



Mekong River Commission

Regional Flood Management and Mitigation Centre

Weekly Flood Situation Report for the Mekong River Basin

Prepared at: 31/07/2017, covering the week from the 24th – 31st July 2017

General Behaviour of the Mekong River and Flood Situation

Over weather situation

During last week, Tropical Storm SONCA (TS-SONCA) hit the lower Mekong basin (LMB) during 21-25 July 2017 and the most affected areas were in the middle reach of LMB. There were heavy rainfalls happened in the upper and middle reaches of LMB. The first three maximum accumulated rainfalls were at Mukdahan (342.3 mm.), Savannakhet (302 mm.) and Pakse (317.3 mm.), see Figure 1 and Table A2 for more details.

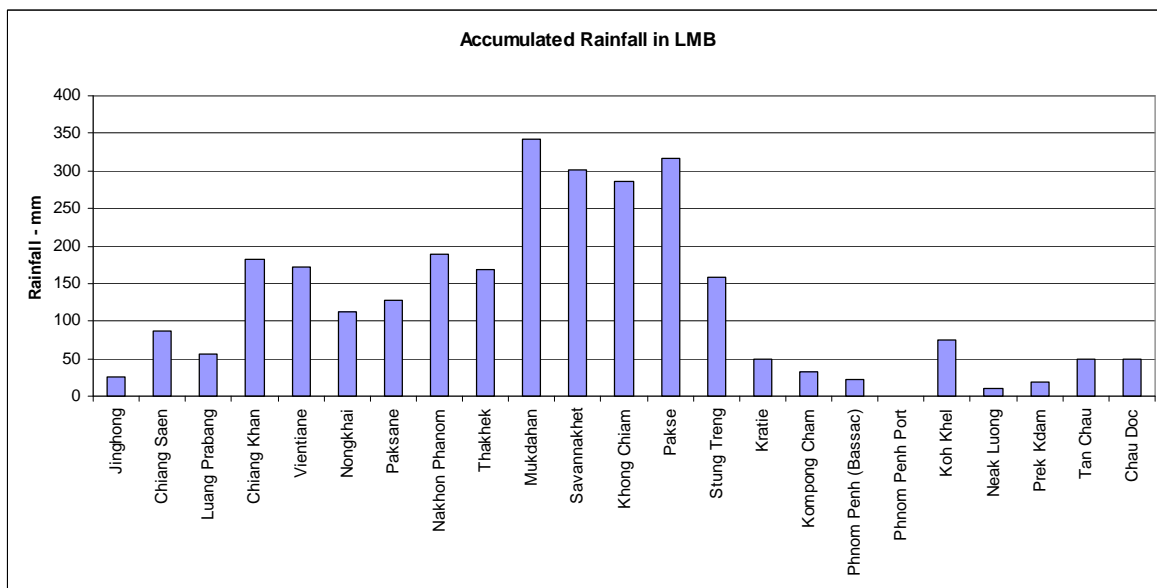


Figure 1: Accumulated Rainfall Distribution over the LMB from 24th – 31st July 2017

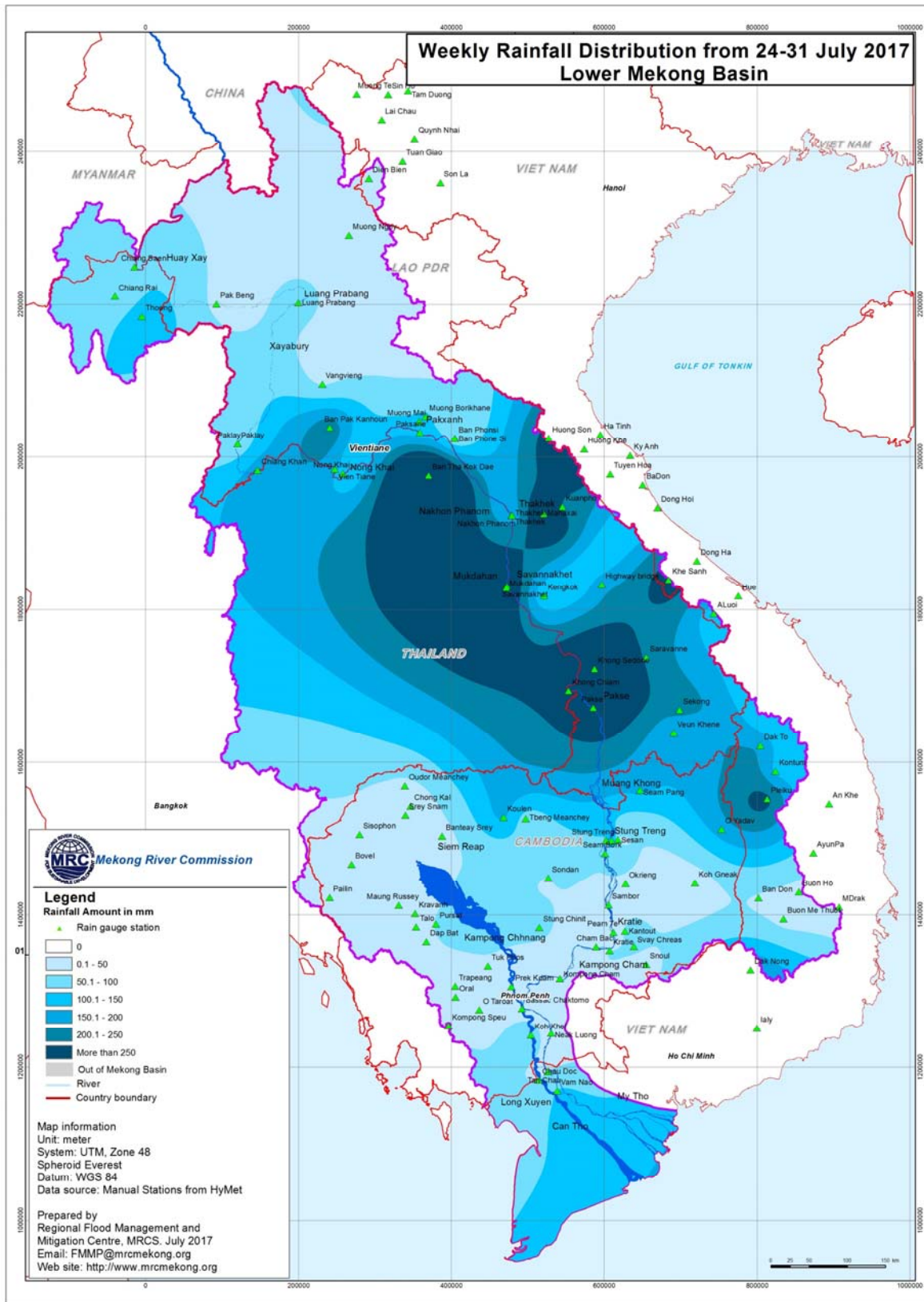


Figure 2: Weekly Rainfall Distribution over the LMB from 24th – 31st July 2017

General behaviour of the Mekong River

Compared the Long Term Average (LTA) before tropical storm SONCA hit the area, all water levels along the Mekong mainstream were higher than their long-term average (LTA) levels, except Chiang Saen and Luang Prabang that were below and about the LTA, respectively. Most water levels along Mekong mainstream raised rapidly and caused high water level above the alarm level at some locations in the middle reach of LMB, such as Pakse on 27 July 2017, Khong Chiam on 29 July 2017; and Stung Treng where almost reached alarm level on 29 July 2017.

For stations from Chiang Saen and Luang Prabang

During the last week, the water levels at Chiang Saen and Luang Prabang rose to LTA then recessed below the LTA.

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

During the last week, the water levels at these stations rose then recessed about or above the LTA.

For stations from Thakhet/Nakhon Phanom to Pakse

During the last week, the water levels at these stations rose above the LTA.

For stations from Stung Treng to Kampong Cham

During the last week, the water levels at these stations rose above the LTA.

For stations from Phnom Penh to Koh Khel/Neak Luong

During the last week, the water levels at these stations rose above the LTA.

Tan Chau and Chau Doc

During the last week, the water levels at these stations rose above the LTA.

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

Flood Situation

- Flood stage or alarm stage:

Khong Chiam and Pakse had reached alarm stage during the last week.

- 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

	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	
2017																								
24/07	535.78	5.24	10.78	10.34	7.20	7.75	10.21	9.52	10.55	9.43	9.11	11.37	9.44	8.47	18.65	12.37	7.40	6.39	6.55	5.34	6.17	2.31	1.83	
25/07	535.78	5.68	11.36	10.78	7.50	8.03	10.10	9.24	10.28	9.20	8.88	11.82	9.91	8.74	18.77	12.43	7.45	6.45	6.56	5.38	6.21	2.21	1.59	
26/07	536.13	5.62	11.62	11.12	7.90	8.52	10.03	9.03	10.02	9.12	8.80	12.70	10.88	9.50	19.39	12.74	7.56	6.54	6.64	5.46	6.32	2.21	1.56	
27/07	536.66	5.10	11.68	11.32	8.20	8.86	10.28	9.03	10.09	9.43	9.11	13.39	11.50	10.29	20.30	13.30	7.85	6.82	6.86	5.70	6.52	2.37	1.71	
28/07	536.70	4.63	11.16	11.60	8.68	9.19	10.52	9.21	10.28	9.60	9.28	13.43	11.54	10.61	20.93	13.80	8.22	7.10	7.13	5.92	6.74	2.51	1.81	
29/07	536.31	4.54	10.28	11.65	8.80	9.50	10.76	9.47	10.51	9.95	9.63	13.56	11.54	10.68	21.19	14.11	8.44	7.34	7.29	6.10	6.92	2.62	1.89	
30/07	536.30	4.38	9.97	11.14	8.84	9.68	10.88	9.82	10.88	10.31	9.99	13.44	11.35	10.53	21.26	14.36	8.59	7.63	7.39	6.22	7.07	2.72	1.94	
31/07	536.30	3.95	9.40	10.68	8.50	9.23	11.20	10.03	11.08	10.58	10.26	13.37	11.11	10.32	21.23	14.54	8.71	7.74	7.47	6.28	7.19	2.78	1.99	

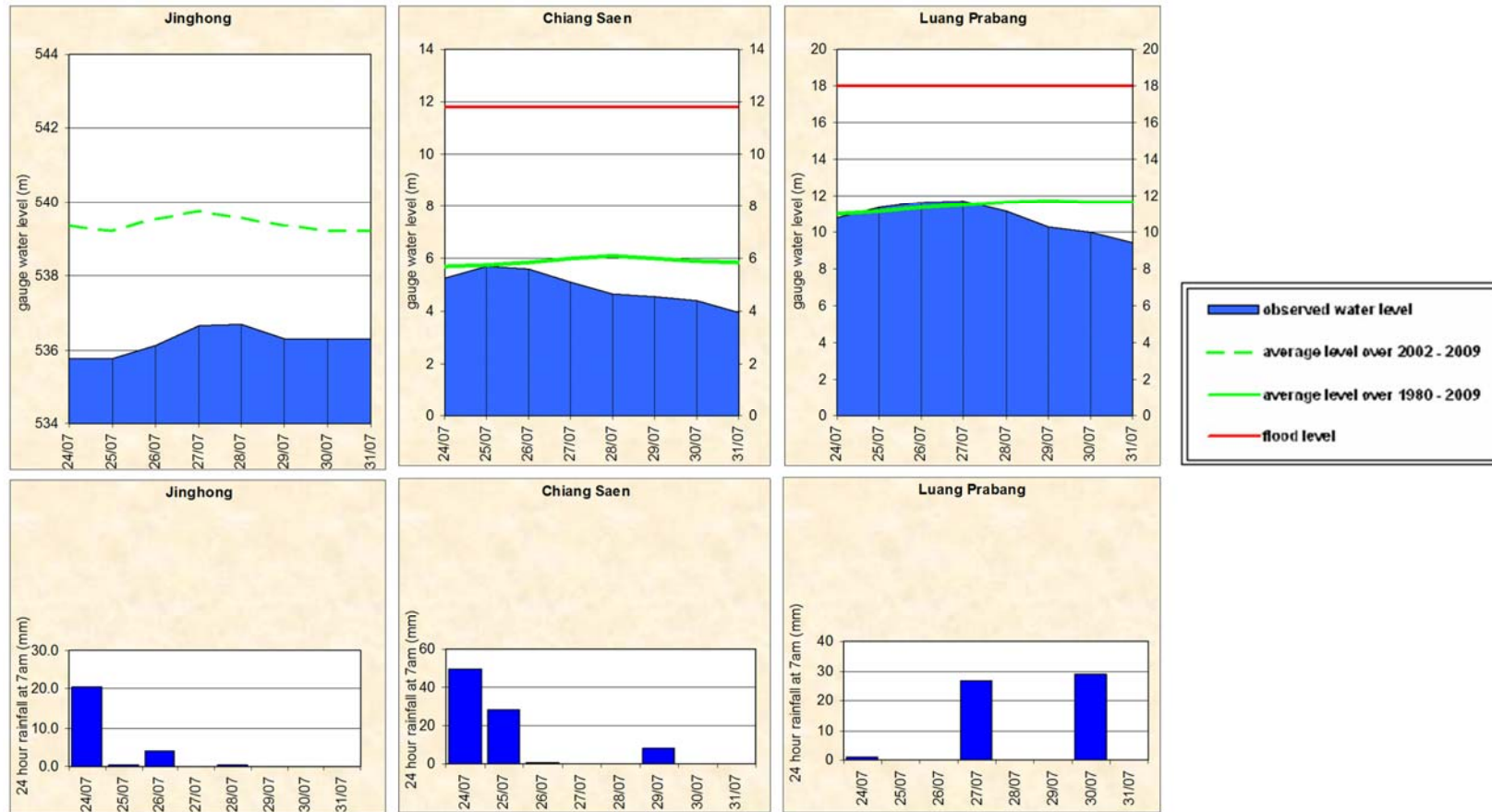
Table A2: observed rainfall

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 Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc	
2017																								
24/07	20.5	49.4	1.0	2.5	nr	3.3	nr	0.6	1.5	0.0	nr	2.7	3.8	37.0	nr	nr	nr	-	12.9	8.4	nr	nr	2.0	
25/07	0.5	28.6	nr	2.4	nr	0.0	45.1	0.0	0.3	34.5	48.5	105.0	105.9	54.0	22.6	21.6	1.6	-	0.0	0.0	7.4	0.0	0.1	
26/07	4.0	1.0	nr	10.0	1.4	4.1	5.8	15.6	22.1	92.6	78.4	97.2	134.8	16.5	26.8	1.1	0.0	-	10.2	1.2	5.3	4.8	10.9	
27/07	0.0	0.0	26.6	53.0	12.5	3.5	9.2	3.3	3.8	91.0	77.5	39.5	47.4	38.0	nr	3.8	10.0	-	6.5	1.4	5.2	45.2	36.0	
28/07	0.5	0.0	nr	61.0	67.2	9.0	34.4	23.1	24.5	21.7	23.3	29.5	nr	9.5	nr	nr	10.0	-	nr	0.0	nr	0.0	1.0	
29/07	0.0	8.2	nr	44.3	52.6	61.0	8.2	25.7	35.6	68.0	56.2	11.8	5.0	nr	nr	nr	nr	-	nr	0.0	nr	nr	-	
30/07	0.0	0.0	28.8	9.3	38.2	24.6	20.6	119.6	80.3	27.2	13.7	0.0	6.2	nr	nr	5.3	nr	-	2.0	0.0	nr	nr	0.1	
31/07	0.00	0.00	nr	0.00	nr	6.20	5.00	0.60	0.50	7.30	4.40	0.00	14.20	4.00	nr	nr	nr	-	42.70	0.00	nr	nr	-	
Sum R	25.5	87.2	56.4	182.5	171.9	111.7	128.3	188.5	168.6	342.3	302.0	285.7	317.3	159.0	49.4	31.8	21.6	0.0	74.3	11.0	17.9	50.0	50.1	

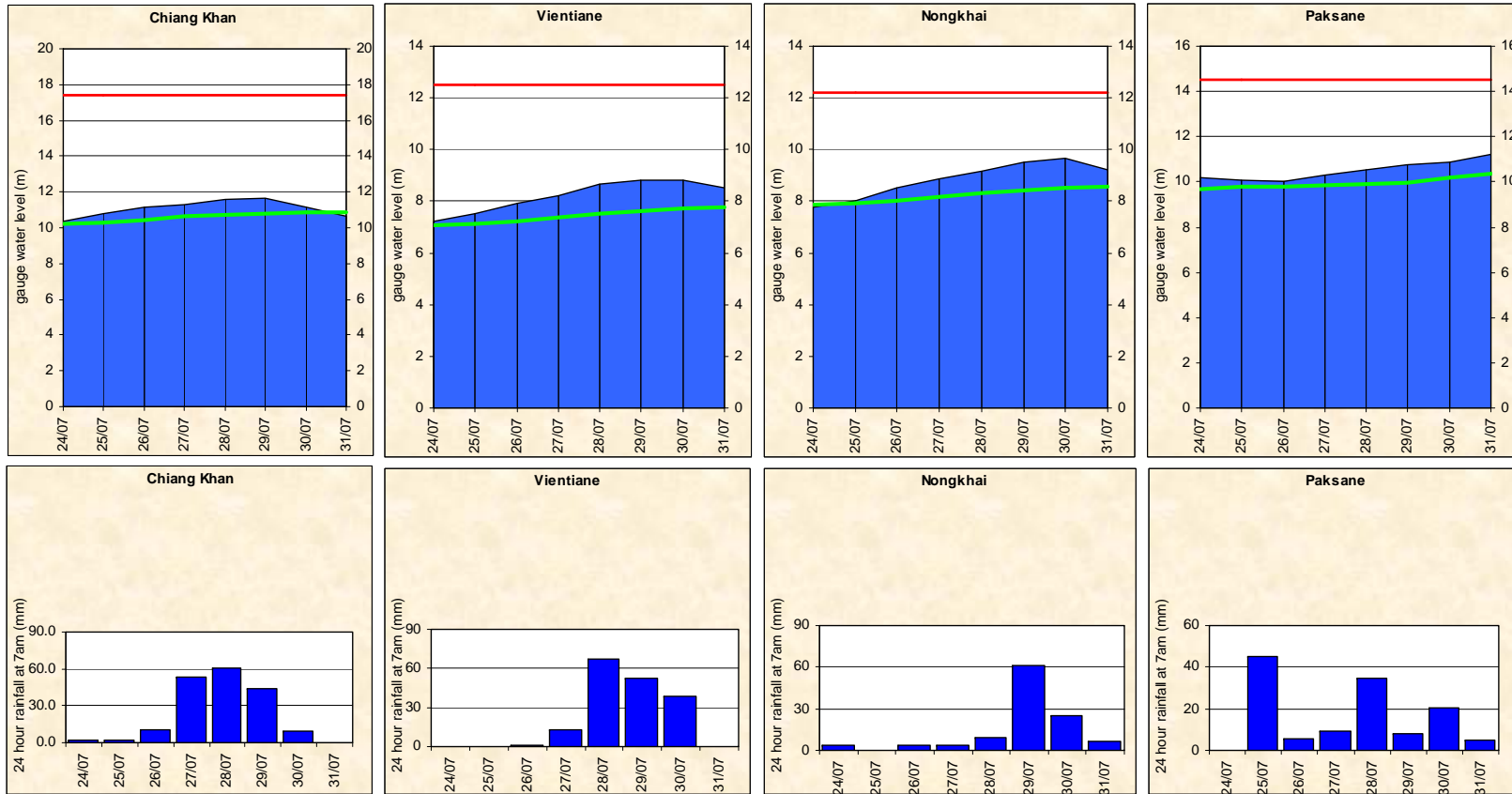
Monday, 31st July 2017

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



Monday, 31st July 2017

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



Monday, 31st July 2017

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

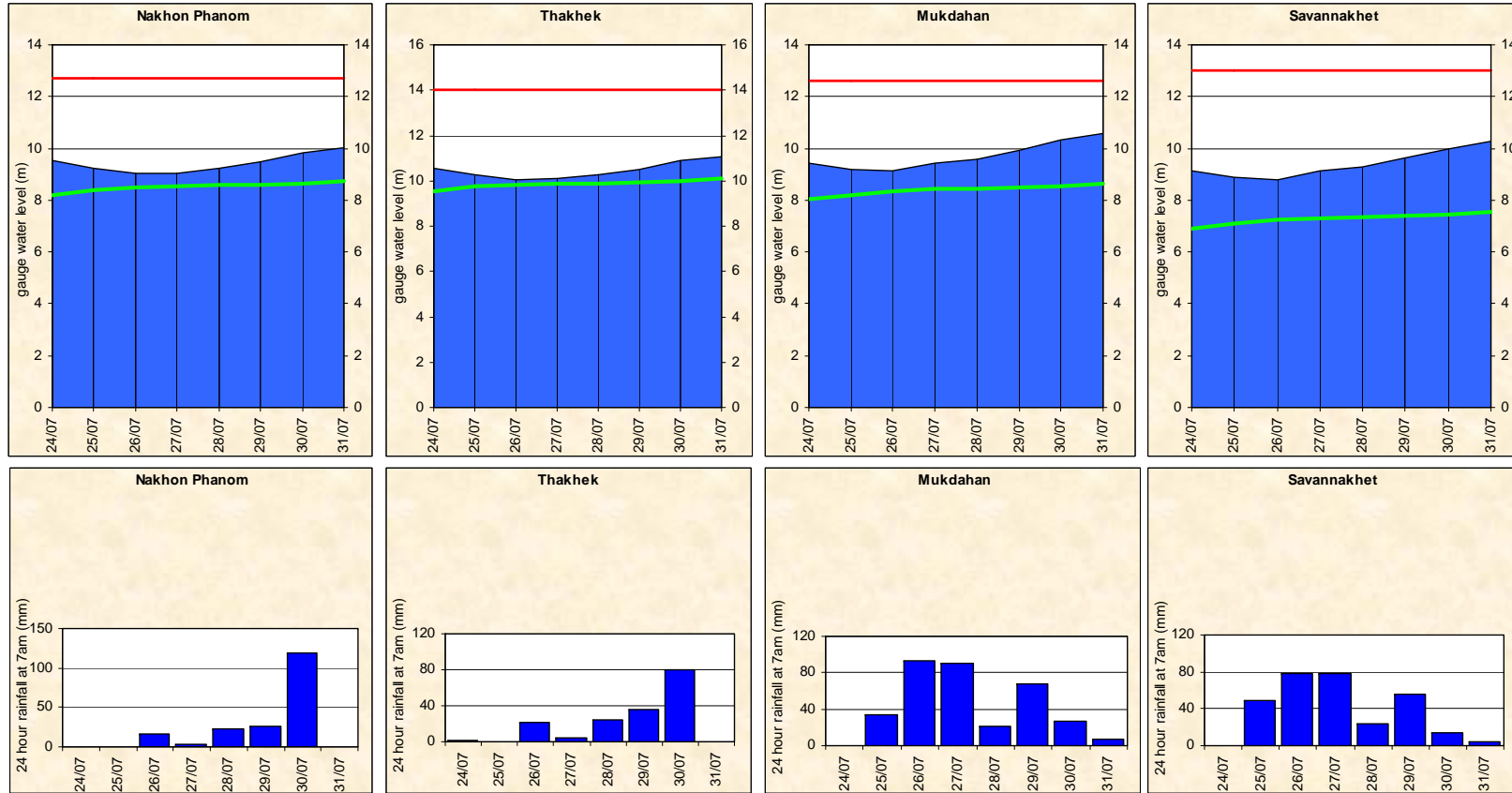
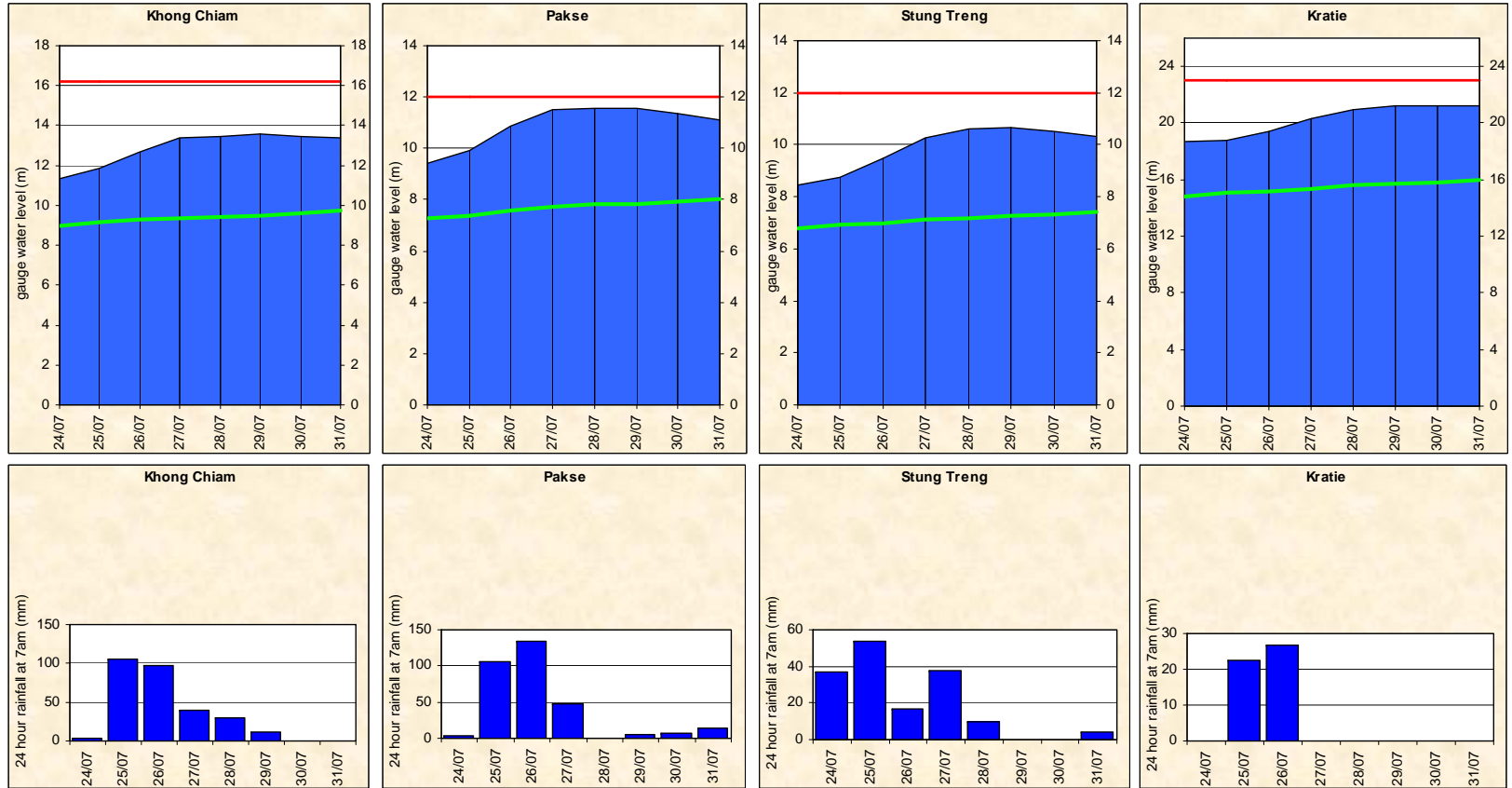
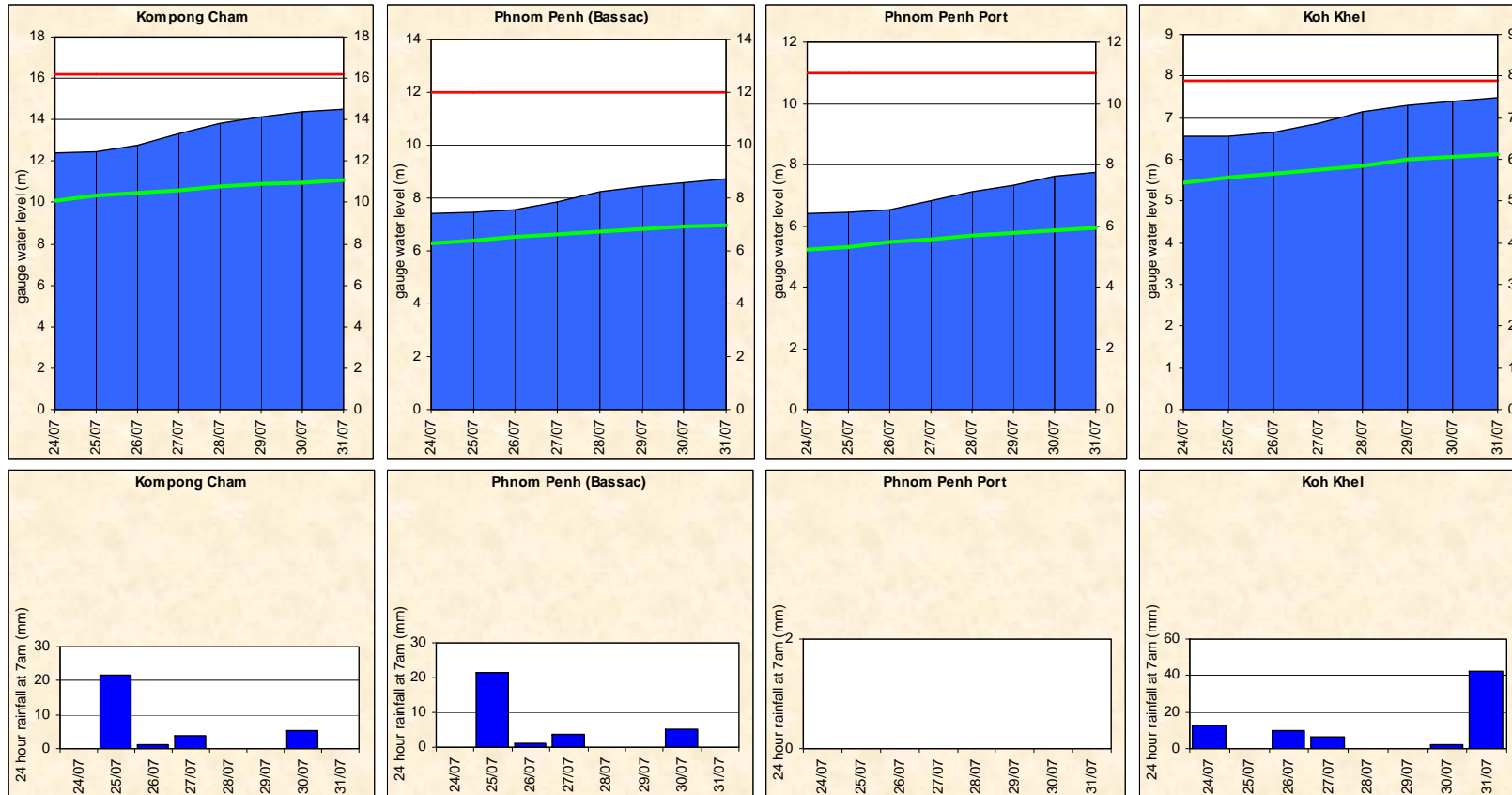


Figure A4: Observed water level and rainfall for Khong Chiam, Pakse, Stung Treng, and Kratie



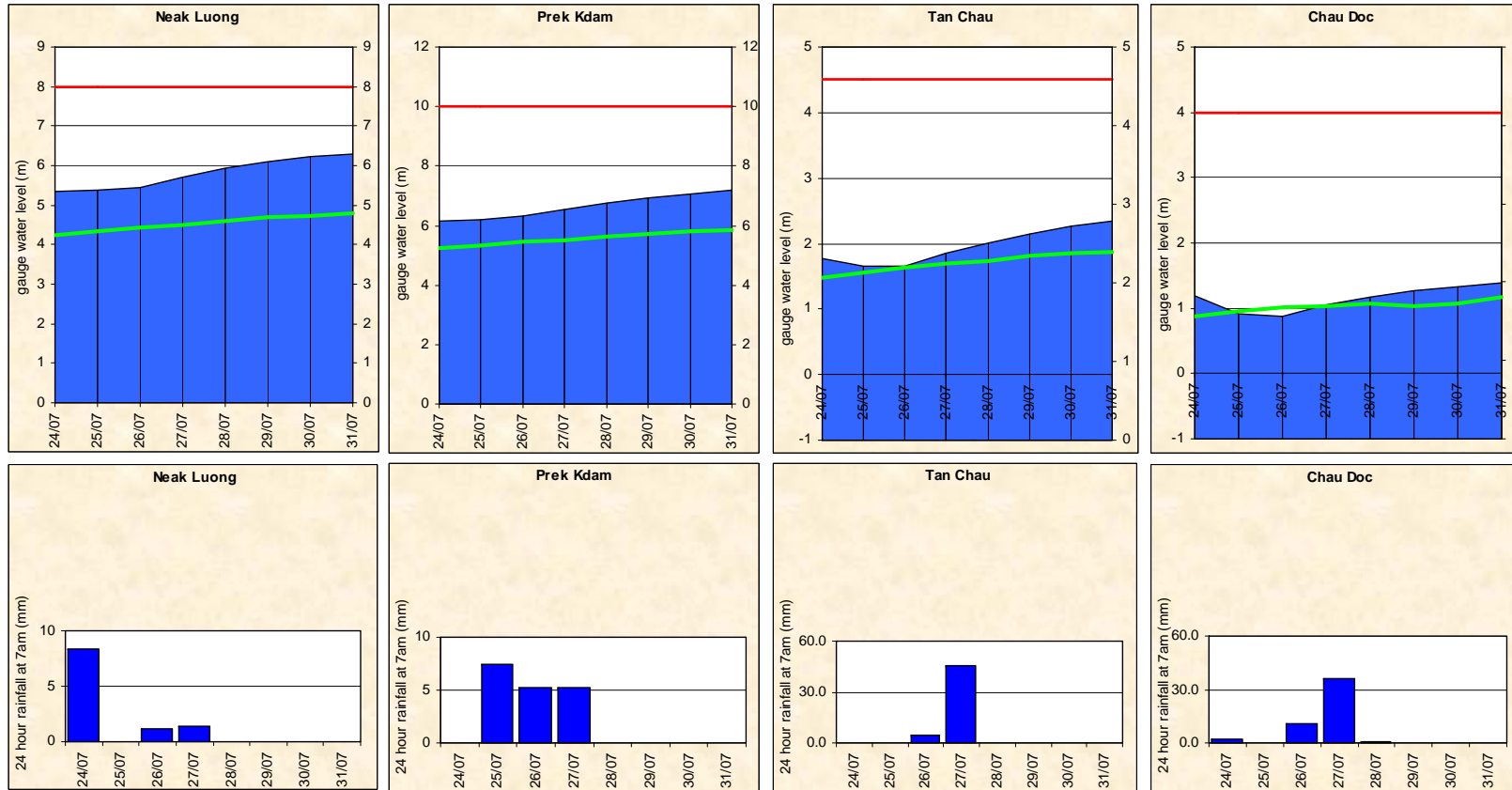
Monday, 31st July 2017

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



Monday, 31st July 2017

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 the LMB. However, the accuracies at Paksane,

Khong Chiam and Pakse for 1-day forecast; Luang Prabang to Nongkhai 2-day to 4-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; (3) the heavy rainfall happened in many tributaries inside the LMB. See the Figure B1 and table B1 for more detail.

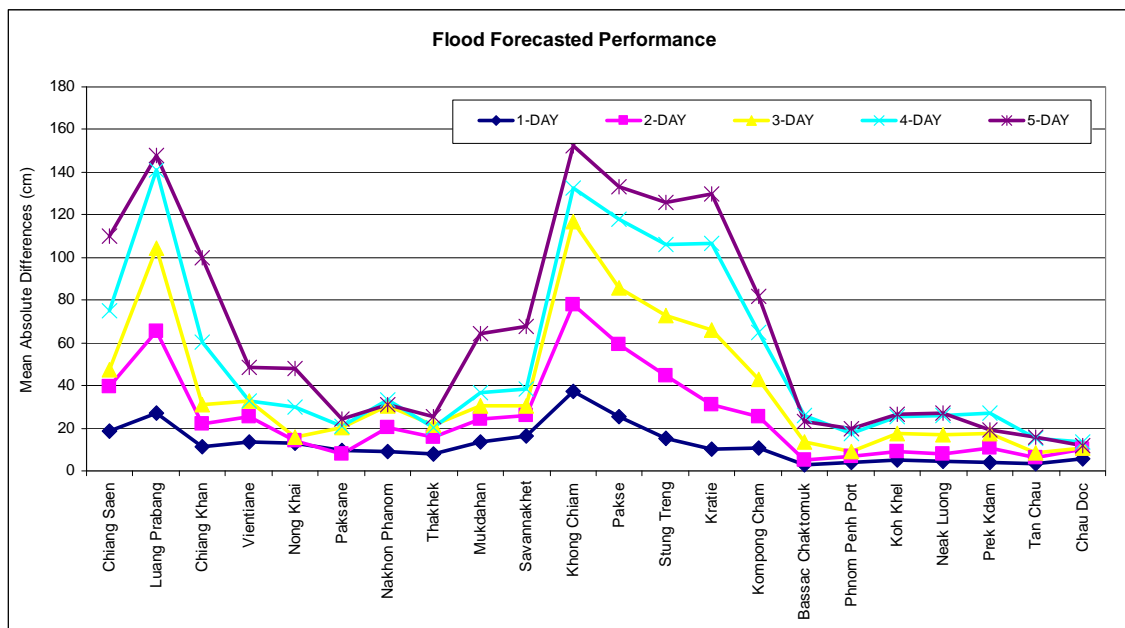


Figure B1: Average flood forecast accuracy along the Mekong mainstream (from 24th – 31st July 2017)

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 Khei	Neak Luong	Prek Kdam	Tan Chau	Chau Doc	Average
1-day	71.4	51.7	76.7	50.0	50.0	30.0	50.0	53.3	50.0	50.0	36.7	36.7	66.7	63.3	75.0	96.7	90.0	96.7	95.0	98.3	73.3	63.3	64.8
2-day	50.0	0.0	0.0	0.0	0.0	49.2	55.9	55.9	61.0	61.0	52.5	52.5	67.8	69.5	84.7	76.3	69.5	67.8	78.0	84.7	47.5	30.5	50.7
3-day	60.0	0.0	0.0	0.0	0.0	34.5	27.6	37.9	32.8	34.5	39.7	34.5	43.1	44.8	56.9	55.2	50.0	41.4	53.4	50.0	32.8	29.3	34.5
4-day	50.0	0.0	0.0	0.0	0.0	50.9	43.9	47.4	47.4	45.6	45.6	47.4	64.9	49.1	68.4	35.1	77.2	38.6	75.4	75.4	19.3	19.3	40.9
5-day	33.3	44.6	41.1	53.6	51.8	48.2	39.3	41.1	41.1	35.7	30.4	35.7	55.4	39.3	57.1	55.4	53.6	67.9	67.9	55.4	42.9	21.4	46.0

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 Khei	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

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

	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	
2017																			
<i>week</i>	10:18	0	-	0	08:15	07:10	07:34	08:51	08:22	07:39	08:07	0	0	4	34	403	16	41	
<i>month</i>	10:06	0	-	-	08:15	07:10	07:30	08:14	08:25	07:41	07:56	0	0	14	35	1463	94	82	
<i>season</i>	10:06	0	-	0	08:15	07:10	07:31	08:06	08:27	07:41	07:49	0	0	66	106	2849	169	134	

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.

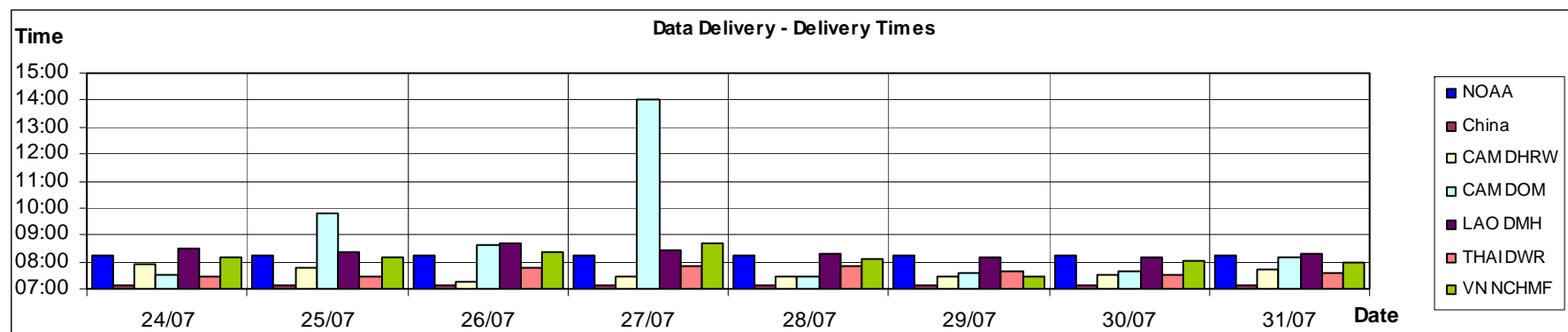


Figure B2: Data delivery times for the past 8 days including the current report date

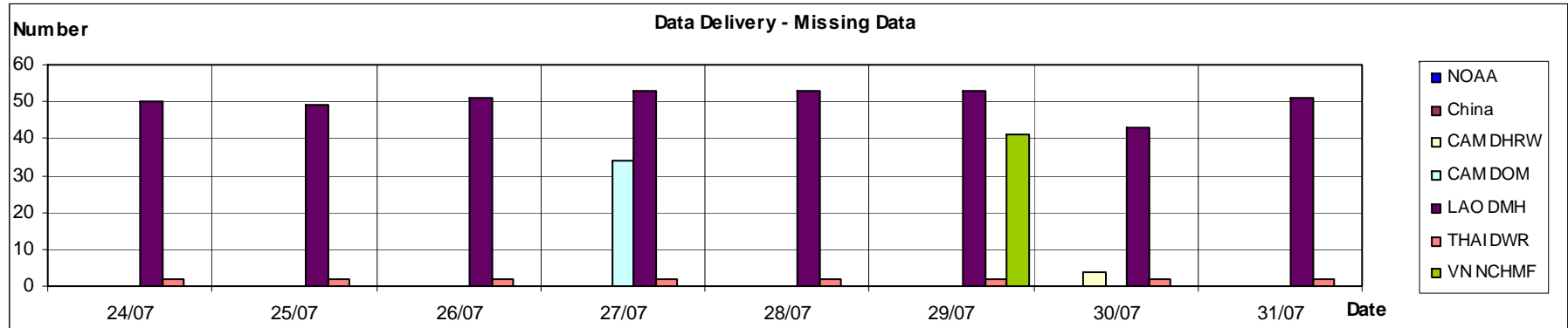


Figure B3: Missing data for the past 8 days including the current report date

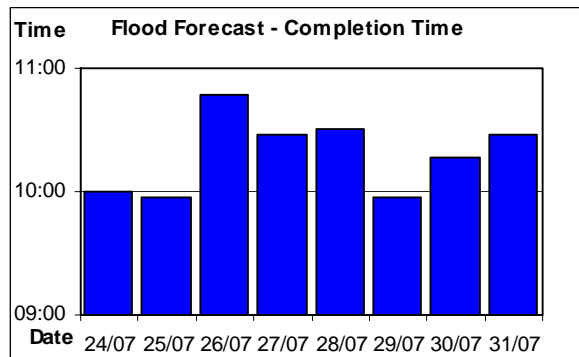


Figure B4: Flood forecast completion time

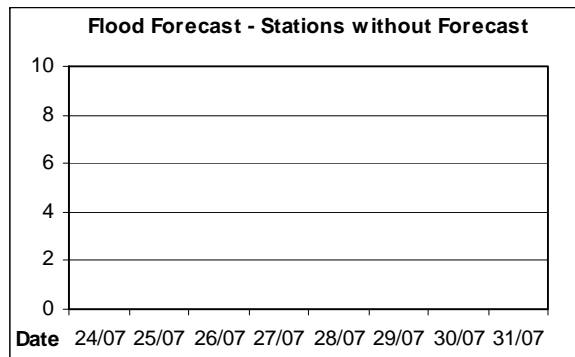


Figure B5: Flood forecast stations without forecast

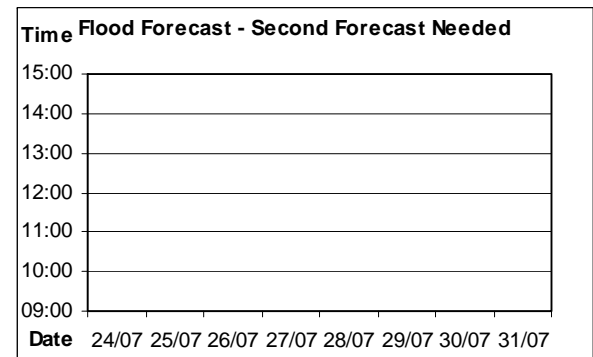


Figure B6: Second forecast needed

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

