Mekong River Commission

Regional Flood Management and Mitigation Centre

Weekly Flood Situation Report for the Mekong River Basin

Prepared on: 11/10/2010, covering the week from the 4th to the 10th October 2010

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

General weather patterns

During the week of the 4th to the 10th October 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 4th to the 10th October bulletins are shown below:

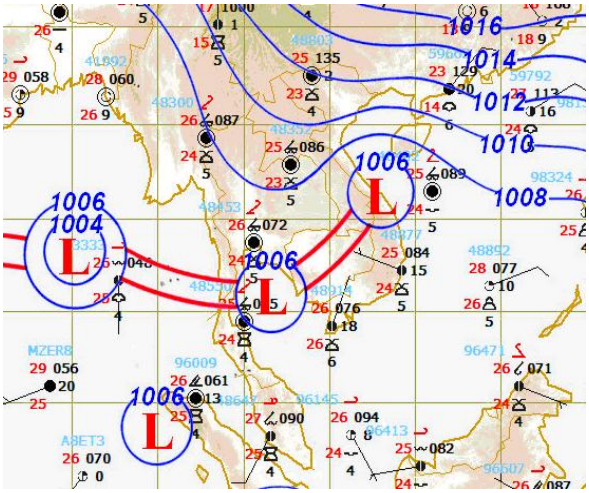


Figure 1: Weather map of 04 October 2010

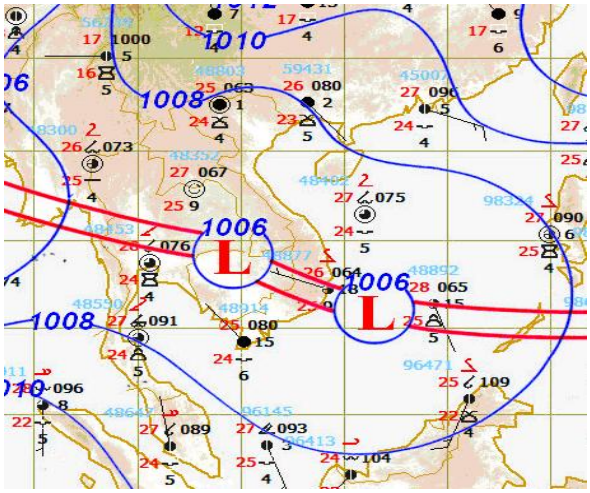


Figure 2: Weather map of 10 October 2010

Strong South-West (SW) Monsoon

From the beginning of the week, the active SW monsoon trough laid across middle parts of Lower Mekong Basin, Lao PDR, Cambodia, Viet Nam and the lower parts of Myanmar and Thailand at the surface (figure 1) and expanded to the Gulf of Thailand and the lower South China Sea from the 9th October (figure 2).

Inter Tropical Convergence Zone (ITCZ)

ITCZ was observed during last week and laid across lower part of LMB, Cambodia, Thailand, Lao PDR, and Viet Nam (figure 1, 2) in most of the monitoring period.

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

During last week, a Tropical Depression (TD) with central pressure of 1004 hPa and a near central maximum wind speed of 50km/h located at latitude 19.5^0 N and longtitude 108.5 E on 5th October. It did not have any significant influence to the LMB.

Other weather phenomena that affect the discharge

No other weather phenomena affecting the discharge were observed.

Overall weather situation

Normal weather situation prevailed during last week. Moderate thundershower to heavy rain occurred in Myanmar, Thailand, Lao PDR, Cambodia, Viet Nam and Lower Mekong Basin (LMB) particularly in the lower part of LMB, the middle and lower parts of Thailand and Cambodia, upper and middle parts of Viet Nam.

General behaviour of the Mekong River

Water levels at most stations in the upper and lower reaches of LMB were somewhat around or below the long-term average while water levels at stations in middle lower reach were over the long-term average for this time of the year. Water level at most stations in the upper reach of the LMB were falling while water levels at stations in the middle reach were rising from the beginning to the mid of the week and then falling to the end of the week. Water level at stations in lower reach of LMB were more-or-less stable during the monitoring period. Regarding to downstream stations at Tan Chau and Chau Doc, water levels at those stations were affected by tide with a little rise from the beginning to the mid of the week and then more-or-less stable.

For stations from Chiang Saen to Paksane

Water levels at those stations showed falling trend during last week except Chiang Saen, where its water level was falling from the beginning to the mid of the week and slightly rising to the end of the week. The stations were recording levels that were somewhat below the long-term average for this time of the year.

For stations from Nakon Phanom/Thakkhet to Pakse

Water levels were rising from the beginning to the mid of the week and then falling to the end of the week. The stations were recording levels that were somewhat over the long-term average for this time of the year.

For stations Strung Treng to Kampong Cham

Water levels were rising from the beginning to the mid of the week and more-or-less stable to the end of the week. Water levels at those stations were somewhat around the long-term average for this time of the year.

For stations from Phnom Penh Bassac/ Phnom Penh Port to Neak Luong/ Koh Khel

Water levels were more-or-less stable with a little rising trend during last week. All stations were recording levels that are below the long-term average 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, were slightly rising from the beginning to the mid of the week and then more-or-less stable to the end of the week. These stations were recording levels that are below the long-term average for this time of the year.

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 are still significanlyt 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
04/10	536.82	4.58	10.26	10.18	7.48	8.46	9.88	7.89	9.00	7.43	6.51	8.58	6.93	6.28	15.38	10.57	7.67	6.79	6.44	5.40	6.81	2.72	2.29
05/10	536.19	4.40	9.90	9.86	7.16	8.15	9.86	8.19	9.30	7.99	7.25	9.11	7.19	6.42	15.46	10.59	7.70	6.82	6.43	5.41	6.73	2.79	2.37
06/10	536.48	4.24	9.26	9.67	6.84	7.82	9.55	8.22	9.33	8.42	7.66	10.58	8.41	6.94	15.76	10.70	7.74	6.87	6.45	5.41	6.86	2.86	2.45
07/10	536.46	4.20	8.90	9.27	6.55	7.52	9.10	8.04	9.14	8.37	7.50	11.04	8.98	7.67	16.63	11.06	7.80	6.92	6.48	5.48	6.91	2.91	2.50
08/10	536.16	4.13	8.68	8.87	6.12	7.12	8.92	7.69	8.78	8.11	7.42	11.02	9.04	7.86	17.51	11.70	7.88	7.00	6.55	5.54	6.98	2.90	2.47
09/10	536.50	4.19	8.55	8.60	5.67	6.61	8.54	7.31	8.43	7.78	7.10	10.67	8.80	7.67	17.61	11.96	7.95	7.05	6.60	5.60	7.04	2.91	2.46
10/10	538.29	4.38	8.40	8.46	5.38	6.26	8.14	6.95	8.09	7.48	6.66	9.96	8.26	7.45	17.34	11.92	8.00	7.11	6.63	5.67	7.08	2.91	2.43
11/10	538.82	4.75	8.34	8.32	5.16	6.12	7.70	6.61	7.73	7.18	6.38	9.42	7.78	7.28	17.02	11.77	8.02	7.13	6.66	5.70	7.11	2.88	2.46
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
04/10	0.0	0.0	0.0	0.0	0.0	0.8	2.1	41.3	41.3	15.7	17.3	0.4	5.5	2.0	66.2	0.2	3.1		7.6	0.0	0.0	11.7	13.2
05/10	0.0	0.0	0.0	0.3	0.0	1.5	0.0	22.8	23.8	64.4	67.5	1.0	11.2	63.5	2.8	6.2	0.9		14.8	1.5	7.3	2.1	0.0
06/10	0.0	0.0	0.0	0.5	0.0	0.0	0.0	4.7	3.4	3.0	2.6	25.8	0.0	70.5	0.0	26.2	10.9		3.0	2.3	0.0	1.9	0.7
07/10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	58.2	0.0
08/10	2.0	0.2	4.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.6	11.7	51.9		2.7	3.9	4.3	2.0	0.0
09/10	7.0	0.0	0.0	0.0	0.0	0.0	58.9	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	1.6		0.0	0.0	4.2	0.0	0.3
10/10	0.0	0.0	0.0	0.0	0.0	0.0	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.3	0.0		13.0	30.6	0.0	39.0	14.0
11/10	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.8	0.0	67.8	7.0	15.5	9.0	42.0	55.5		44.3	26.8	23.4	14.0	0.0

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

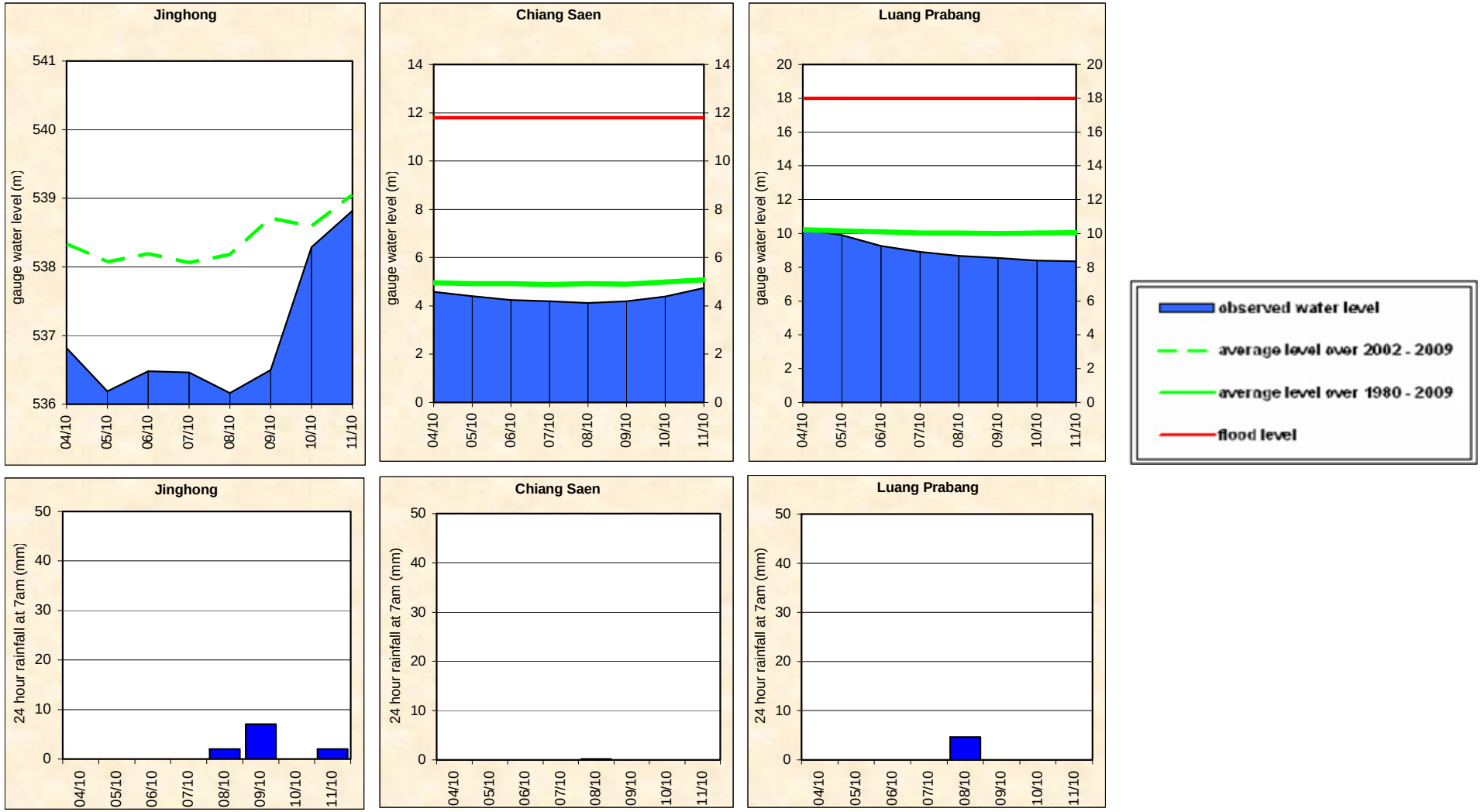


Figure A2: Water level and rainfall for Chiang Khan, Vientiane, Nongkhai, and Paksane

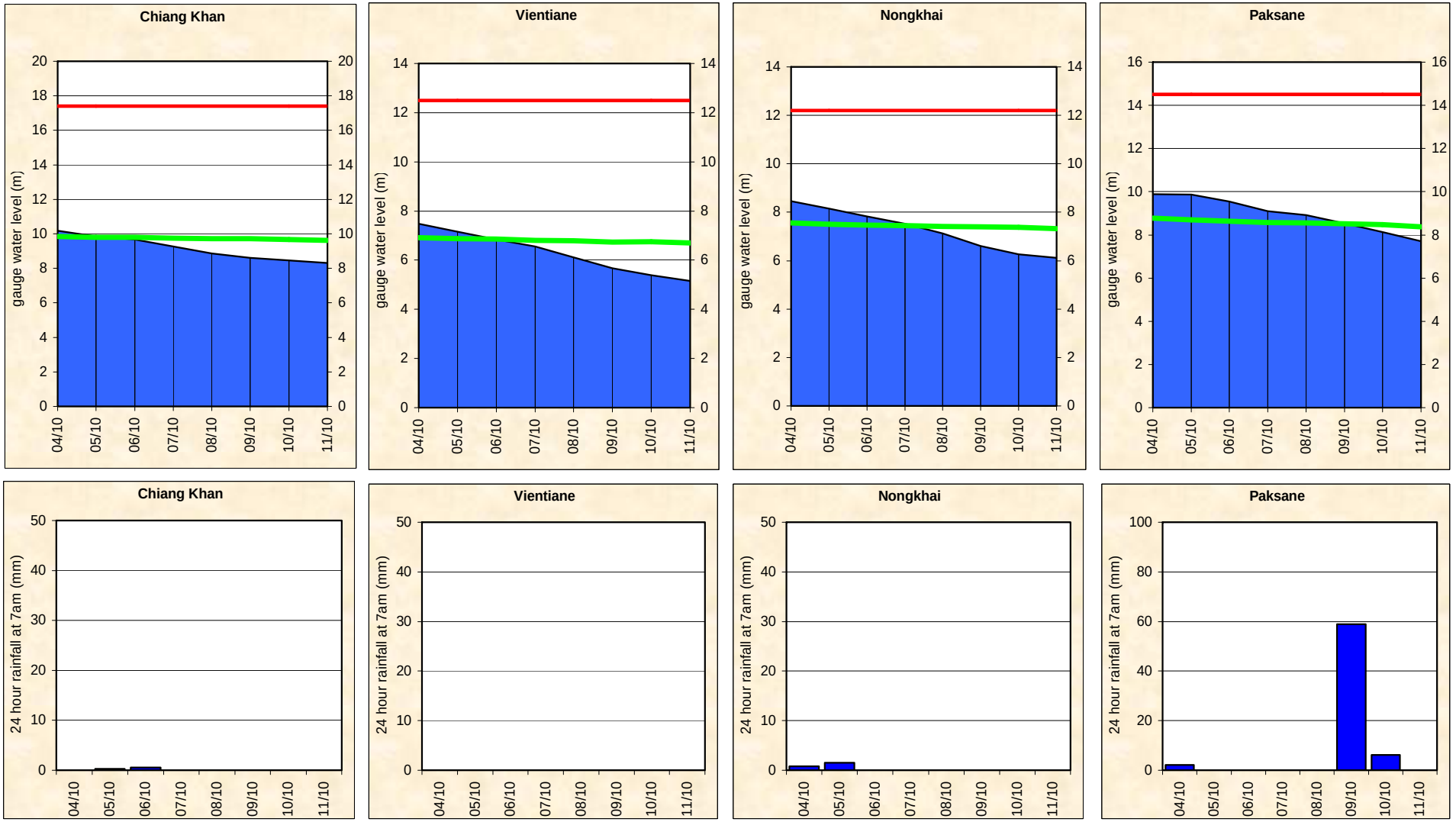


Figure A3: Water level and rainfall for Nakhon Phanom, Thakhek, Mukdahan and Savannakhet

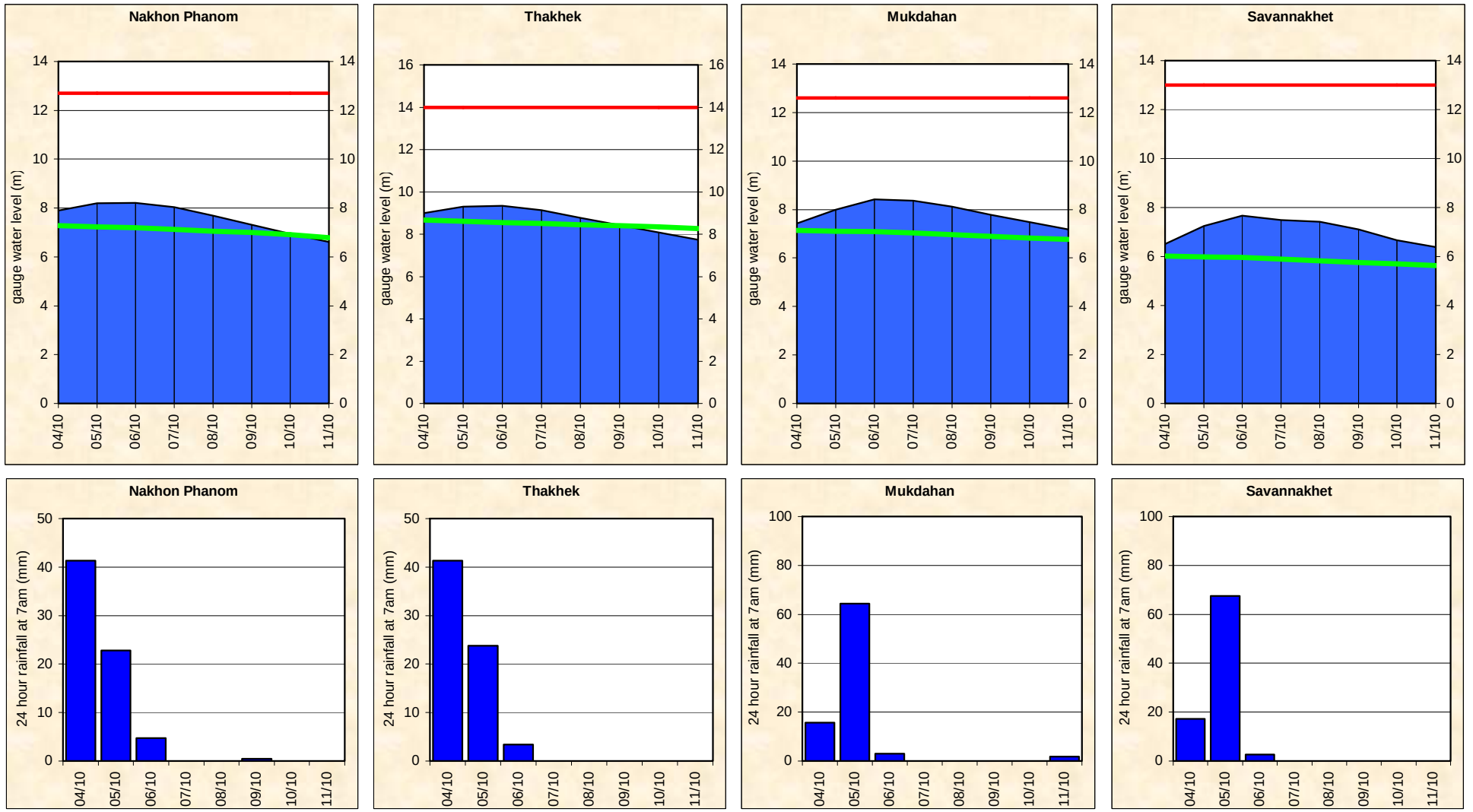


Figure A4: Water level and rainfall for Khong Chiam, Pakse, Stung Treng, and Kratie

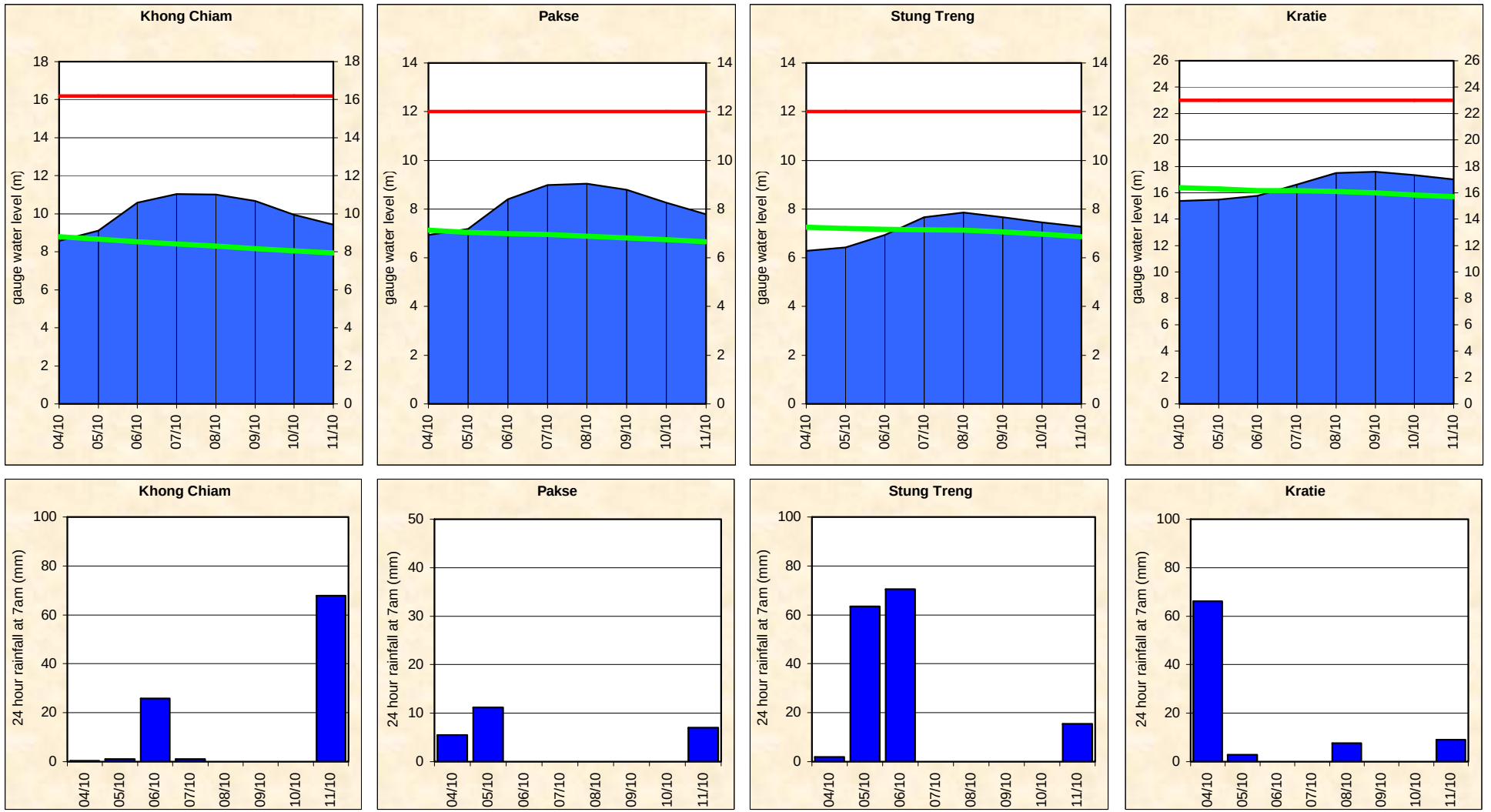


Figure A5: Water level and rainfall for Kampong Cham, Phnom Penh (Bassac and Port), and Koh Khel

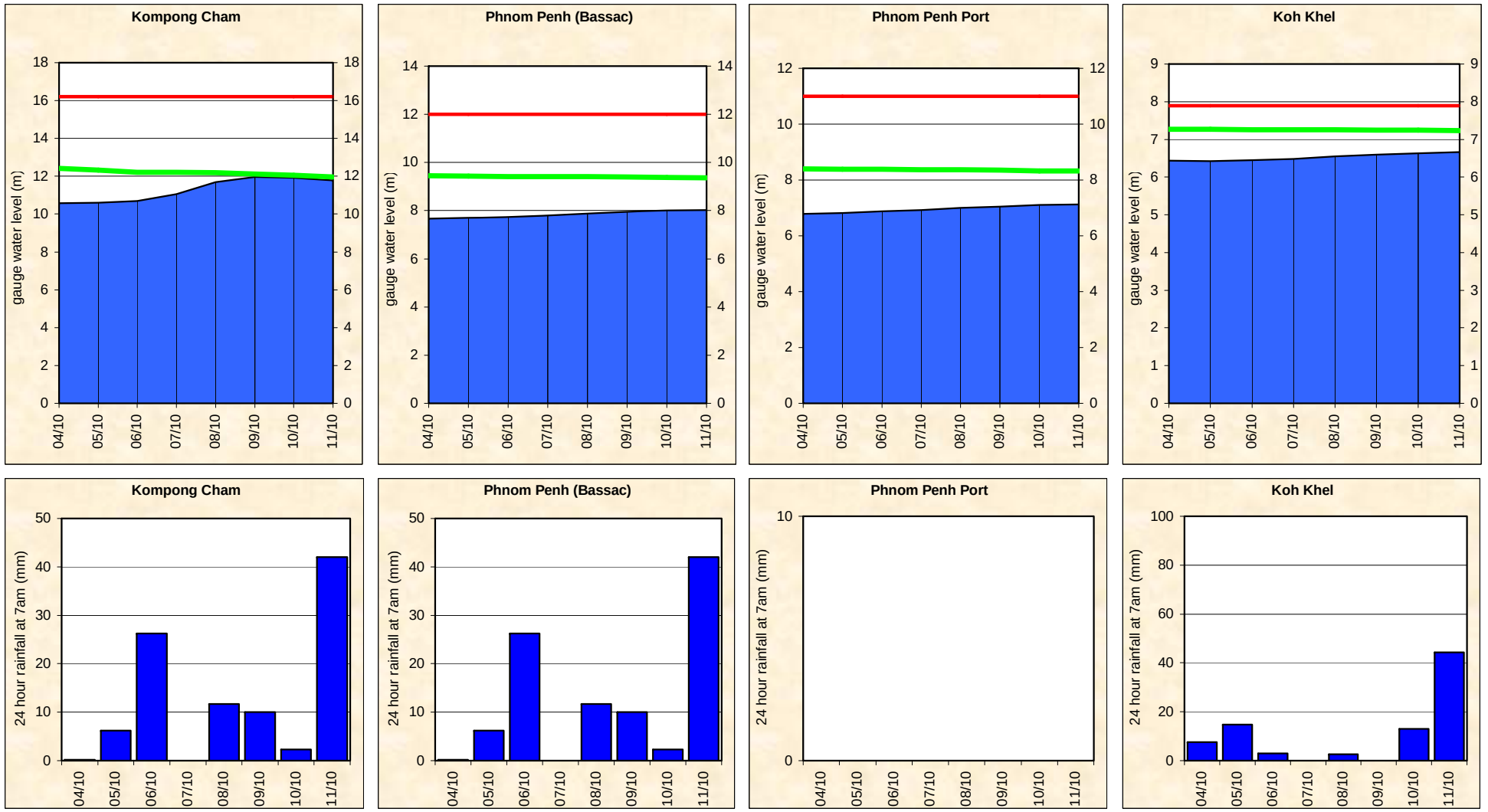
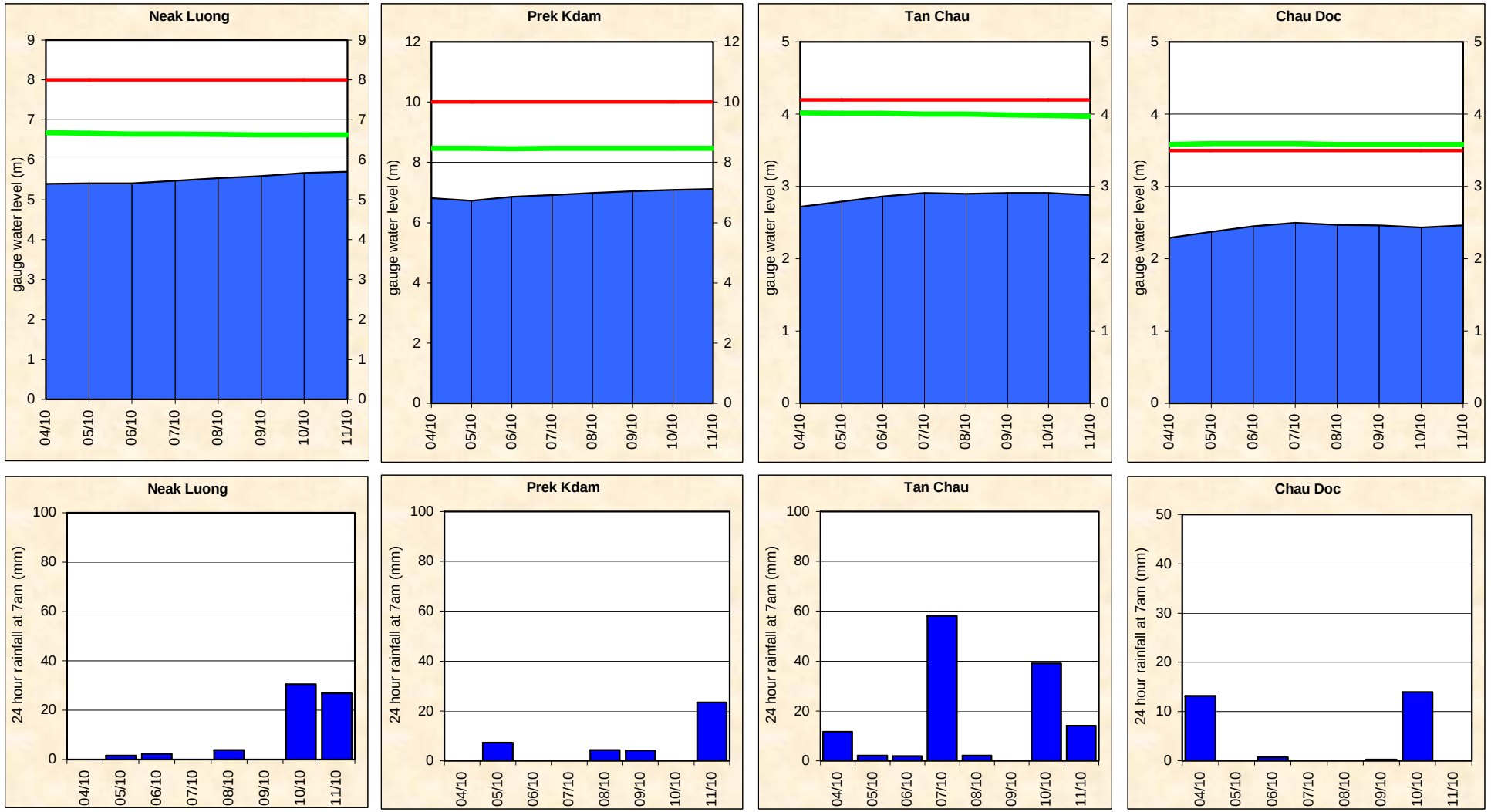


Figure A6: Water level and rainfall for Neak Luong, Prek Kdam, Tan Chau and Chau Doc



Annex B: Accuracy and performance

Accuracy

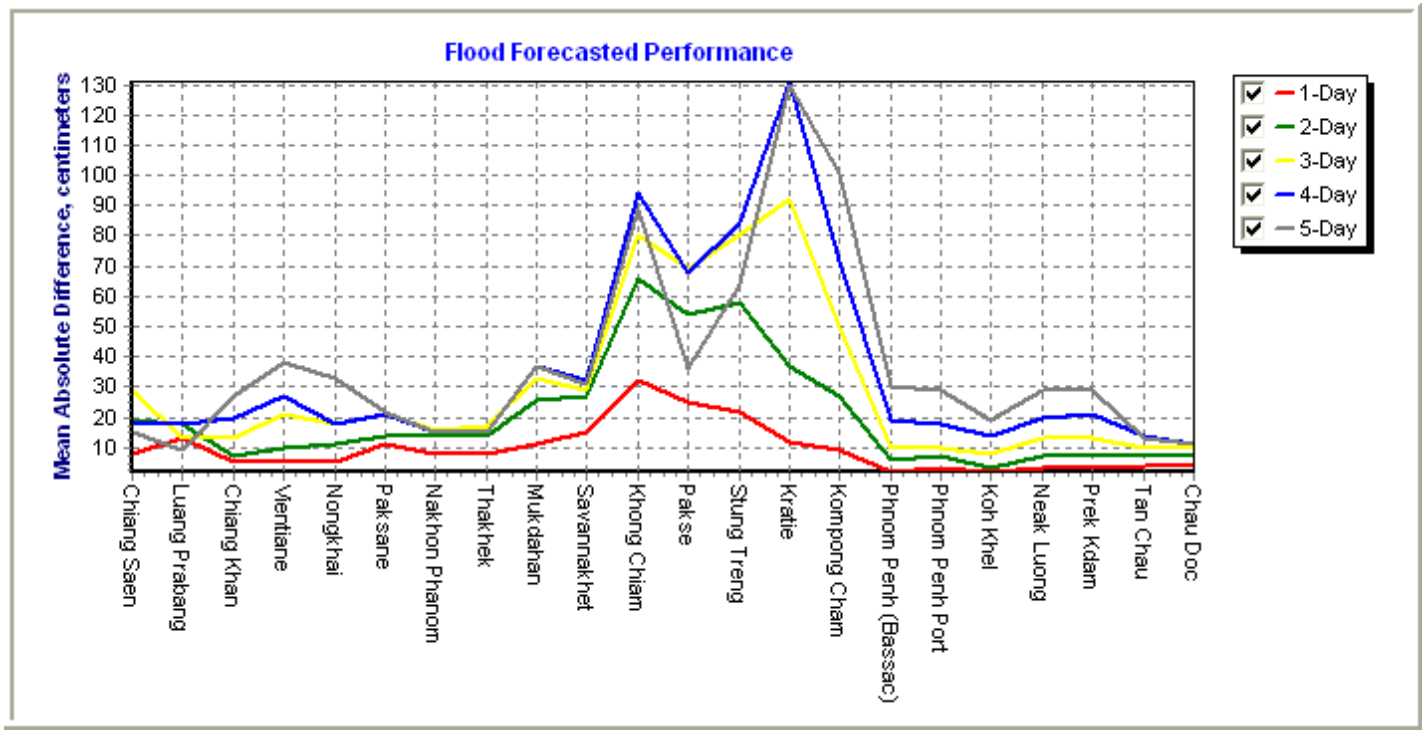
"Accuracy" describes the accuracy of the adjusted and published forecast, based on the results of the MRC Mekong Flood Forecasting System, which are then adjusted by the Flood Forecaster-In-Charge taking into consideration the known biases in input data, the knowledge of model response and the experience 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 accuracies at stations in the upper reach were better than the middle reach of the Lower Mekong Basin.

In overall, the accuracy is good for almost forecasts lead-time at stations in the upper and lower reaches of the LMB. The accuracies at stations in the middle reach between Khong Chiam and Kampong Cham were less than expected.

The above differences perharp caused by high variability of Satellite Rainfall Estimates (SRE) and rainfall forecast of Numerical Weather Prediction (NWP) as well as internal model functionality in forecasting for those stations for which the parameters adjustment are not possible.

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	100.0	100.0	100.0	100.0	100.0	83.3	83.3	33.3	50.0	0.0	33.3	50.0	100.0	100.0	100.0	100.0	83.3	100.0	100.0	*82.6*
2-day	100.0	100.0	100.0	80.0	100.0	80.0	100.0	100.0	80.0	80.0	60.0	60.0	0.0	40.0	20.0	80.0	80.0	100.0	100.0	60.0	60.0	60.0	*74.5*
3-day	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	50.0	75.0	50.0	75.0	0.0	25.0	25.0	50.0	50.0	75.0	25.0	50.0	50.0	50.0	*65.9*
4-day	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	66.7	66.7	0.0	0.0	33.3	66.7	66.7	100.0	0.0	33.3	66.7	33.3	*69.7*
5-day	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	50.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	50.0	50.0	*61.4*

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
2-day	75	75	25	25	25	25	50	50	50	50	50	50	25	25	25	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
4-day	100	*125*	75	50	50	50	50	50	75	75	75	75	50	50	50	25	25	25	10	25	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

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)						
2010	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
week	*10:21*	*0*	*-*	*8*	*08:13*	*08:19*	*07:52*	*06:00*	*08:37*	*08:18*	*07:33*	*0*	*0*	*3*	*47*	*134*	*3*	*41*
month	*10:17*	*0*	*-*	*31*	*08:13*	*08:19*	*07:56*	*05:53*	*08:33*	*08:10*	*07:33*	*0*	*4*	*8*	*205*	*583*	*11*	*237*
season	*10:37*	*2*	*-*	*123*	*18:49*	*08:57*	*08:01*	*06:33*	*08:37*	*08:18*	*07:28*	*0*	*26*	*62*	*2113*	*2367*	*65*	*916*

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.

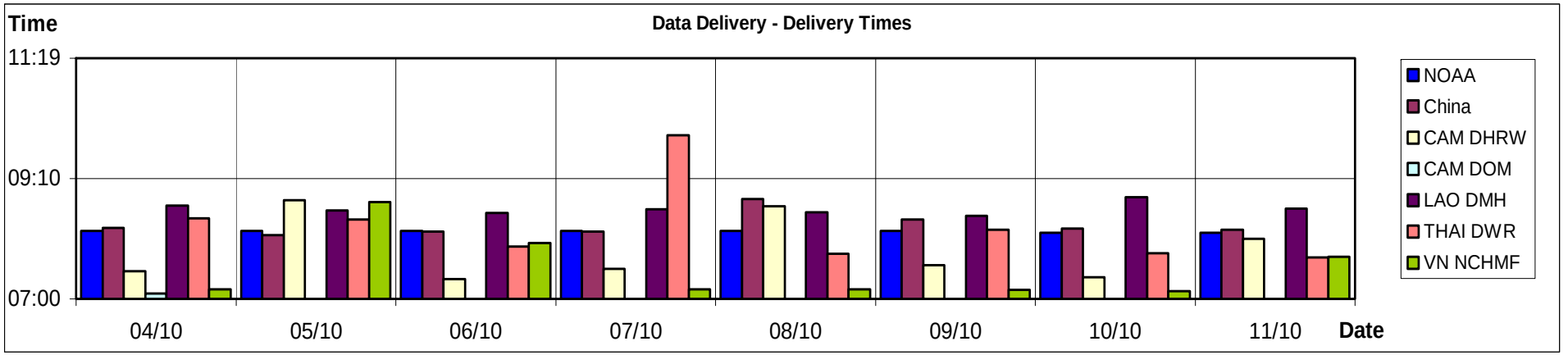


Figure B2: Data delivery times for the past 8 days including the current report date

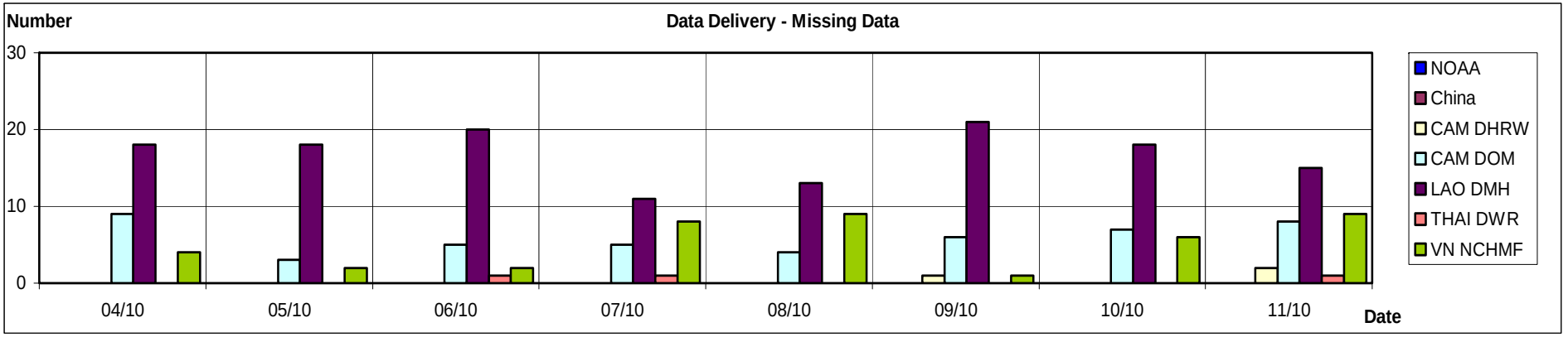


Figure B3: Missing data for the past 8 days including the current report date

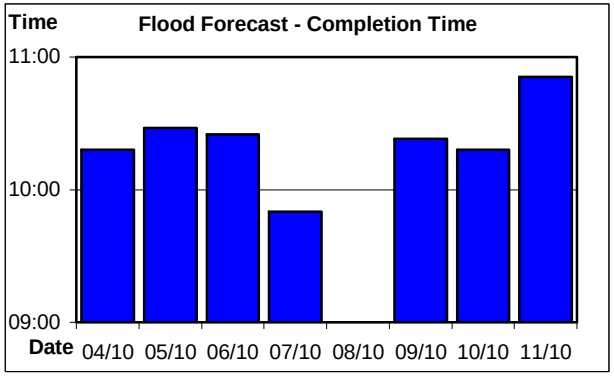


Figure B4: Flood forecast completion time

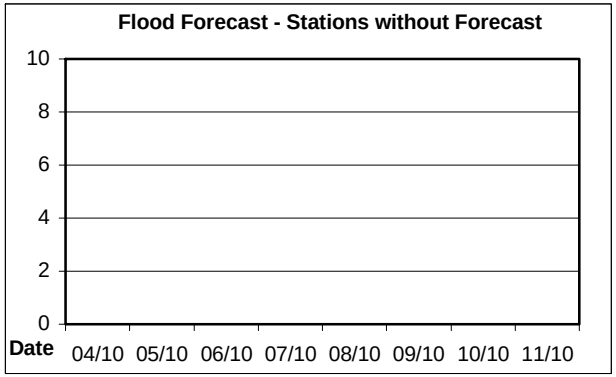


Figure B5: Flood forecast stations without forecast

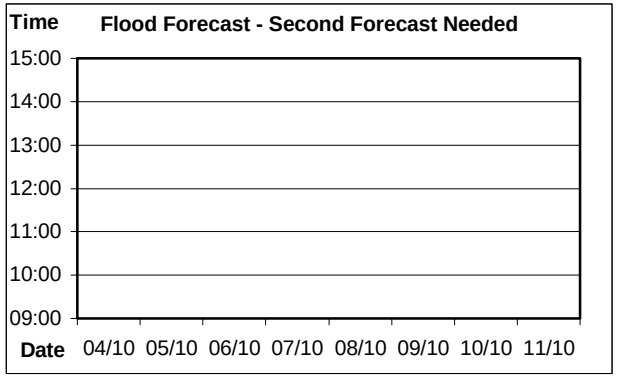


Figure B6: Second forecast needed