Weekly Flood Situation Report for the Mekong River Basin
Prepared at: 19/06/2018, covering the week from the 11th to 18th June 2018

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

General weather patterns
During the week of 11th – 18th June 2018 the first weather bulletins were issued by the Thai Meteorological Department (TMD). The observed weather maps of the 11th – 8th June 2018 from TMD are presented in the Figures 1 & 2.

Moderate South-West (SW) Monsoon
The moderate Southwest monsoon prevailed over Andaman Sea, the Gulf of Thailand, Thailand and Indochina Peninsular at the surface, which revealed some sporadic rainfall covered the Lower Mekong Basin-LMB (See Figure 1 & 2).

Tropical depressions (TD), tropical storms (TS) or typhoons (TY)
No TD, TS or TY was presented in LMB during last week.

Other weather phenomena that affect the discharge
The Inter Tropical Convergence Zone (ITCZ) laid across the middle of Myanmar, the upper North of Thailand, the North of Lao PDR and Viet Nam while the moderate Southwest monsoon prevailed over Andaman Sea, the Gulf of Thailand, Thailand and Indochina Peninsular at the surface. The trough laid across Myanmar, Thailand and Indochina Peninsular at the height of 1.5km (850 hPa).

Over weather situation
During last week, the weather was influenced by ITCZ, trough of low pressure and moderate Southwest monsoon. However, on the mainstream of LMB not much heavy rain occurred, except the total accumulated rainfall at Paksane was 102.9 mm; Figure 3 showed the rainfall distribution in weekly covered the LMB, and Table A1 and A2 provided the observed water level and rainfall at key stations from 11th to 18th June 2018.
Figure 3: Weekly Rainfall Distribution over the LMB from 12th – 18th June 2018
General behaviour of the Mekong River
During the last week, the water levels at stations from upper to middle part of LMB has been decreasing due to inflow operation upstream part, while at downstream part has been slightly rising.

For stations from Chiang Saen and Luang Prabang
Compared to the long-term average (LTA), water levels from 11th to 18th June from Chiang Sean station were fluctuated just below the LTA, while at Luang Prabang station water level were raised at the end of the week.

For stations from Chiang Khan, Vientiane and Nong Khai and Paksane
Compared to the long-term average (LTA), water levels at these stations were increased above the LTAs.

For stations from Nakon Phanom/Thakhet to Pakse
Compared to the long-term average (LTA), water levels at Chiang Khan station were above LTA, while at Vientiane to Pakse stations were slightly decrease below their LTAs.

For stations from Stung Treng to Kompong Cham
Compared to the long-term average (LTA), water levels at these stations were increasing above their LTAs.

For stations from Phnom Penh to Koh Khel/Neak Luong
Compared to the long-term average (LTA), water levels at these stations were slightly fluctuated and rising slightly above their LTAs.

Tan Chau and Chau Doc
Compared to the long-term average (LTA), water levels at these two tidal stations were fluctuated around their LTAs.

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 last week. Water levels were 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 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

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<th>Chiang Khan</th>
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<th>Savannakhet</th>
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Table A2: observed rainfall

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Unit in m

Unit in mm
Figure A1: Observed water level and rainfall for Jinghong, Chiang Saen, and Luang Prabang
Figure A2: Observed water level and rainfall for Chiang Khan, Vientiane, Nongkhai, and Paksane
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
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 fair for 1-day to 5-day forecast lead time at stations in the upper and lower parts of the LMB. However, the accuracies at upper and middle reaches of the LMB stations as Chaing Sean, Paksan, Mukdahan and Kratie stations for 4-day to 5-day forecast were considered large.

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 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; and (3) the forecasted accumulated rainfall was not well represented.

![Figure B1: Average flood forecast accuracy along the Mekong mainstream](image-url)
**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: Evaluation performance forecasting (from 11 – 18 June 2018) base on New Benchmark (%).

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<th>Chiang Khan</th>
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Unit in %
Table B2: Evaluation performance forecasting (from 11 – 18 June 2018) base on Old Benchmark (%).

| Lead time | Chiang Saen | Luang Prabang | Chiang Khan | Vientiane | Nongkhai | Pakse | Nakhon Phanom | Thakhek | Mukdahan | Savannakhet | Khorng Chiak | Stung Treng | Kratie | Kompong Cham | Phnom Penh (Bassac) | Phnom Penh Port | Koh Kheil | Neak Luong | Prek Kdam | Tan Chau | Chau Doc | Avg
|------------|-------------|---------------|-------------|-----------|----------|-------|---------------|---------|-----------|-------------|-------------|------------|--------|--------------|----------------|---------------|-----------|-----------|----------|-------|---------|-----
| 1-day      | 71          | 28            | 71          | 43        | 71       | 86     | 14            | 14      | 14        | 29          | 29          | 29        | 43     | 43           | 71                | 71                | 71        | 71        | 100      | 86     | 29       | 14  |
| 2-day      | 100         | 67            | 83          | 67        | 67       | 67     | 0            | 0       | 17        | 50          | 67          | 67        | 17     | 33           | 67                | 33                | 33        | 67        | 50       | 17     | 0        | 439 |
| 3-day      | 80          | 20            | 40          | 20        | 60       | 60     | 0            | 0       | 20        | 20          | 40          | 20        | 0      | 60           | 0                 | 20                | 20        | 60        | 0        | 0      | 0        | 273 |
| 4-day      | 100         | 25            | 25          | 25        | 75       | 75     | 75            | 75      | 75        | 75          | 25          | 25        | 25     | 25           | 0                 | 25                | 25        | 25        | 50       | 0      | 0        | 443 |
| 5-day      | 100         | 0             | 0           | 0         | 0        | 33     | 67            | 67      | 67        | 33          | 33          | 33        | 33     | 0            | 0                 | 0                 | 0         | 31.8      |          |        |          |   |

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

<table>
<thead>
<tr>
<th></th>
<th>FF time sent</th>
<th>Arrival time of input data</th>
<th>Missing data (number-mainstream and trib.st.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2018</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>week</td>
<td>10:09</td>
<td>00:00</td>
<td></td>
</tr>
<tr>
<td>month</td>
<td>10:16</td>
<td>00:00</td>
<td></td>
</tr>
</tbody>
</table>

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.

HYDROGRAPH OF THE MEKONG AT MAINSTREAM STATIONS IN FLOOD SEASON FROM 1 JUNE TO 31 OCTOBER

Water Level at 7am of Mekong at Chiang Saen

Water Level at 7am of Mekong at Luang Prabang
MRC Weekly Flood Situation Report – Week 11th – 18th June 2018

Water Level at 7am of Mekong at Paksane

Water Level at 7am of Mekong at Nakhon Phanom

Water Level at 7am of Mekong at Thakhek