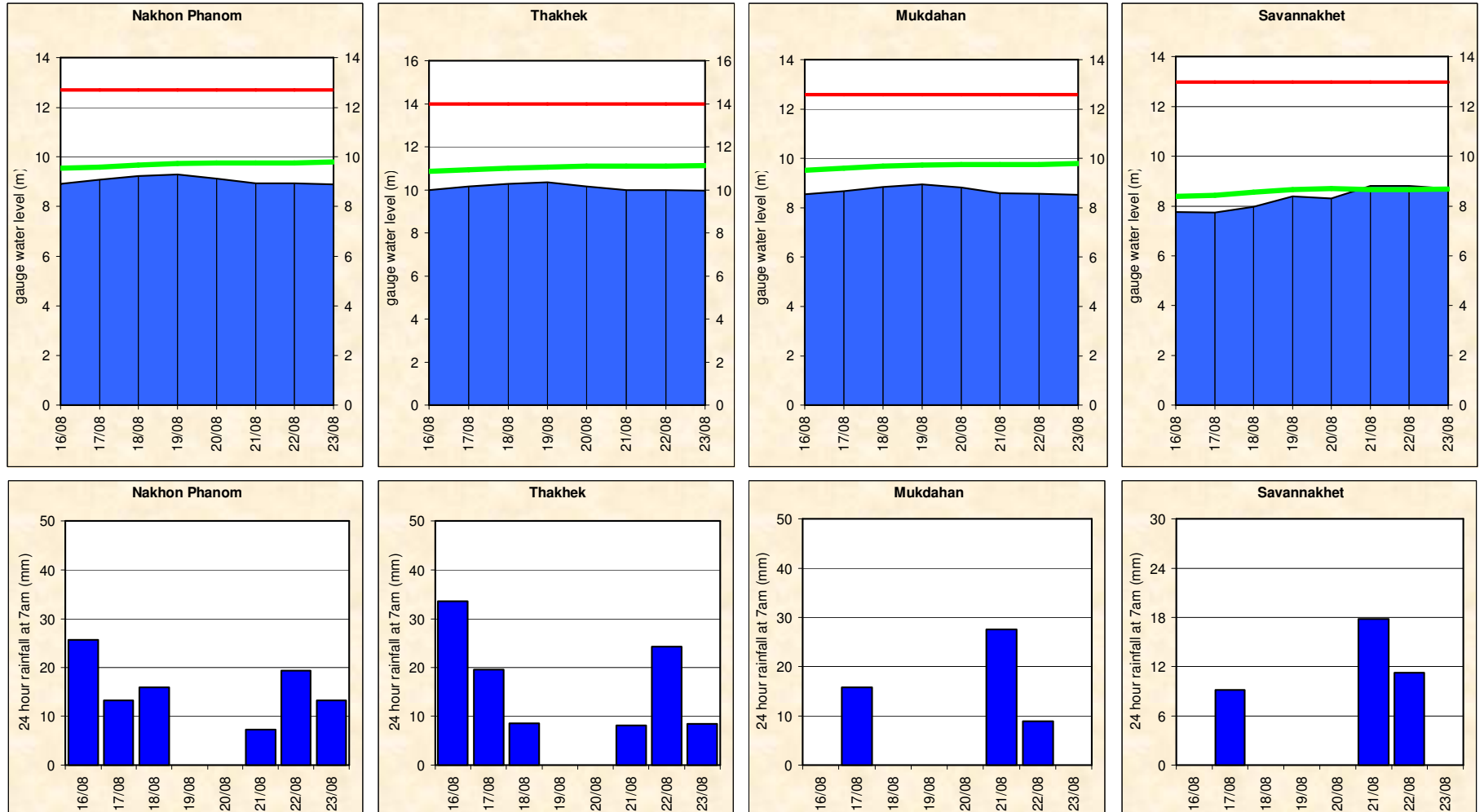
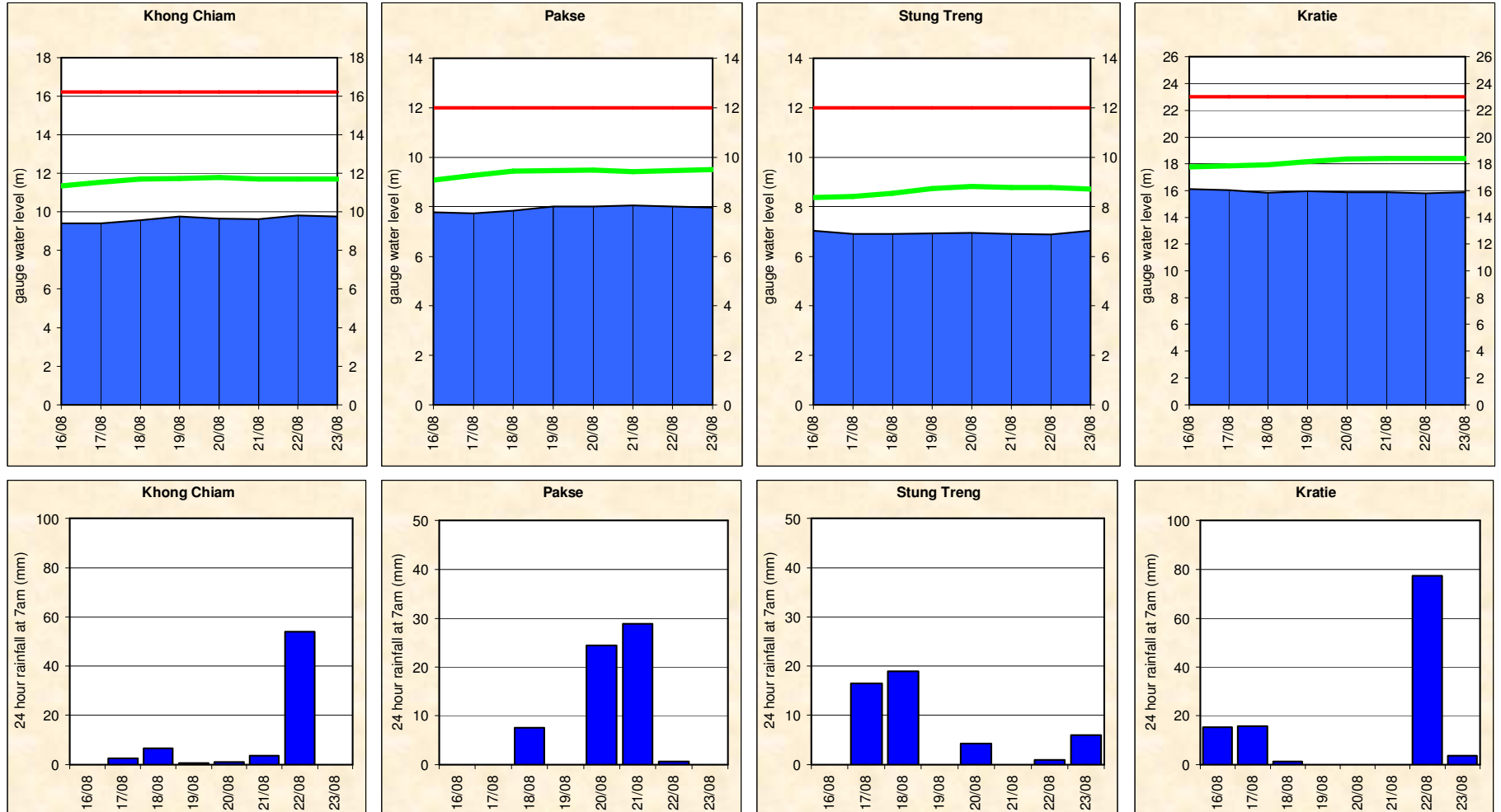


Figure A4: Water level and rainfall for Khong Chiam, Pakse, Stung Treng, and Kratie



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

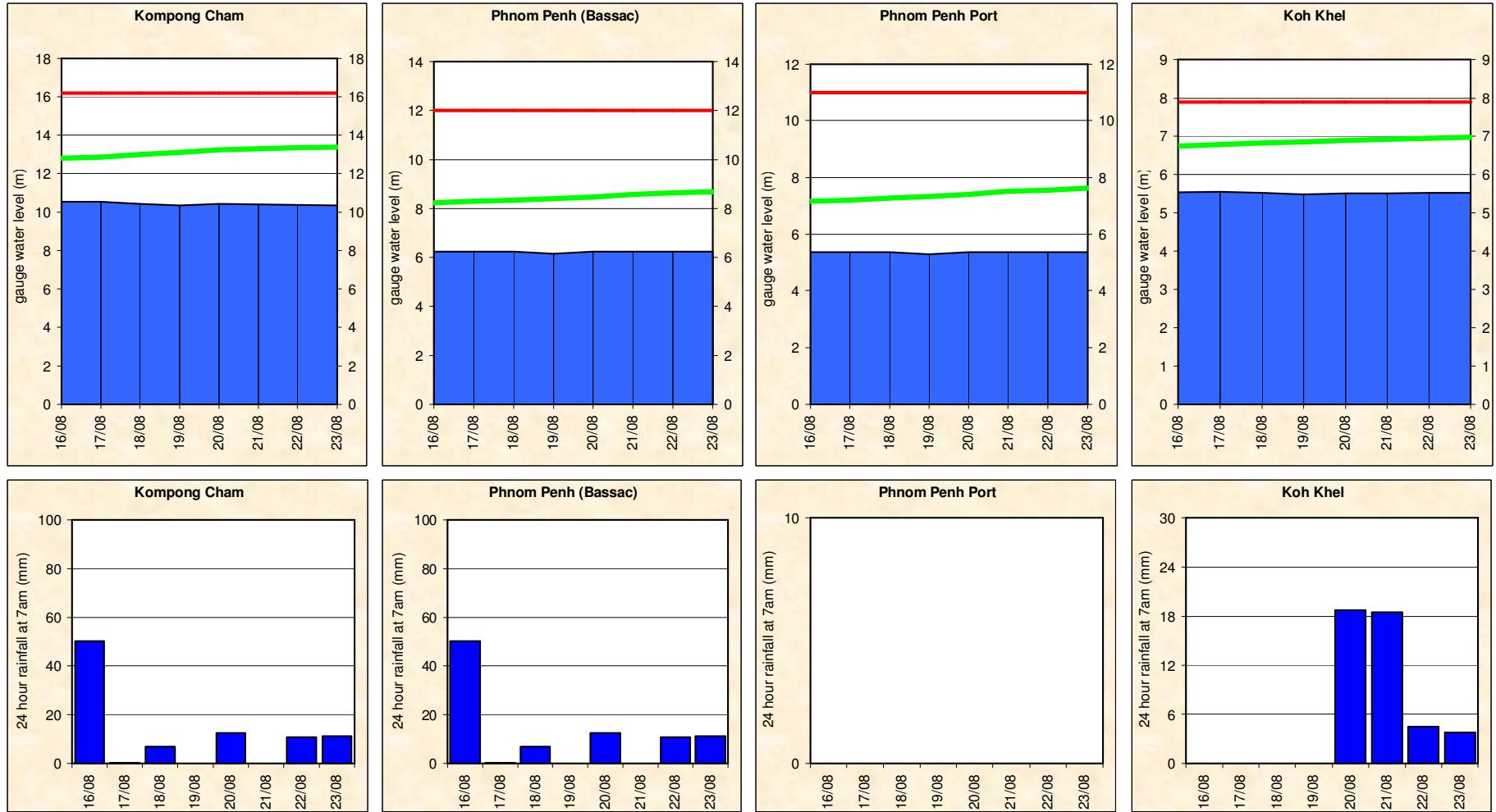
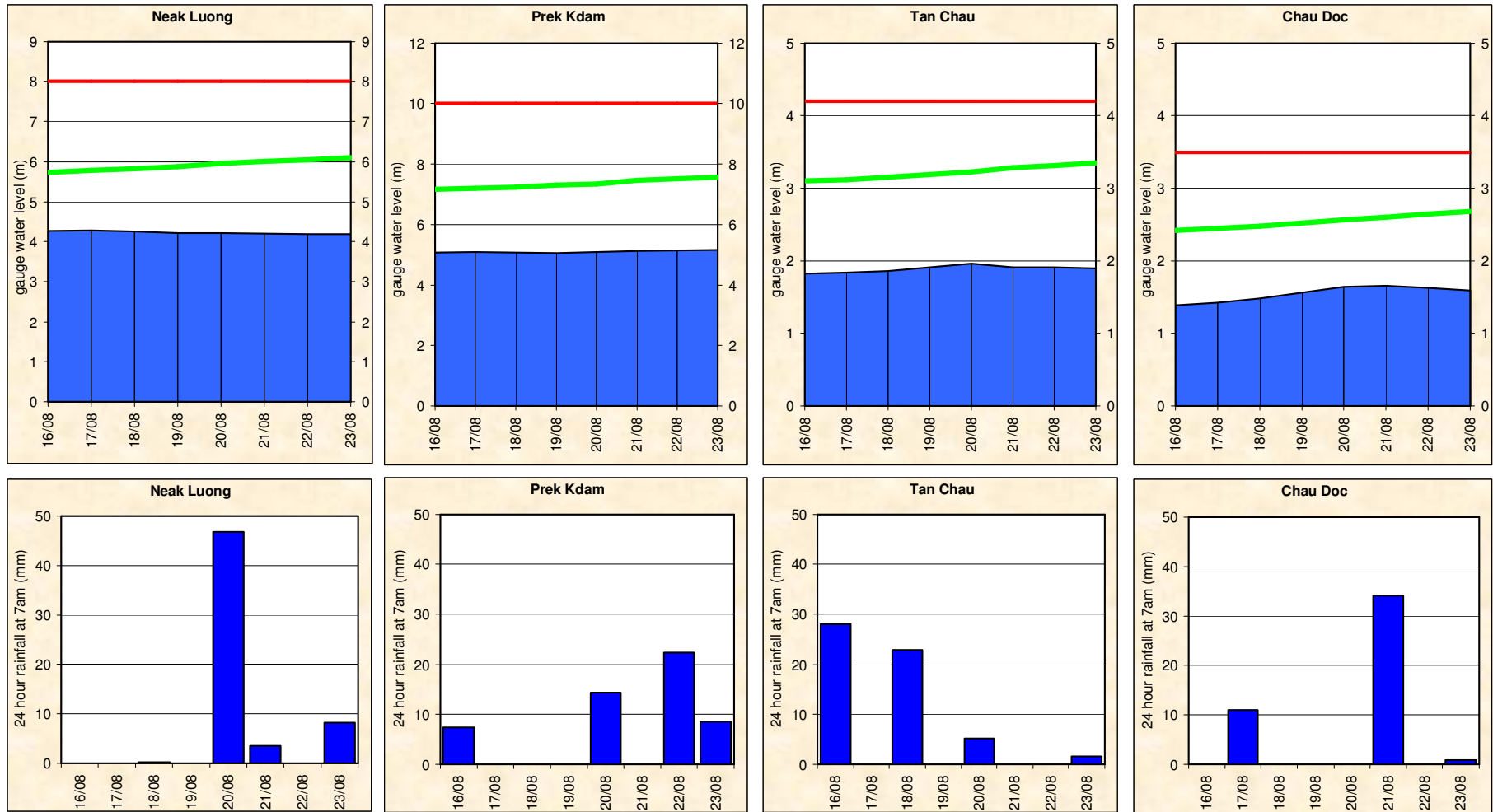


Figure A6: Water level and rainfall for Neak Luong, Prek Kdam, Tan Chau and Chau Doc



Annex B: Accuracy and performance

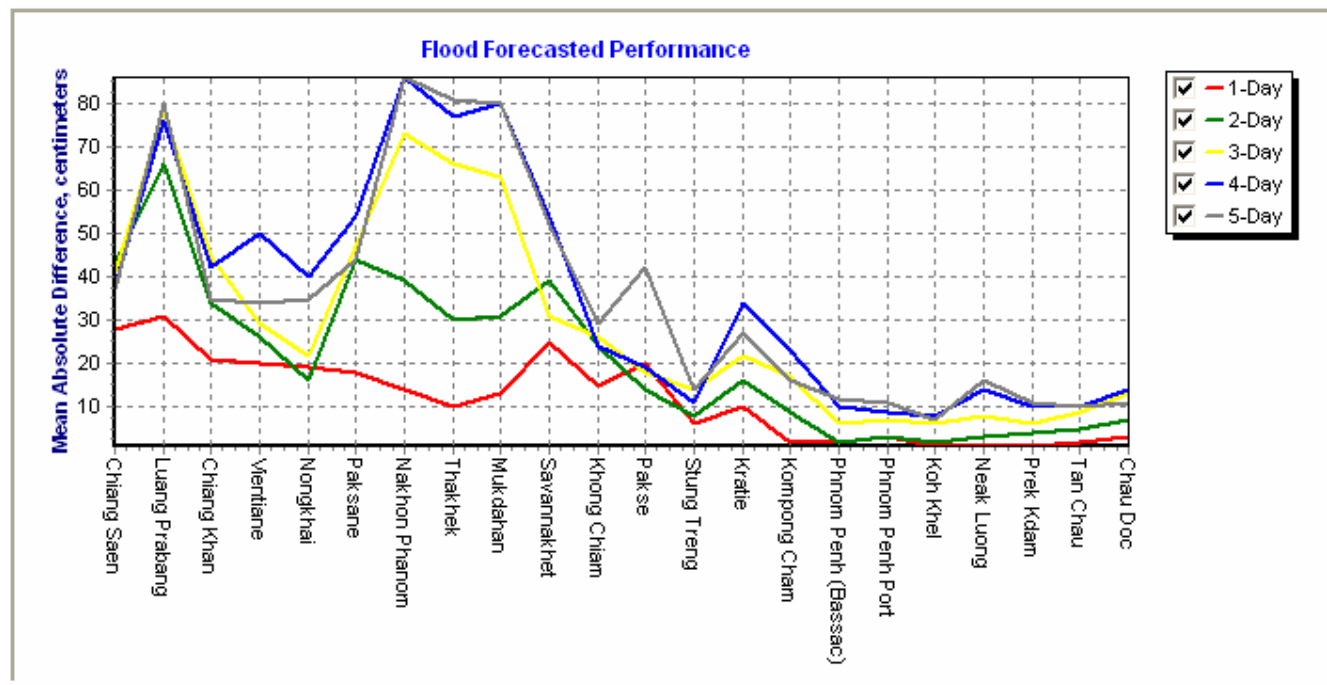
Accuracy

“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 the known biases in input data, the knowledge of model response and the experience with hydrometeorological conditions of the Mekong River Basin. The information presented as a graph below shows the average flood forecasting accuracy along the Mekong mainstream.

The graph of average difference between forecast and actual water levels for the past week shows the abnormal pattern in which the accuracy at stations in upper reach of LMB was better than that in middle reach.

In overall, the accuracy is good for 1-day to 3-day forecasts lead time at most stations, however, the accuracies for 3-day to 5-day forecasts between Nakhon Phanom and Mukdahan were less than expected. The above differences perhaps caused by internal model functionality in forecasting for those stations for which the parameter adjustment is impossible and the high variability of the SRE and NWP.

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	66.7	66.7	83.3	66.7	83.3	100.0	100.0	100.0	66.7	100.0	100.0	100.0	50.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	90.2
2-day	80.0	60.0	40.0	40.0	60.0	60.0	60.0	80.0	100.0	100.0	100.0	100.0	100.0	60.0	100.0	100.0	100.0	100.0	100.0	100.0	80.0	60.0	60.0	80.9
3-day	100.0	75.0	50.0	75.0	100.0	50.0	50.0	50.0	50.0	75.0	100.0	100.0	100.0	75.0	75.0	75.0	75.0	75.0	50.0	75.0	50.0	75.0	75.0	72.7
4-day	100.0	100.0	66.7	33.3	66.7	66.7	33.3	33.3	66.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	33.3	100.0	66.7	33.3	33.3	77.3
5-day	100.0	100.0	100.0	100.0	50.0	100.0	50.0	50.0	50.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	50.0	50.0	50.0	81.8

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	50	50	25	25	25	25	25	25	25	25	25	25	10	10	10	10	10	10	10	10	10	10	10	10
2-day	75	75	25	25	25	25	50	50	50	50	50	50	25	25	25	10	10	10	10	10	10	10	10	10
3-day	75	100	50	50	50	50	50	50	50	50	75	75	50	50	25	10	10	10	10	10	10	10	10	10
4-day	100	125	75	50	50	50	50	50	75	75	75	75	50	50	50	25	25	25	10	25	10	10	10	10
5-day	100	150	75	75	75	75	75	75	75	75	75	75	50	50	50	25	25	25	10	25	10	10	10	10

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 8 days including the current report date

	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
2010																		
<i>week</i>	10:41	0	-	8	08:14	08:12	08:01	05:18	08:42	08:10	07:25	0	0	11	64	151	1	35
<i>month</i>	10:41	0	-	23	08:14	08:23	07:48	05:52	08:39	08:17	07:14	0	6	19	274	412	20	108
<i>season</i>	10:43	2	-	82	00:07	09:24	08:03	07:04	08:37	08:22	07:25	0	22	56	1817	1568	52	595

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.

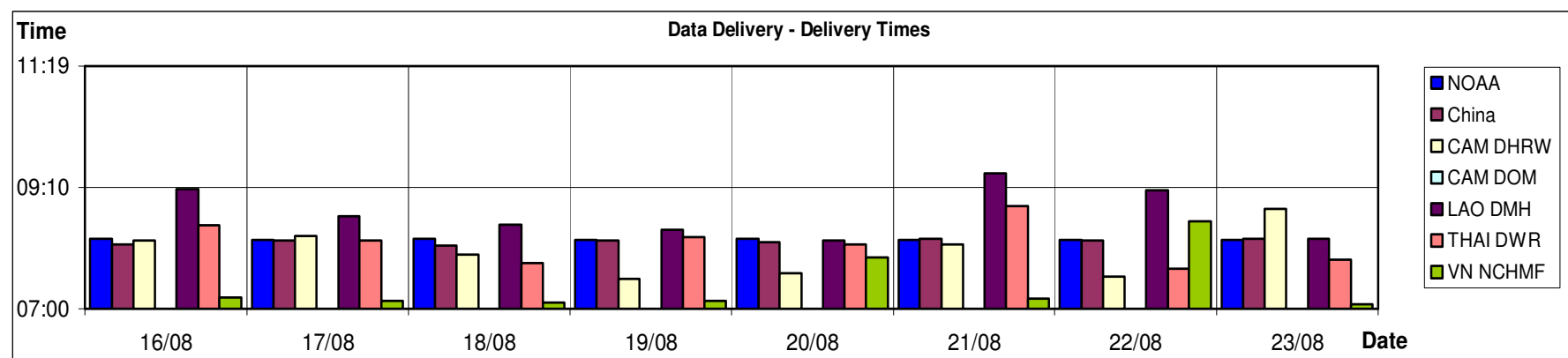


Figure B2: Data delivery times for the past 8 days including the current report date

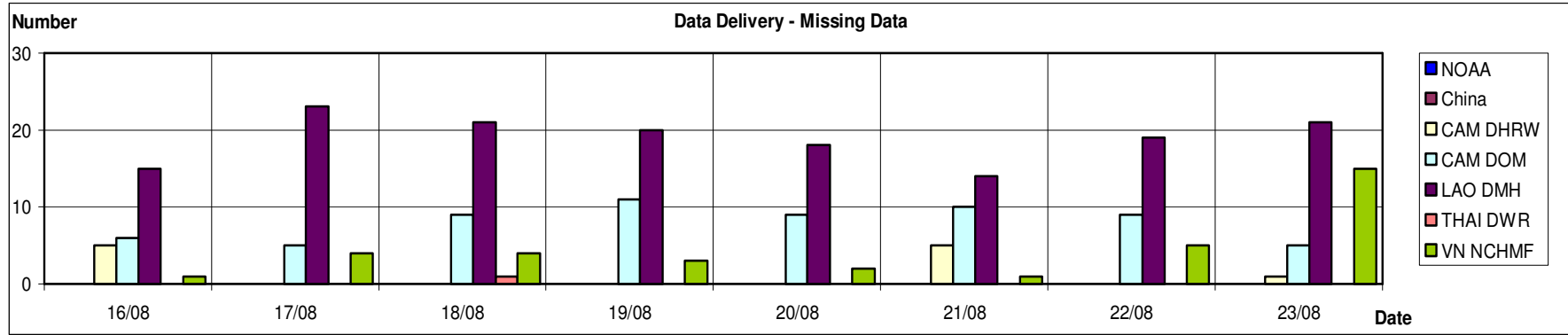


Figure B3: Missing data for the past 8 days including the current report date

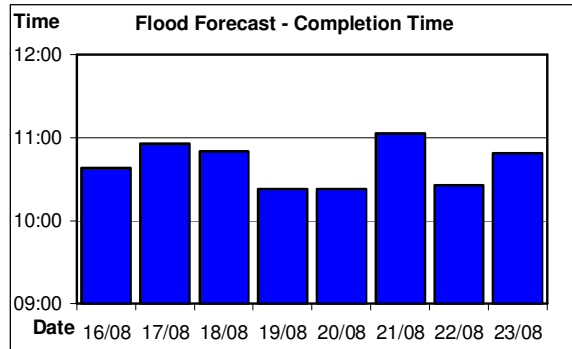


Figure B4: Flood forecast completion time

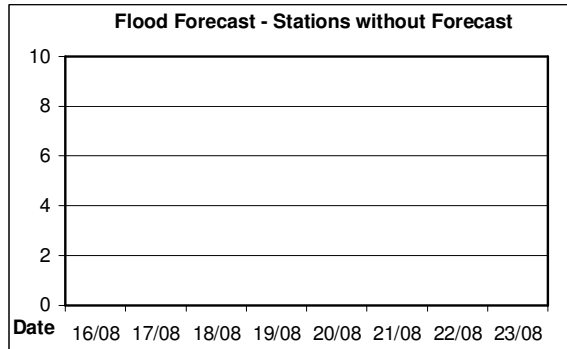


Figure B5: Flood forecast stations without forecast

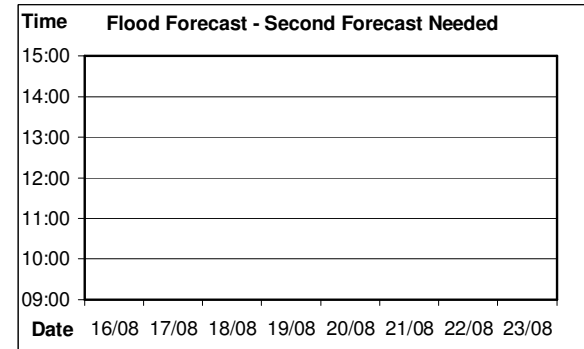


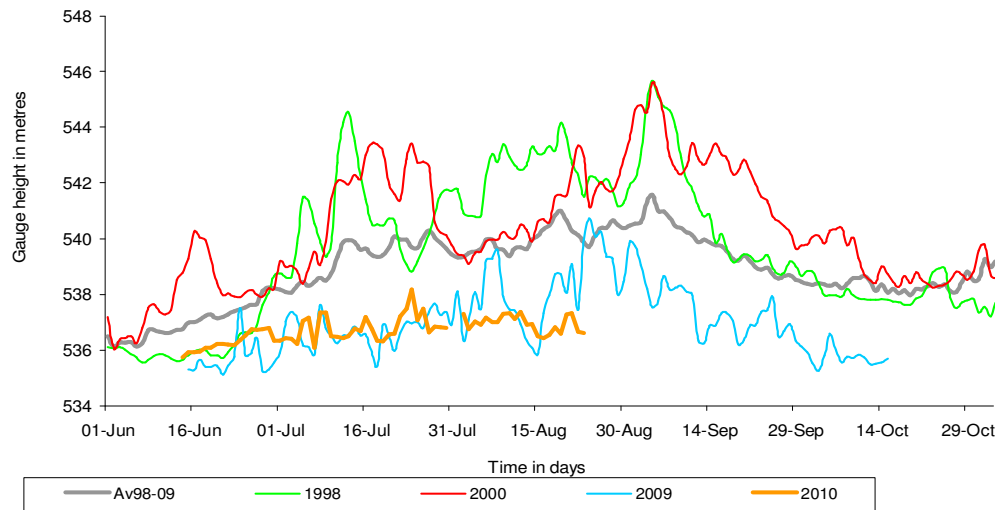
Figure B6: Second forecast needed

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 WET 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

