



# Mekong River Commission

## Regional Flood Management and Mitigation Centre

**Weekly Dry Season Situation Report for the Mekong River Basin, covering the week from to 23<sup>th</sup> to 29<sup>th</sup> April 2019**

**Prepared on: 30/04/2019 by Flood Team**

**Weather Patterns, General Behaviors of the Mekong River and Dry Season Situation**

### **General weather patterns:**

From 23<sup>th</sup> to 29<sup>th</sup> April 2019, water levels along the lower Mekong River from Thailand's Chiang Saen to Lao PDR's Luang Prabang were continuing to rise and stay above their long-term averages (LTAs) after the dropped trend from 11<sup>th</sup> to 18<sup>th</sup> April due to hydropower operation upstream in China (they sent a notification, mentioned that from 11<sup>th</sup> to 17<sup>th</sup> April 2019, the outflow of water at the Jinghong hydropower station will start decreasing from 2,000 – 3,000 (m<sup>3</sup>/s) to 1,500 – 1,600 m<sup>3</sup>/s. The same trends of water levels were observed from Chiang Khan to Pakse.

Based on the river monitoring, water level at Stung Treng, Kratie to Chaktomuk were stay over their LTAs. The changed water levels upstream were not caused any significant impact in the lower reaches of the Mekong mainstream. For Viet Nam's Tan Chau on the Mekong River and Chau Doc on the Bassac River, water levels were fluctuated over their LTAs but tracking in different trend, compared to previous years.

### **General behavior of the Mekong River:**

From 23<sup>th</sup> to 29<sup>th</sup> April 2019, water levels along the lower Mekong River from Thailand's Chiang Saen rise up again, after the deadline of hydropower operation (Jinghong station) which notified to store water for water flashing festival of Dai ethnic group in Yunnan, China. However, the trend of water levels at Luang Prabang was went up to the same trend as impact by downstream hydropower dam at Xaiyaburi. The trends of water levels from Chiang Khan to Pakse were same as Luang Prabang, which water levels were continued to increase and stay above their LTAs. Water level at the lower stations from Cambodia's Stung Treng, Kompong Cham, Chaktomuk and Neak Luong were slightly decreased close to their LTAs. However, the tidal stations at Viet Nam's Tan Chau on the Mekong River and Chau Doc on the Bassac River were fluctuating over their LTAs. As observed, there were different tidal trend of these 02 stations. It is needed to discuss and find out for justification of this changing.

### ***For stations from Chiang Saen and Luang Prabang***

Water levels from 23<sup>th</sup> to 29<sup>th</sup> April 2019 at Chiang Saen were rise up above its long-term averages (LTA), after the deadline of water storing in upstream of Lancang. Also, water levels at Luang Prabang station were increased to the same trend as impact by downstream hydropower dam at Xaiyaburi.

Since last year 2018, the water level at Lao PDR's Luang Prabang rise over their historical long-term averages, based on the observed water level monitoring provided by Department of Hydrology and Meteorology (DMH). It showed the higher levels than previously historical maximum water level recorded from 2010 to 2018. The cause of abnormal rise of water level at Chiang Saen are likely caused by experience of hydropower operation upstream in the Southern Yunnan province of China during the Dry Season period. This inflow from Chiang Saen could be affected to the raised water levels at Luang Prabang and Chiang Khan stations (approximal 2 days travelling time of flows from Chiang Saen). However, the continuing rise water level on the Mekong mainstream to date at Luang Prabang is not likely effected by inflows from upstream or rainfall in the catchment. This raising up water level not due to high rainfall in the Upper Mekong Basin but rather a consequence of an increase of water impounding of hydropower downstream and other inflows from tributaries upstream of Luang Prabang. It is needed to discuss among relevant stakeholders (MRCS, DMH and Xaiyaburi) for further detail information to find out what are the most influent inflows for this station and the solution.

### ***For stations from Chiang Khan, Vientiane-Nong Khai and Paksane***

Water levels from 23<sup>th</sup> to 29<sup>th</sup> April 2019 at Chiang Khan, Vientiane, Nong Khai and Paksane were increased the same trend as upstream and stayed above their LTAs. It has been observed that since December 2018, the water level at Lao PDR's Paksane raised up contently over its historical long-term averages, based on the observed water level data provided by Department of Hydrology and Meteorology (DMH). It showed the higher levels than previously historical water level recorded from 2010 to 2018. The raising water levels are not likely caused by rainfall in the upper Mekong Basin, but effected by a consequence of inflows from upstream and tributaries in the catchment. Based on the information provided by DMH, the rising trend of water level at Pakane may causes by the Nam Ngum hydropower dam operation during the dry season. It is needed to discuss among the relevant stakeholders for further detail information to find out what are the most influent inflows for this station.

### ***For stations from Nakhon Phanom to Pakse***

Water levels from 23<sup>th</sup> to 29<sup>th</sup> April 2019 at Nakhon Phanom to Pakse were increasing, the same trend as upstream inflows and stay above their LTAs.

### ***For stations from Stung Treng to Kratie***

Water levels from 23<sup>th</sup> to 29<sup>th</sup> April 2019 at Stung Treng to Kratie were decreased slightly but still above their LTAs. Water levels at these stations will be increasing the same trends as upstream part for next week.

### ***For stations from Kompong Cham, Phnom Penh to Prek Kdam***

Water levels from 23<sup>th</sup> to 29<sup>th</sup> April 2019 at Kompong Cham down to Chaktomuk on the Bassace and Prekdam on the Tonle Sap were slightly decreased and reached to their long-term averages (LTAs).

### ***Tan Chau and Chau Doc***

Water levels from 23<sup>th</sup> to 29<sup>th</sup> April 2019 at Tan Chau on the Mekong and at Chau Doc on the Bassac were fluctuated over their long-term averages (LTAs). As observed, there were different tidal trend of these 02 stations. It is needed to discuss and find out for justification of this changing.

### **Conclusion**

From 23<sup>th</sup> to 29<sup>th</sup> April 2019, the trend of water levels at Chiang Sean was increased after the deadline of the operational hydropower dam on the Lancang River in Yunnan, China. The impact was observed down to downstream reach to the Cambodia's Kratie.

The flow changes in the lower reaches of the Mekong mainstream may not become obvious or cause any significant impact on the River or people from 13 to 30 April.

Some stations, including those from Lao PDR's Luang Prabang to Cambodia's Kratie, are on the other hands experiencing water decrease between 0.50 and 1.50 meters during 13 to 30 April 2019. But no worrying trends are detected.

Based on a hydrological phenomenon, the inflow contribution of water from the upstream of Lancang-Mekong in China to the Mekong mainstream is about 20% in total during the dry season from November to May. The whole inflow of water into the lower Mekong basin is influenced more by tributaries and a direct rainfall distribution.

The abnormal raised water levels at Luang Prabang and Paksane were impacted by the impounding hydro-power at Xaiyaburi and the Dam operation at Nam Ngum. It is needed to further investigate and discuss among the relevant stakeholder (MRCS, DMH and Hydro-per dam companies) about the reasons cause of these rising water levels and solution.

In general, water levels in the Mekong mainstream are staying above their LTAs, although there are reported of water shortage in the nearby area of the Mekong.

On the other hand, the hydrological conditions (rainfall and flows) of the Mekong River during early dry season 2019 (Jan to April) is characterized as high flow, compared to the long-term average. This caused a high-water level in the mainstream and many tributaries in rainfed watershed areas of the Lower Mekong Basin are likely caused by experience of hydropower operation upstream in the Southern Yunnan province of China during the Dry Season period and the abnormal rainfall in March in the floodplain area.

#### **Dry season situation**

On the other hand, drought risk cause of water shortage depends upon with the severity or 'intensity' of a drought (as measured by its likelihood of occurrence of rainfall, stream flow and soil moisture deficits) and the effecting of El Niño conditions in the focused area. Water shortage is likely dependent on water resources management strategy, including infrastructures of reservoir and cannel system and water supply facilities of each country.

Based on the information from the International Research Institute for Climate and Society (IRICS) and the Japan Meteorological Agency (JMA), the consensus of ENSO prediction models indicated that strong El Niño conditions is continuing during the Dry season from Jan-May 2019 in the Mekong Region.

The current water levels from upstream at Chiang Saen to the downstream stations in Cambodia of the Mekong river system are rising above their LTAs. If there will be significant rainfall over the region in early May 2019, the is expecting water levels in the Mekong River System will rise quickly that may causes flood in region.

For details information on water levels and rainfall at each key station are described as follows:

- Tables for observed water levels and rainfall for the last week in **Annex A**
- The water levels graphs showing the observed water levels for the season in **Annex B**

**Annex A: Graphs and Tables**

Table A1: Observed water levels

Unit: m

2019	Jinghong	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Mukdahan	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc
23/04/2019	-	4.20	7.89	5.06	1.48	2.10	4.01	2.23	2.69	1.96	3.15	8.38	3.84	2.32	2.33	1.56	1.36	-0.03	-0.03
24/04/2019	-	4.16	8.36	5.26	1.42	2.07	3.93	2.11	2.55	1.92	3.13	8.35	3.80	2.27	2.34	1.54	1.34	-0.04	-0.01
25/04/2019	-	4.06	9.42	5.86	1.50	2.13	3.92	2.03	2.43	1.87	3.10	8.33	3.76	2.27	2.33	1.54	1.32	-0.04	0.01
26/04/2019	-	3.92	9.58	6.30	1.90	2.45	3.98	2.02	2.38	1.82	3.05	8.27	3.71	2.23	2.34	1.52	1.28	-0.06	0.00
27/04/2019	-	3.82	9.78	6.70	2.46	3.02	4.20	2.00	2.38	1.62	3.00	8.16	3.63	2.13	2.24	1.46	1.18	-0.09	-0.01
28/04/2019	-	4.07	9.89	6.74	2.92	3.44	4.66	2.07	2.38	1.60	2.95	8.05	3.53	2.05	2.13	1.40	1.08	-0.06	0.01
29/04/2019	-	4.14	9.29	6.67	3.10	3.62	4.86	2.27	2.44	1.60	2.84	7.92	3.35	1.98	1.94	1.36	1.04	-0.02	0.10

Table A2: Observed rainfall

2019	Jinghong	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Mukdahan	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc
23/04/2019	-	0	0	2.5	0	0	0	21.1	6.3	0	0	0	0	0	0	0	0	0	0
24/04/2019	-	12	14.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25/04/2019	-	26	2.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26/04/2019	-	2	0	7.6	0	0	0	43.7	0	0	0	0	0	0	0	0	0	0	0
27/04/2019	-	0	0	0	0	0	4.4	0.2	2.6	0	0	0	0	0	0	0	0	0	0
28/04/2019	-	0	5.2	0	0	0	5.8	4.7	0	4	0	0	0	0	0	0	0	0	0
29/04/2019	-	0	2.4	0	2.5	0	0	1.7	0	0	0	0	29.4	32.1	5.6	86.4	18.3	99.1	59.4

Unit: mm

**Note: No data available from China during the Dry Season**

**Annex B: Season Water Level Graphs**

This Annex has the water level graphs of the report date. These graphs are distributed weekly by email together with the River Monitoring Bulletin.

**HYDROGRAPH AT 7 AM OF MEKONG TONLE SAP AND BASSAC AT MAINSTREAM STATIONS IN DRY SEASON FROM 23 TO 29 APRIL 2019**















