

Weekly Flood Situation Report for the Mekong River Basin

Prepared on: 27/09/2010, covering the week from the 20th to the 26th September 2010

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

General weather patterns

During the week of the 20th to the 26th September 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 20th to the 26th September bulletins are shown below:

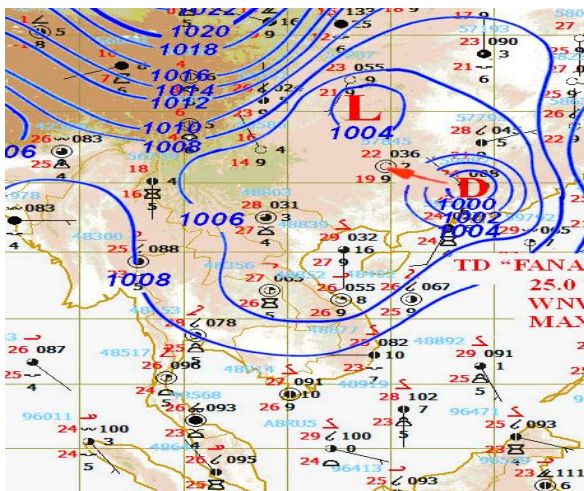


Figure 1: Weather map of 20 September 2010

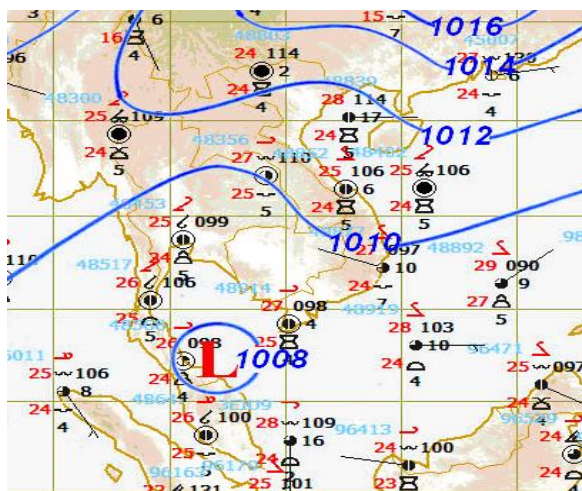


Figure 2: Weather map of 26 September 2010

From moderate to weak South-West (SW) Monsoon

From the 22nd to the 23rd September, moderate SW monsoon trough laid across Myanmar, Thailand, Lao PDR, Cambodia, Viet Nam and the LMB at the surface and then was weakening toward the end of the week (figure 2).

Inter Tropical Convergence Zone (ITCZ)

ITCZ was observed during the 21st and 22nd September and laid across middle part of LMB, Myanmar, Thailand, Lao PDR, and Viet Nam.

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

During last week, the super Tropical Storm (sTS) named "**FANAPI**" (1011) downgraded into TD after landing the mainland of China on 20th September (figure 1). 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. Scattered to moderate thundershower occurred in Myanmar, Thailand, Lao PDR, Cambodia, Viet Nam and Lower Mekong Basin (LMB) particularly in the upper and middle parts of LMB, upper part of Thailand, Viet Nam and Cambodia.

General behaviour of the Mekong River

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

For stations from Chiang Saen to Chiang Khan

Water levels at those stations were falling from the beginning of the week and then slightly rising at the end of the week. The stations were recording levels that were somewhat around the long-term average for this time of the year.

For stations from Vientiane/ Nong Khai to Savanakheth/Mukdahan

Water levels show a falling trend during the reporting period. The stations were recording levels that were somewhat over the long-term average for this time of the year.

For stations Khong Chiam to Kratie

Water levels were falling during last week. Water levels at Khong Chiam and Pakse were somewhat around the long-term average while water levels at Strung Treng, Kratie were below the long-term average for this time of the year.

For stations from Kampong Cham to Neak Luong, Koh Khel

Water levels were more-or-less stable 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 have been significantly affected by sea tide. Water levels at these 2 stations were more-or-less stable during the monitoring period. 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 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.

Monday, 27th September 2010

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
20/09	537.85	5.79	12.00	11.71	9.46	10.72	12.20	9.85	10.90	9.45	8.97	10.90	8.93	7.46	17.14	11.67	7.54	6.69	6.38	5.28	6.59	2.63	2.17
21/09	537.12	5.69	11.58	11.48	9.16	10.38	12.02	9.79	10.82	9.42	8.93	10.86	8.87	7.49	17.15	11.75	7.59	6.63	6.41	5.32	6.65	2.64	2.18
22/09	536.78	5.40	11.15	11.15	8.86	10.08	11.84	9.67	10.75	9.34	8.87	10.80	8.84	7.40	17.12	11.72	7.61	6.76	6.42	5.32	6.69	2.63	2.18
23/09	536.58	4.96	10.83	10.85	8.53	9.72	11.58	9.54	10.50	9.23	8.75	10.76	8.79	7.39	17.04	11.68	7.63	6.78	6.42	5.33	6.69	2.64	2.16
24/09	536.64	4.78	10.50	10.69	8.31	9.48	11.34	9.35	10.40	9.07	8.57	10.64	8.72	7.34	17.00	11.66	7.63	6.78	6.42	5.35	6.69	2.62	2.10
25/09	536.72	4.98	10.32	10.63	8.18	9.35	11.22	9.19	10.25	8.85	8.36	10.40	8.51	7.33	16.99	11.63	7.64	6.78	6.43	5.36	6.73	2.61	2.08
26/09	536.75	5.12	10.10	10.44	8.00	9.16	10.98	9.02	10.05	8.68	7.90	10.15	8.31	7.15	16.89	11.63	7.68	6.82	6.44	5.38	6.75	2.62	2.09
27/09	537.17	5.05	10.38	10.30	7.72	8.88	10.72	8.79	9.84	8.45	7.67	9.93	8.10	7.01	16.62	11.48	7.68	6.80	6.45	5.40	6.77	2.62	2.09
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
20/09	0.0	0.0	0.0	0.0	0.0	0.0	32.0	0.0	0.0	2.8	0.0	1.0	0.0	0.0	0.0	0.0	0.0		0.0	5.4	0.0	0.0	0.0
21/09	0.0	0.0	11.6	0.0	0.0	0.0	0.0	1.7	8.1	25.5	28.0	0.0	38.2	0.0	0.0	0.0	0.0		0.0	0.0	0.0	1.3	0.0
22/09	10.0	0.0	0.0	1.3	0.0	0.0	31.6	4.2	4.2	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
23/09	6.0	1.5	0.0	3.8	0.0	7.2	18.4	4.5	2.5	8.6	0.8	1.0	20.4	0.0	32.4	0.0	0.0		0.0	8.8	4.5	1.0	0.0
24/09	1.0	2.0	18.2	16.6	18.2	14.0	27.0	0.0	0.0	0.0	0.0	10.0	0.0	0.0	0.0	14.7	0.0		0.0	19.8	0.0	0.0	0.0
25/09	5.0	2.7	0.0	24.4	0.0	0.0	6.0	8.9	0.0	0.0	0.0	0.0	0.0	0.0	2.8	0.0	1.4		21.2	4.2	26.2	2.2	0.0
26/09	1.0	8.3	20.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.4	0.0	0.0	0.0	3.5	4.3		8.5	0.0	36.4	0.9	0.0
27/09	0.0	0.3	27.2	97.0	7.2	7.0	1.7	0.0	0.0	0.0	0.0	24.2	0.0	0.0	0.0	0.5	0.0		11.4	0.0	0.0	38.7	0.0

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

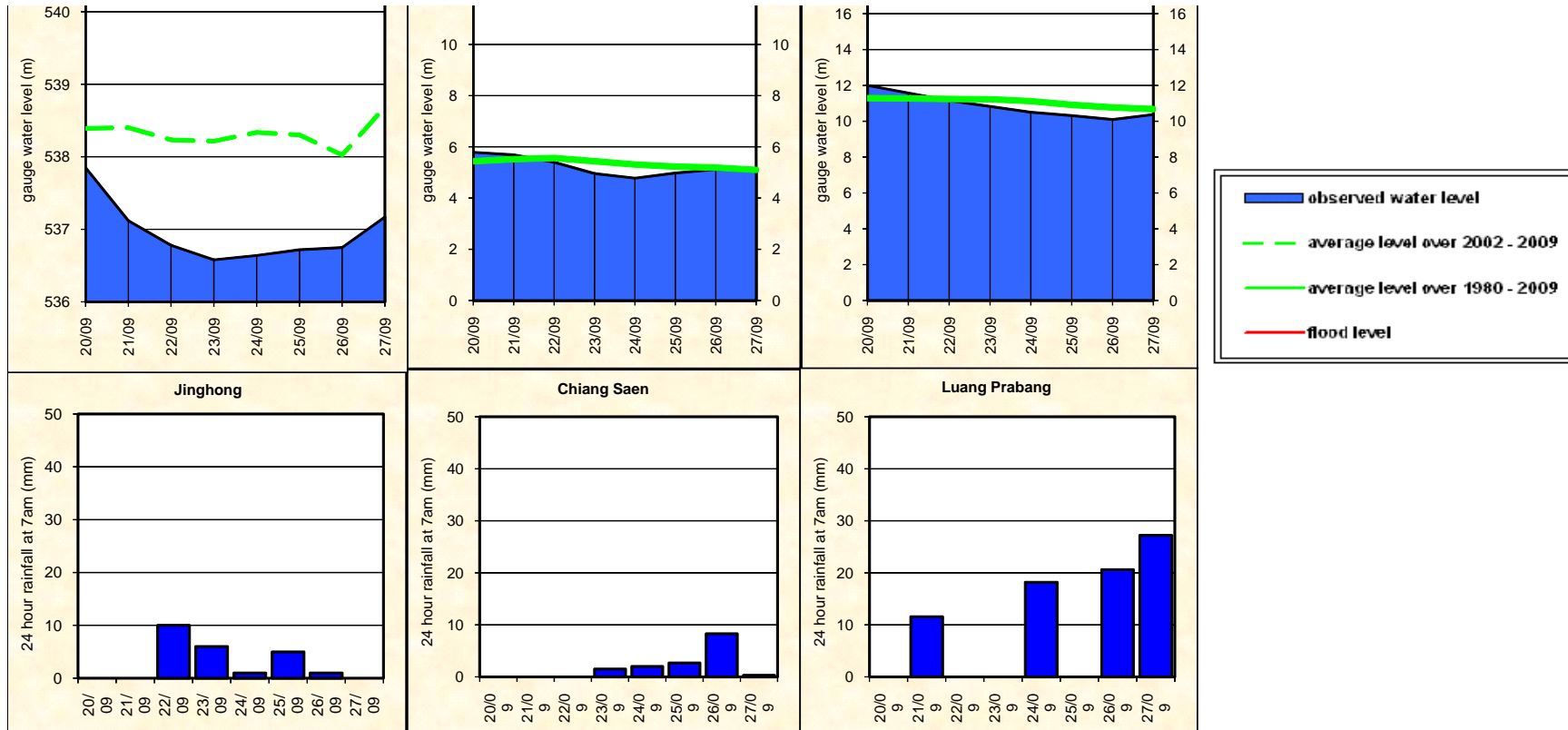


Figure A2: Water level and rainfall for Chiang Khan, Vientiane, Nongkhai, and Paksane

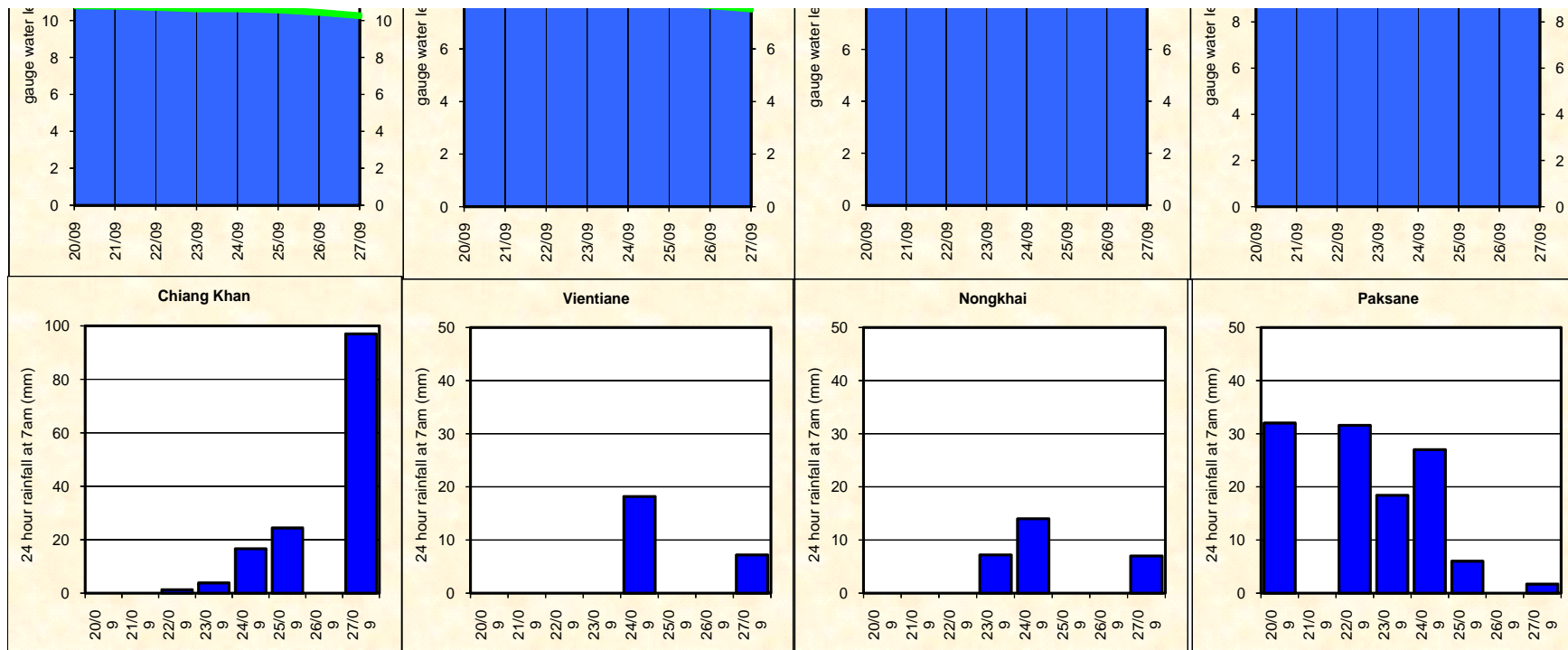


Figure A3: Water level and rainfall for Nakhon Phanom, Thakhek, Mukdahan and Savannakhet

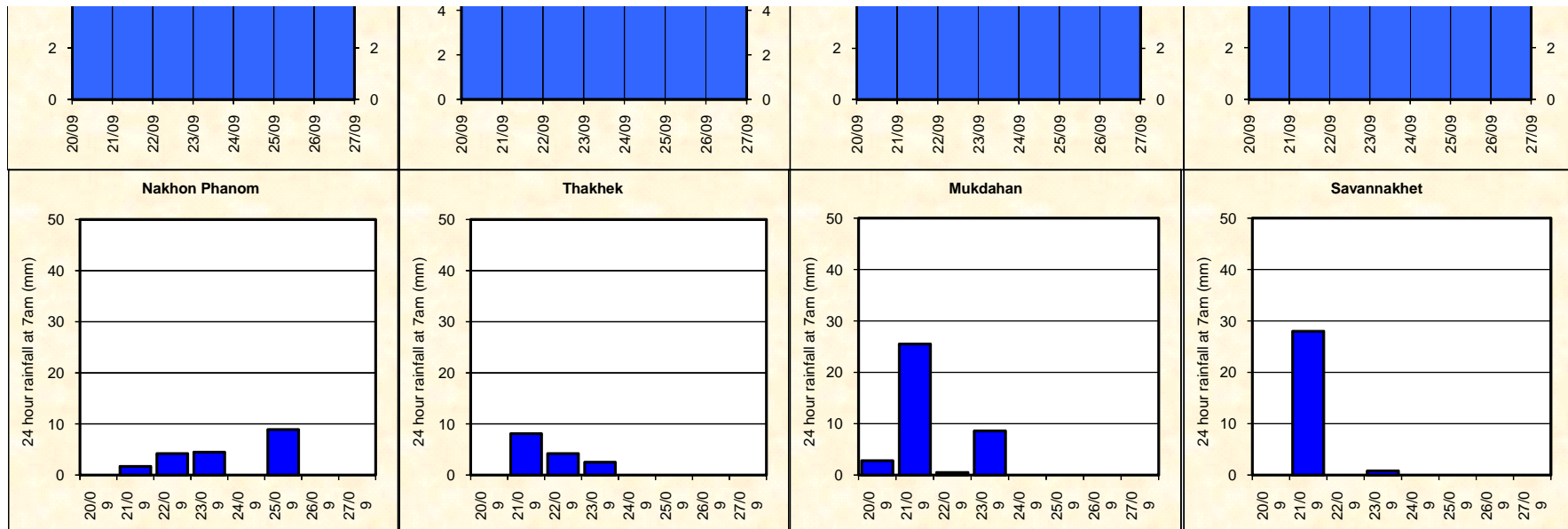


Figure A4: Water level and rainfall for Khong Chiam, Pakse, Stung Treng, and Kratie

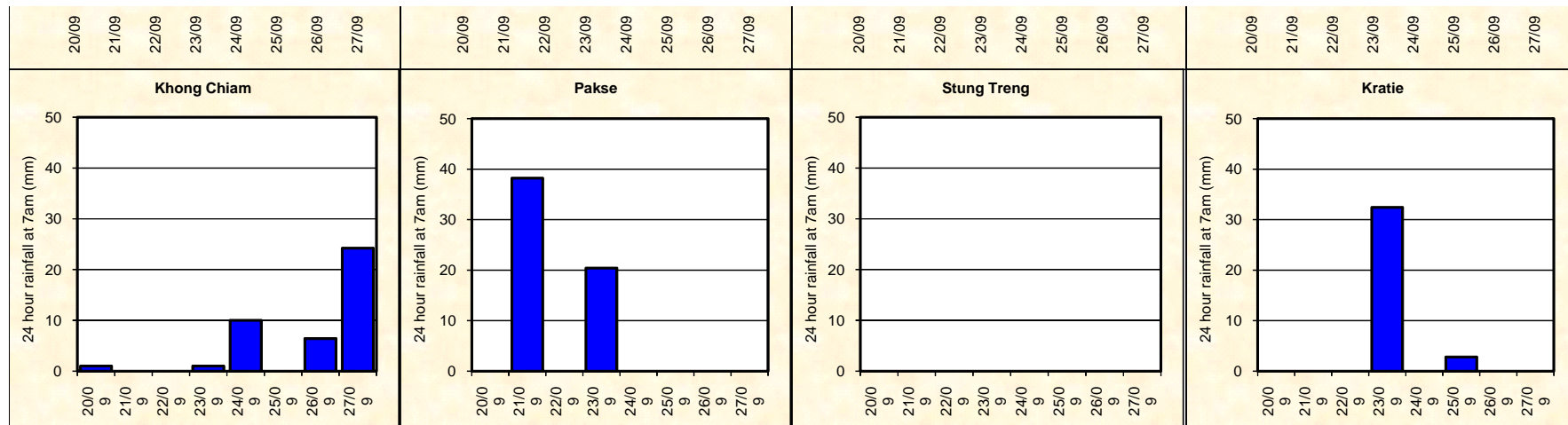


Figure A5: Water level and rainfall for Kampong Cham, Phnom Penh (Bassac and Port), and Koh Khel

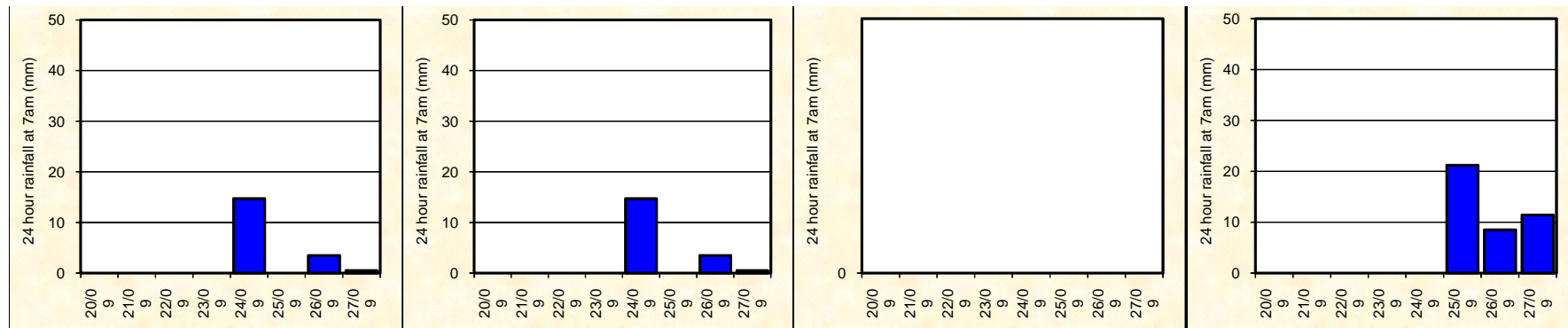
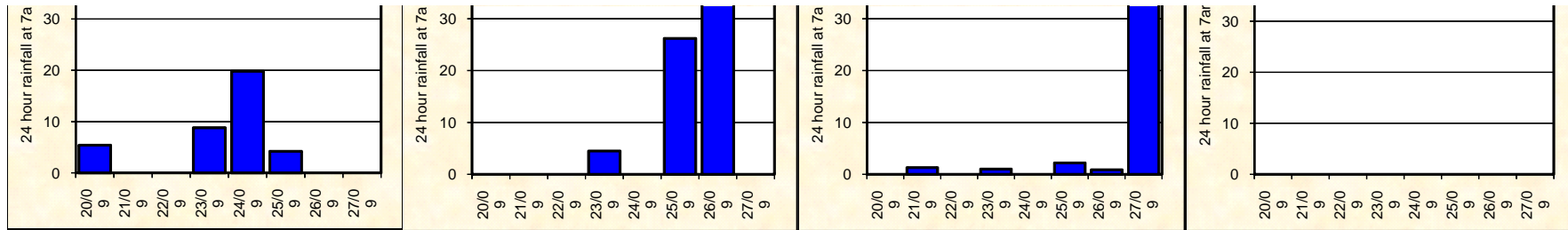


Figure A6: Water level and rainfall for Neak Luong, Prek Kdam, Tan Chau and Chau Doc



Annex B: Accuracy and performance

Accuracy

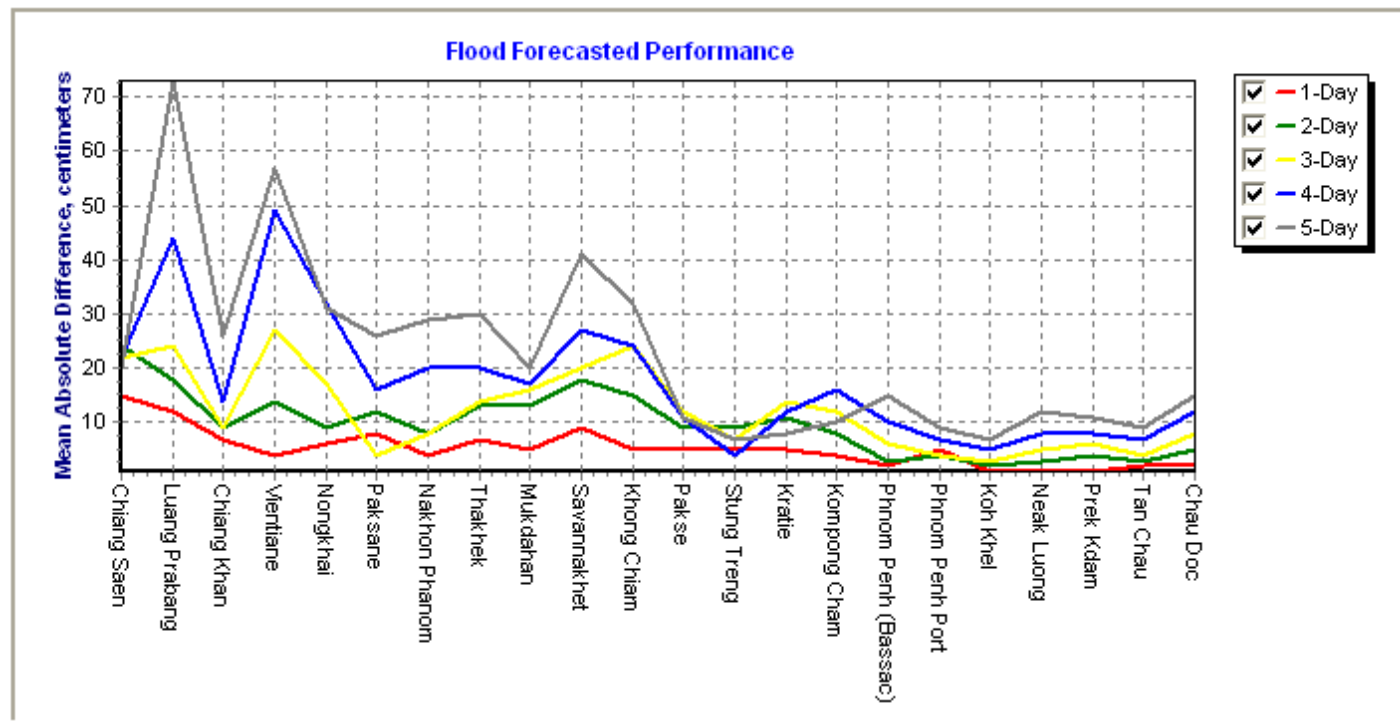
“Accuracy” describes the accuracy of the adjusted and published forecast, based on the results of the MRC Mekong Flood Forecasting System, which are then adjusted by the Flood Forecaster-In-Charge taking into consideration the known biases in input data, the knowledge of model response and the experience 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 normal pattern.

In overall, the accuracy is good for all forecasts lead-time at most stations along the Mekong River; however, the accuracy for 5-day forecast at Chau Doc was less than expected.

The above differences perhaps caused by internal model functionality in forecasting for those stations for which the parameter adjustment is not possible for tidal influence stations.

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	100.0	83.3	100.0	100.0	83.3	100.0	100.0	100.0	83.3	100.0	100.0	100.0	100.0	100.0	100.0	97.7
2-day	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
3-day	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	75.0	50.0	75.0	100.0	100.0	100.0	100.0	100.0	50.0	93.2
4-day	100.0	100.0	100.0	66.7	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	33.3	100.0	33.3	33.3	33.3	89.4
5-day	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	0.0	100.0	0.0	0.0	0.0	86.4

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	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			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
2010																		
<i>week</i>	10:15	0	-	8	08:13	08:27	08:00	05:46	08:30	08:00	07:57	0	2	2	50	153	3	115
<i>month</i>	10:23	0	-	31	08:13	08:23	07:58	05:51	08:37	08:06	07:36	0	2	3	229	609	11	264
<i>season</i>	10:38	2	-	116	03:55	09:00	08:02	06:36	08:37	08:18	07:29	0	24	59	2069	2233	63	875

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.

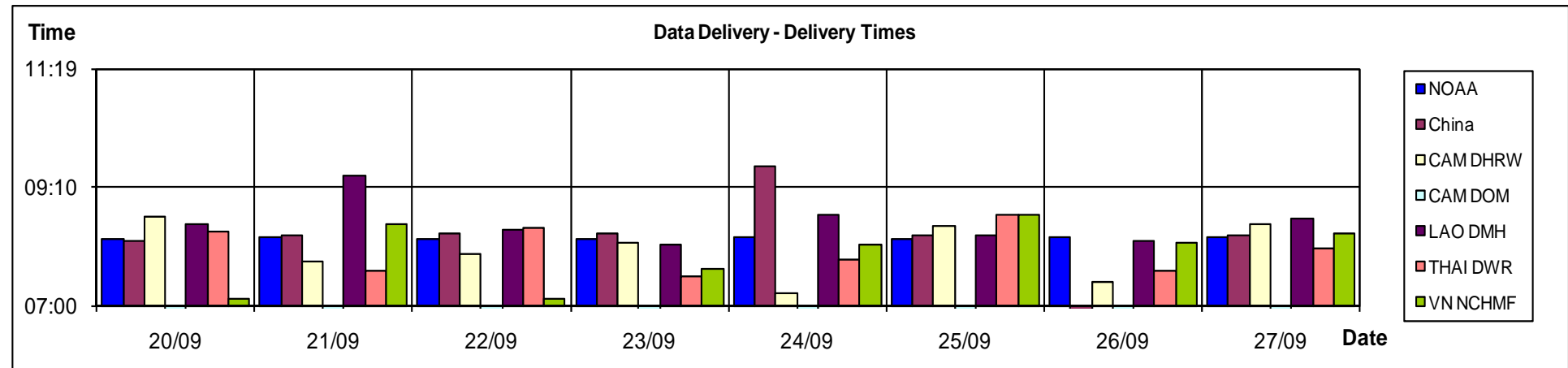


Figure B2: Data delivery times for the past 8 days including the current report date

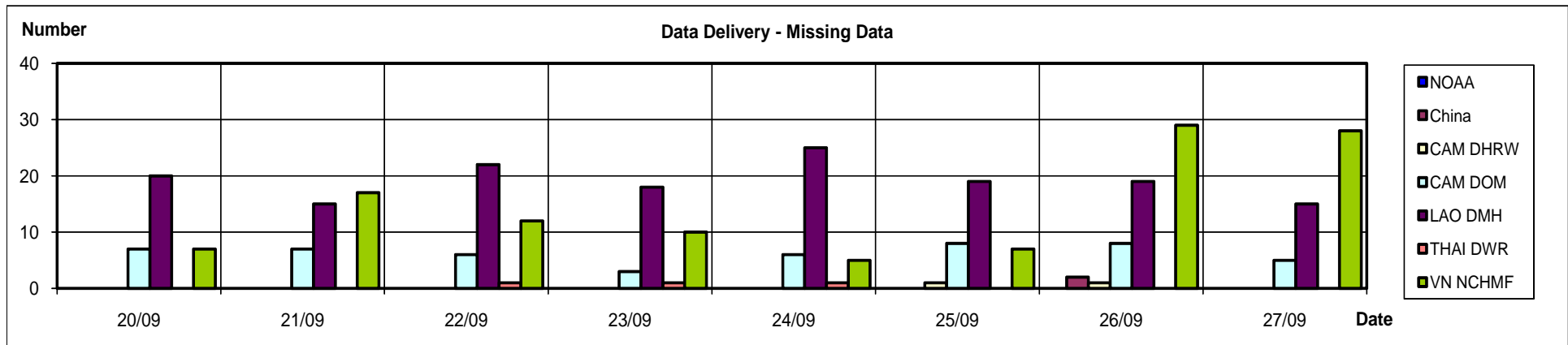


Figure B3: Missing data for the past 8 days including the current report date

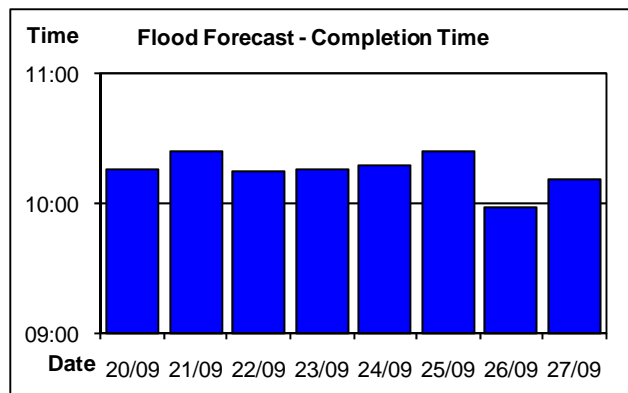


Figure B4: Flood forecast completion time

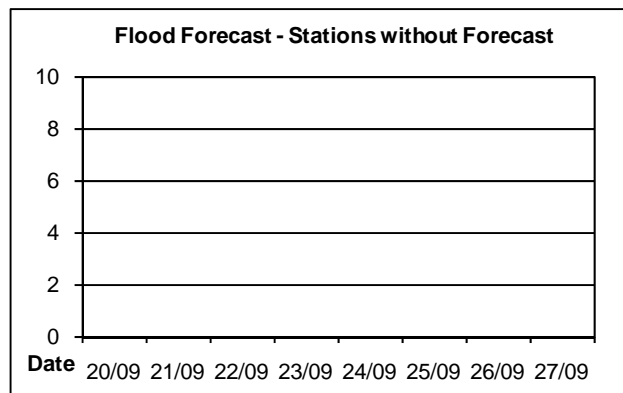


Figure B5: Flood forecast stations without forecast

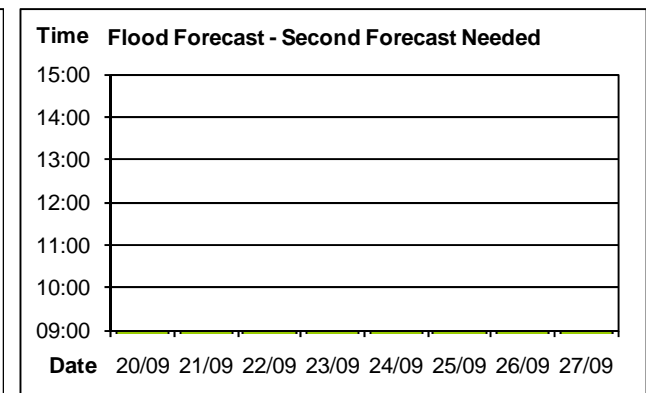


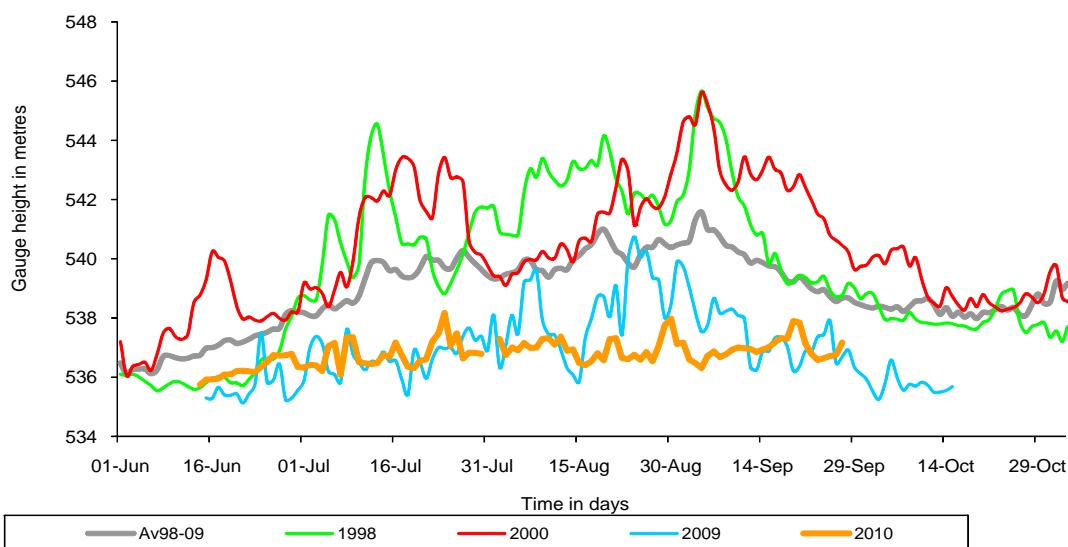
Figure B6: Second forecast needed

Annex C: Season Water Level Graphs

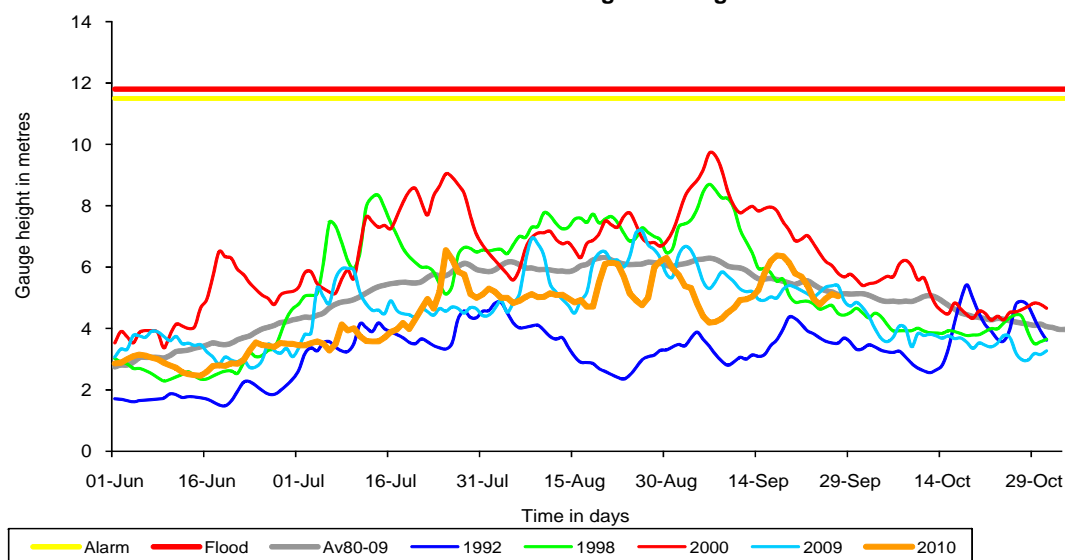
This Annex has the water level graphs of the report date. These graphs are distributed daily by email together with the Flood Bulletins.

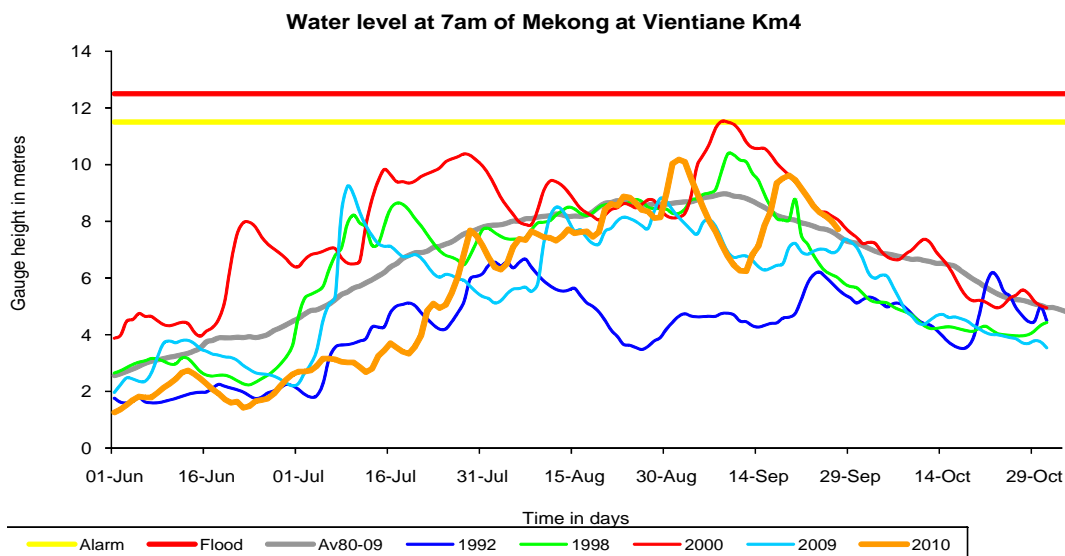
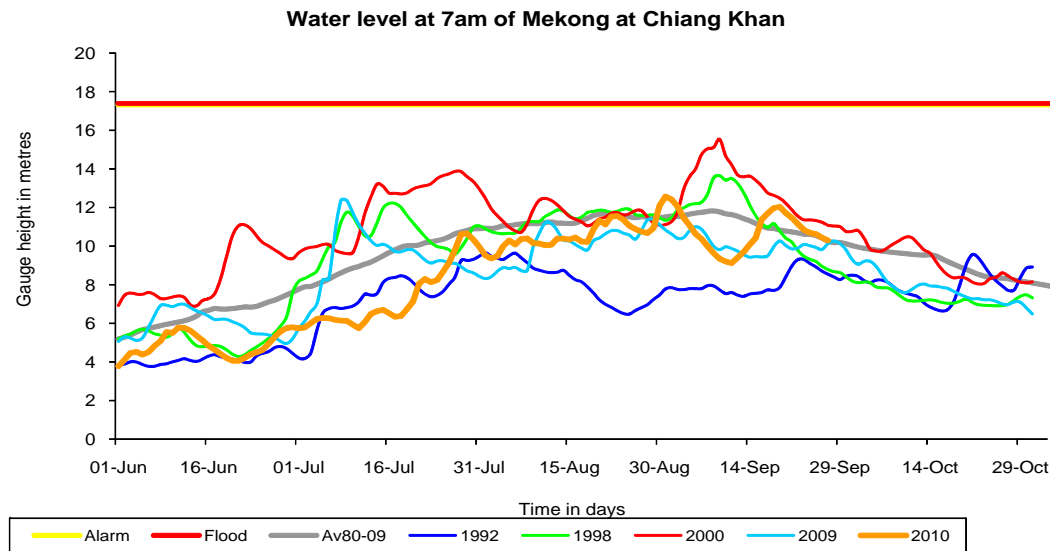
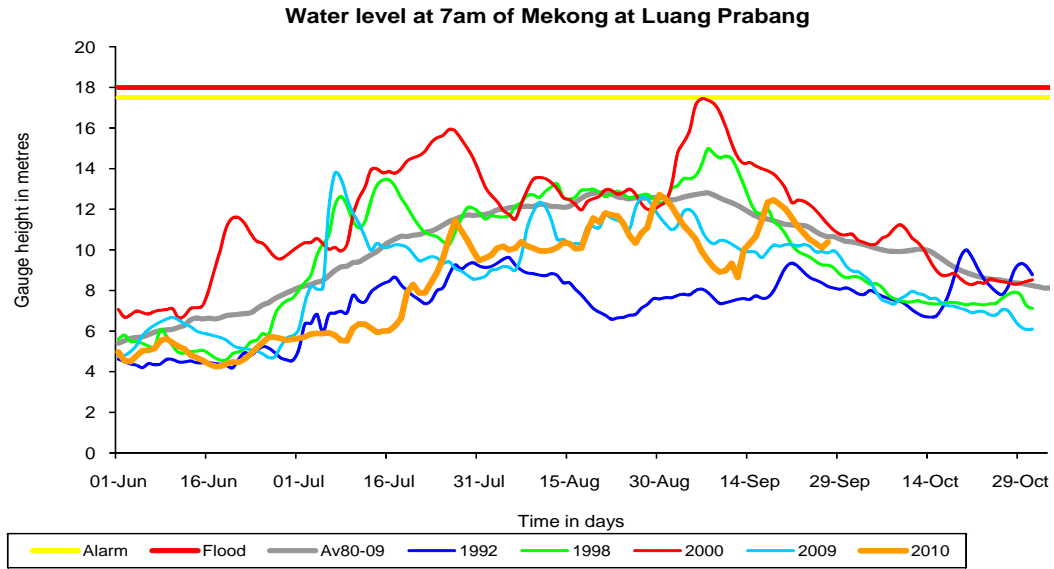
HYDROGRAPHS OF THE MEKONG AT MAINSTREAM STATIONS IN WET SEASON FROM 1 JUNE TO 31 OCTOBER

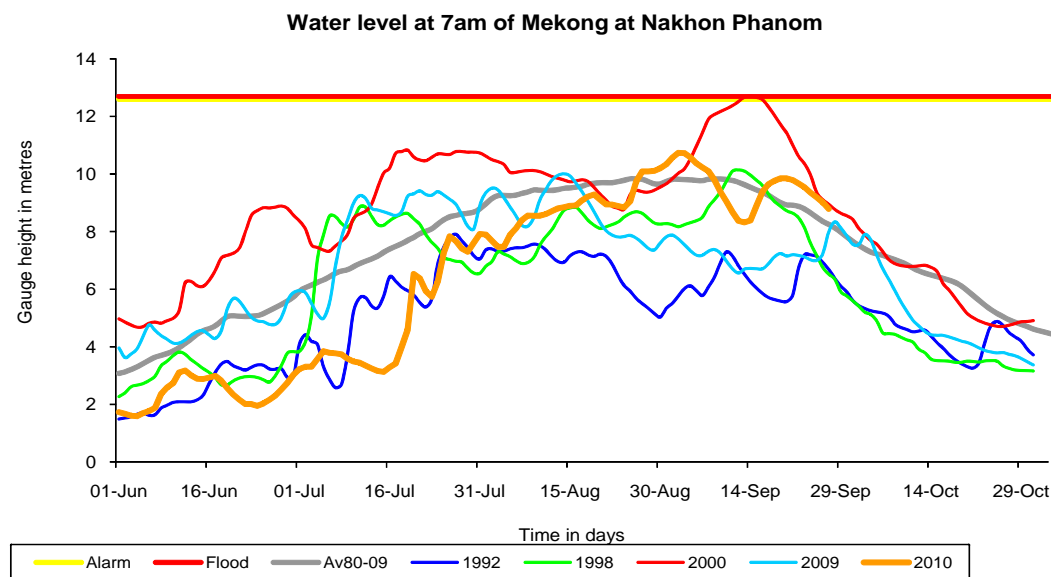
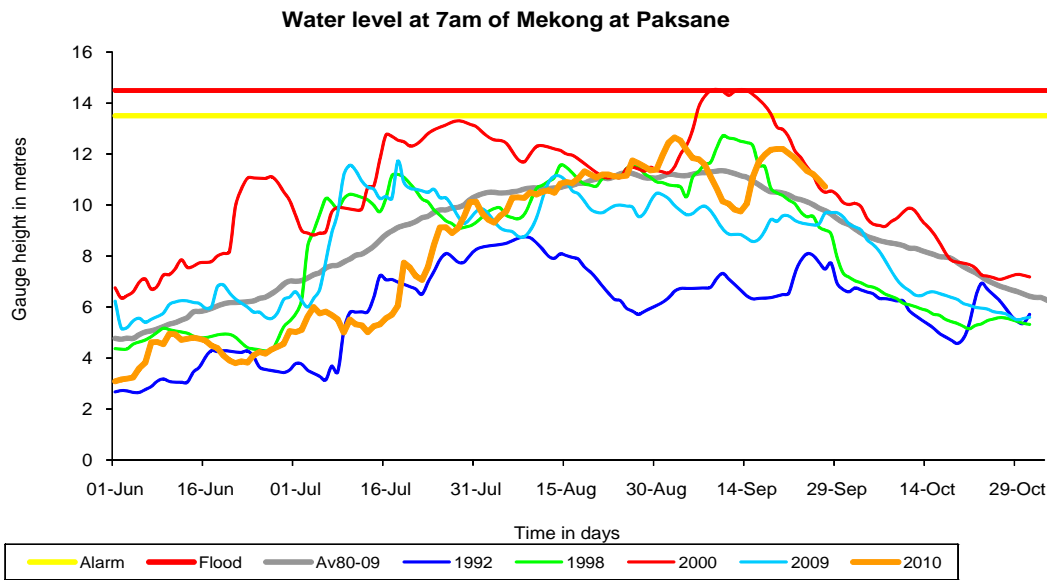
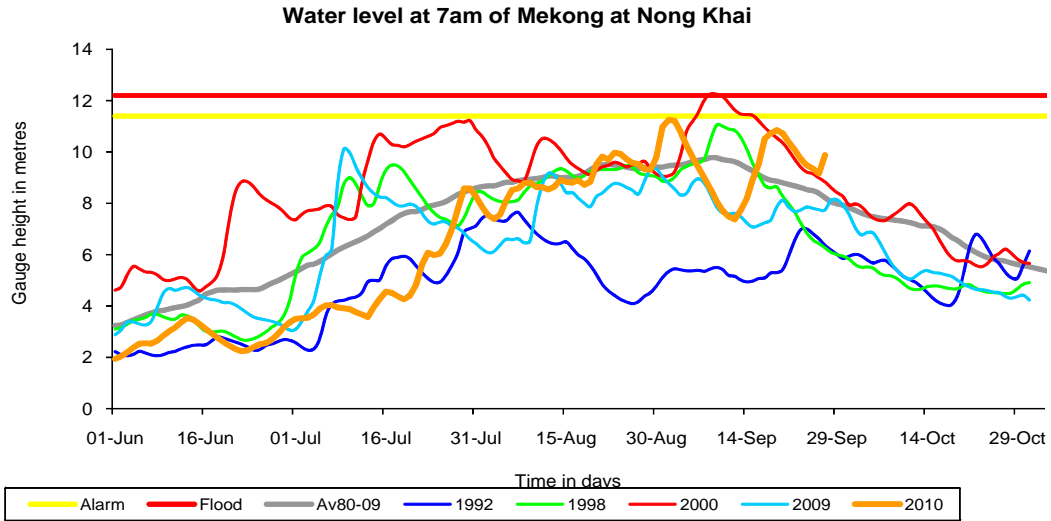
Water level at 7am of Mekong at Jing Hong

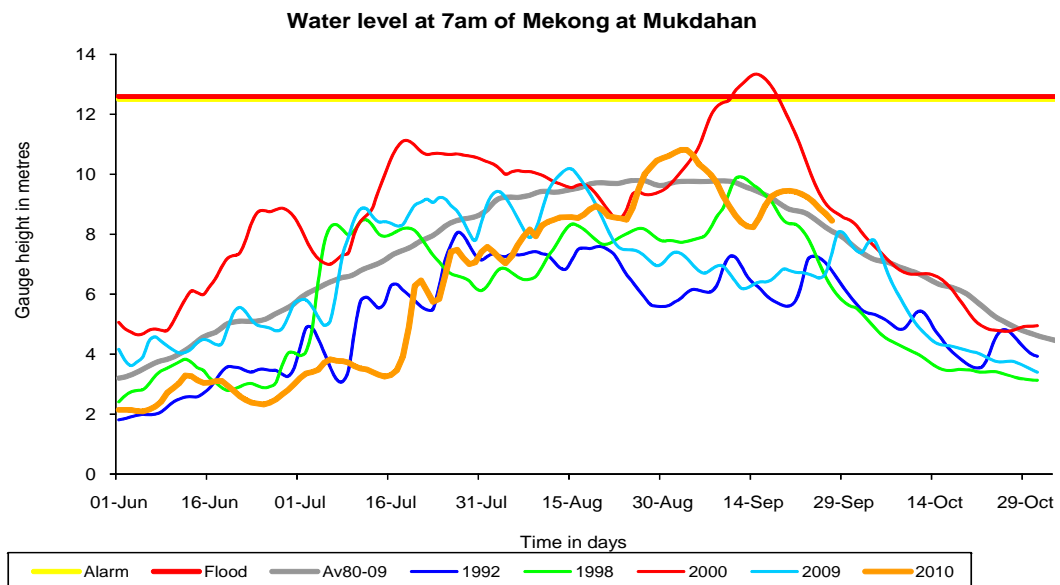
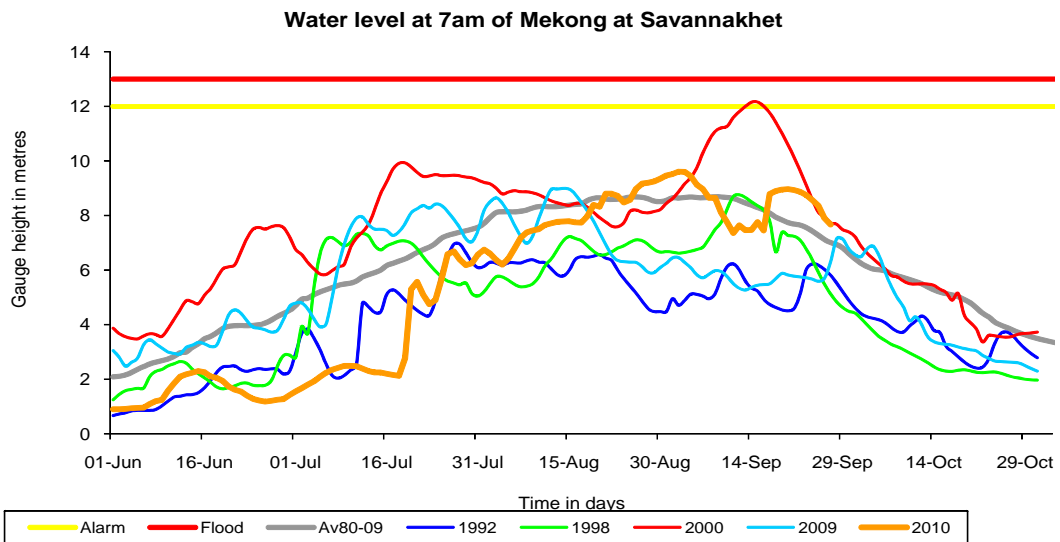
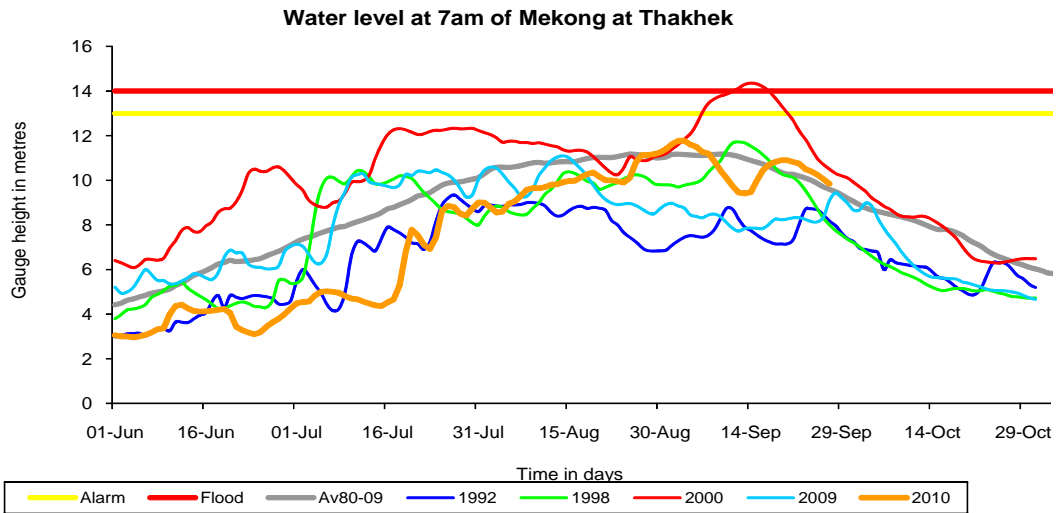


Water level at 7am of Mekong at Chiang Saen

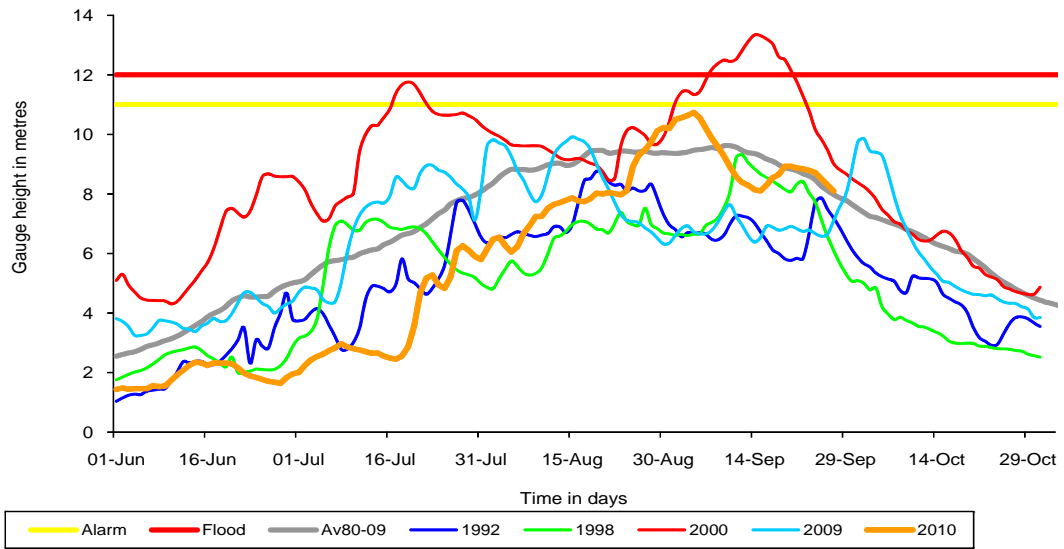




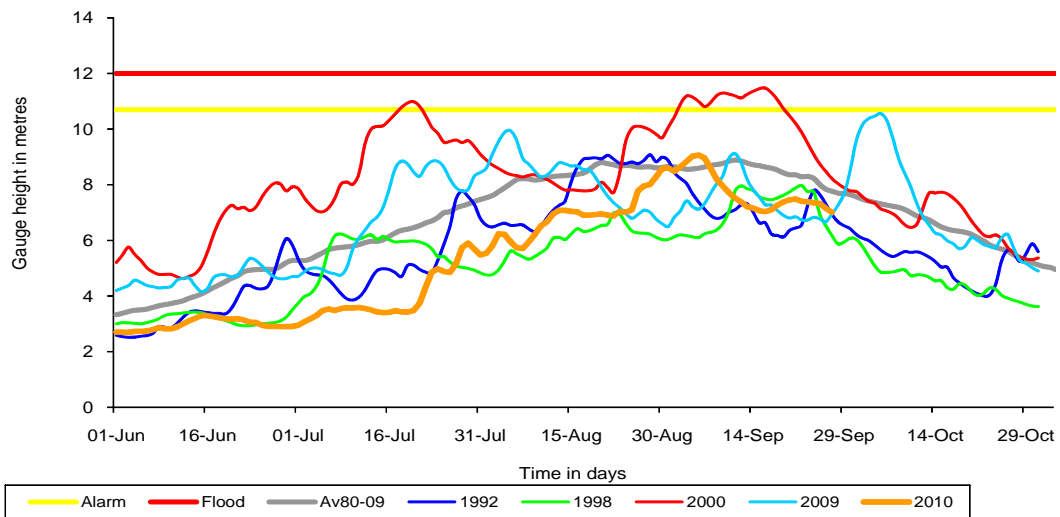




Water level at 7am of Mekong at Paksé



Water level at 7am of Mekong at Stung Treng



Water level at 7am of Mekong at Kratie

