Mekong River Commission

Weekly Dry Season Situation Report in the Lower Mekong River Basin

19 – 25 March 2024

Prepared by
The Regional Flood and Drought Management Centre
26 March 2024

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Key Messages

Key messages for this weekly report are presented below.

Rainfall monitoring and forecast

- In the period of 19 - 25 March 2024, Over the entire basin, the rainfall has been significantly observed to be between light to relatively heavy. However, heavy rainfall occurrence has been found in the central part of LMB in Thailand (particularly in Chiang Khan and Nong Khai) and Lao PDR (Vientiane).
- The light accumulated rain can be observed almost entire Lower Mekong Basin from the lower to central part. However, the rainfall is not likely to be observed at the upper part of the basin.

Water level monitoring and forecast

- At 22 key monitoring stations along the Mekong mainstream from 19 – 25 March 2024, water levels are below the long-term averages (LTAs) except for water level at Luang Prabang, Stung Treng, Kratie, Tan Chau and Chau Doc monitoring stations. However, the 9 monitoring stations remain in normal condition with respect to the flow threshold (PMFM for Observed Water Level). It is also the same condition for Tan Chau and Chau Doc monitoring stations, which are significantly influenced by sea tidal fluctuation.
- In the period of 26 March – 01 April 2024, the water levels at key stations located at upper to middle stretches are expected to slightly increase from Chiang Saen to Kratie stations, while from Kampong Cham to Prek kdam are predicted to slightly drop except for Neak Luong station from 26 March to 01 April 2024. At Tan Chau and Chau Doc stations, the water levels are predicted to be decreasing, resulting from the influence of sea tidal patterns. The water levels at almost all stations are predicted to be below their LTAs except for Luang Prabang, Stung Treng, and Kratie, stations.

Drought condition and forecast

- During 19-25 Mar 2024, the LMB was facing from moderate to severe drought from the middle to the south of the region. List of the impacted provinces is presented at figure 11 above List of the impacted provinces are presented in figure 11 below.
- The next three-month forecast of rainfall indicates that below average rainfall is predicted for southern part of the LMB during March 2024 covering mainly south-eastern Cambodia and Viet Nam; similar prediction goes for April plus a bit less than average rainfall in some area of Thailand in the central area; while during May the forecast indicates below average rainfall over the northern part covering Laos and some areas of Thailand and the 3S area of the southern region of the LMB.

1 Introduction

This Weekly Dry Season Situation Report presents a preliminary analysis of the weekly hydrological situation in the Lower Mekong River Basin (LMB) for **19 March** – **25 April 2024**. The trend and outlook for water levels are also presented.

This analysis is based on the daily hydro-meteorological data provided by the Mekong River Commission (MRC) Member Countries – Cambodia, Lao PDR, Thailand, and Viet Nam – and on satellite data. The water level indicated in this report refers to an above zero gauge of each station.

The report covers the following topics that are updated weekly:

- General weather patterns, including rainfall patterns over the LMB.
- Water levels in the LMB, including in the Tonle Sap Lake.
- Flash flood and drought situation in the LMB.
- Weather, water level and flash flood forecast, and
- Possible implications.

Mekong River water levels are updated daily and can be accessed from:
http://ffw.mrcmekong.org/bulletin_wet.php.

Drought monitoring and forecasting information is available at:
http://droughtforecast.mrcmekong.org

Flash flood information is accessible at: http://ffw.mrcmekong.org/ffg.php

2 General Weather Patterns

During the last week, the Lower Mekong Basin is influenced by the high-pressure system push from China will extend to the upper and central part from 20 – 23 March, some areas of the lower part of the LMB experienced light to heavy rainfall.

Figure 1 presents the weather map indicating no high- or low-pressure cells active in the South Sea of Viet Nam and the LMB. It is forecasted that the Lower Mekong Basin will be influenced by a hight-pressure system from 26 – 27 March, then the low-pressure system will extend to the upper part from 28 – 31 March.

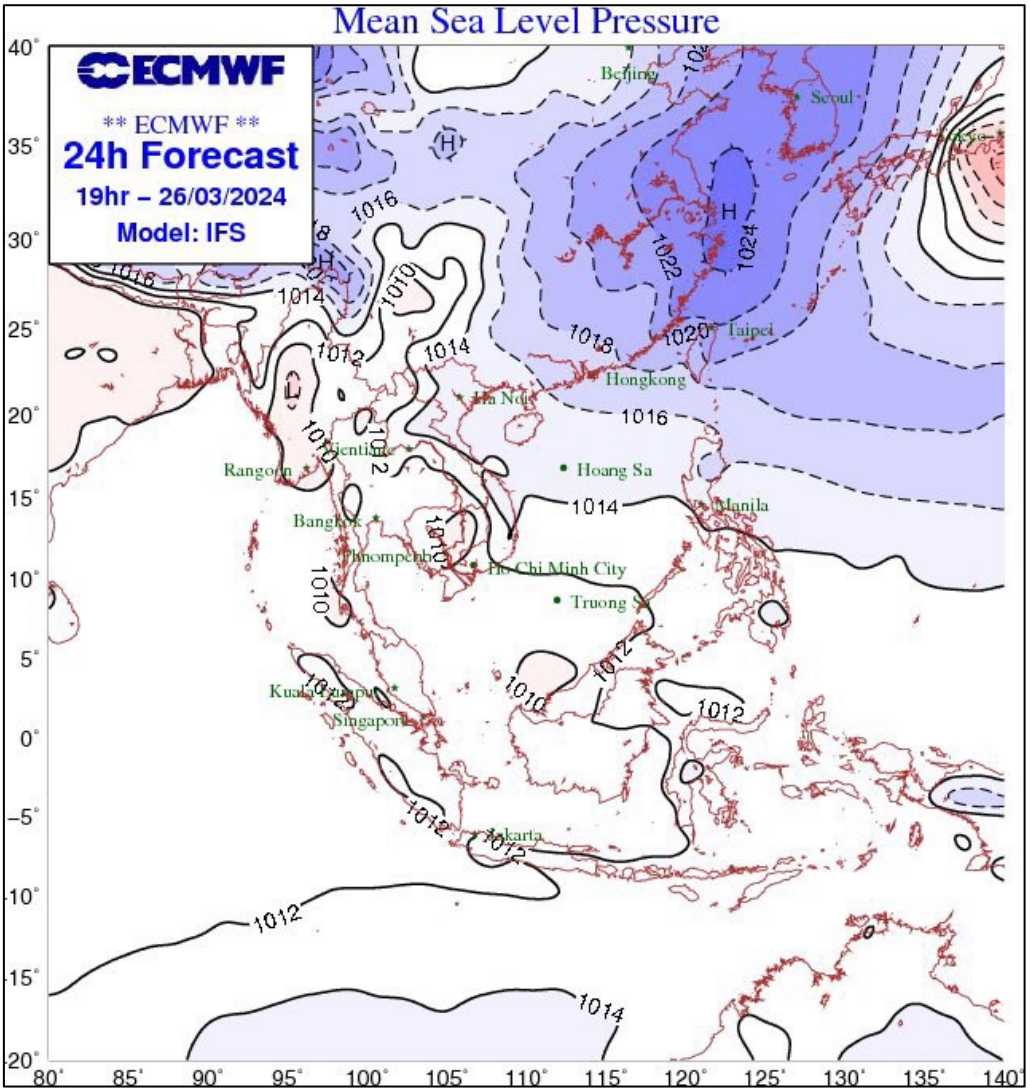


Figure 1: Weather conditions over the LMB

According to the ASEAN Specialised Meteorological Centre (ASMC, http://asmc.asean.org/home/), the subseasonal weather outlook (18 – 31 March 2024) indicates that the drier and warmer conditions are predicted to occur in the Lower Mekong Basin (LMB), particularly the lower part (Cambodia and Viet Nam). **Figure 2** shows the outlook of weather condition from 18 to 31 March 2024 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

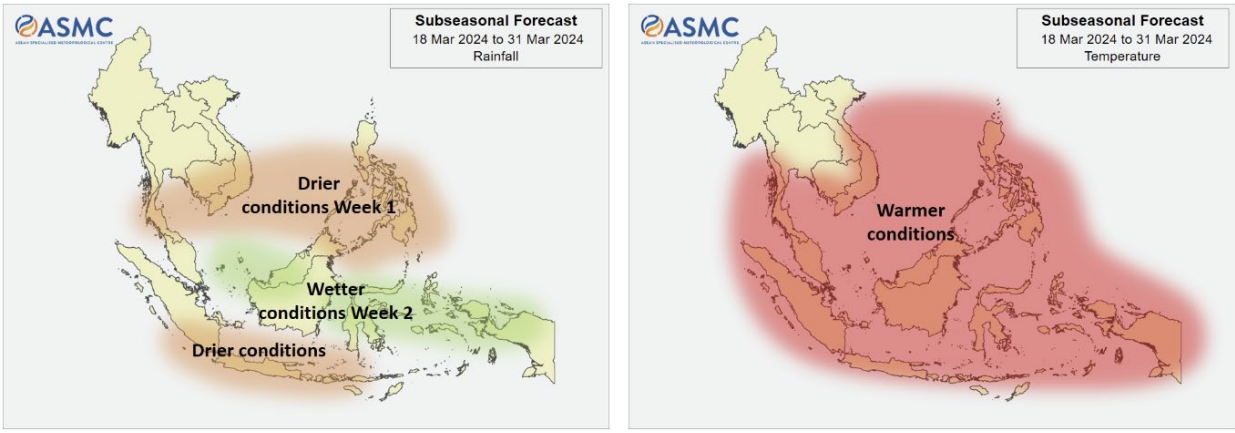


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

Based on the tropical storm risk (TS) (https://www.tropicalstormrisk.com/), there is no active NW pacific system as of 25 March 2024 as displayed in **Figure 3.**

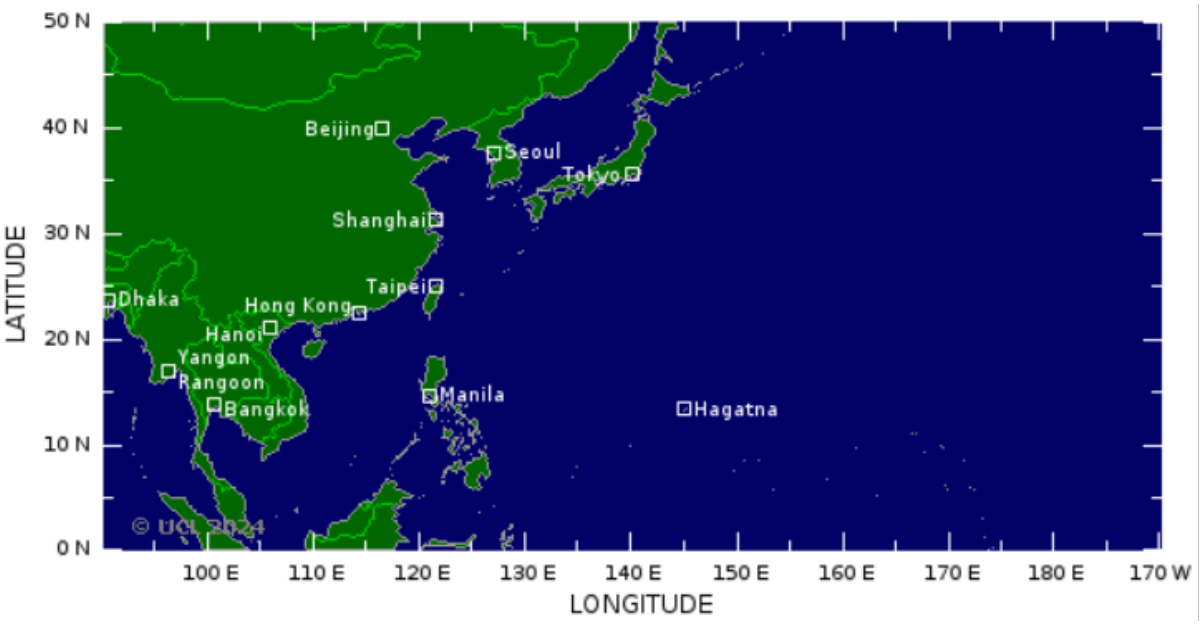


Figure 3: No tropical storm risk observed on 25 March 2024

3. Rainfall and Water Level Monitoring

3.1. Rainfall monitoring

The weekly accumulated rainfall based on the observed data provided by the MRC Member Countries – Cambodia, Lao PDR, Thailand, and Viet Nam – from 19 to 25 March 2024 (**Figure 4**). Over the entire basin, the rainfall has been significantly observed to be between light to relatively heavy. However, heavy rainfall occurrence has been found in the central part of LMB in Thailand (particularly in Chiang Khan and Nong Khai) and Lao PDR (Vientiane).

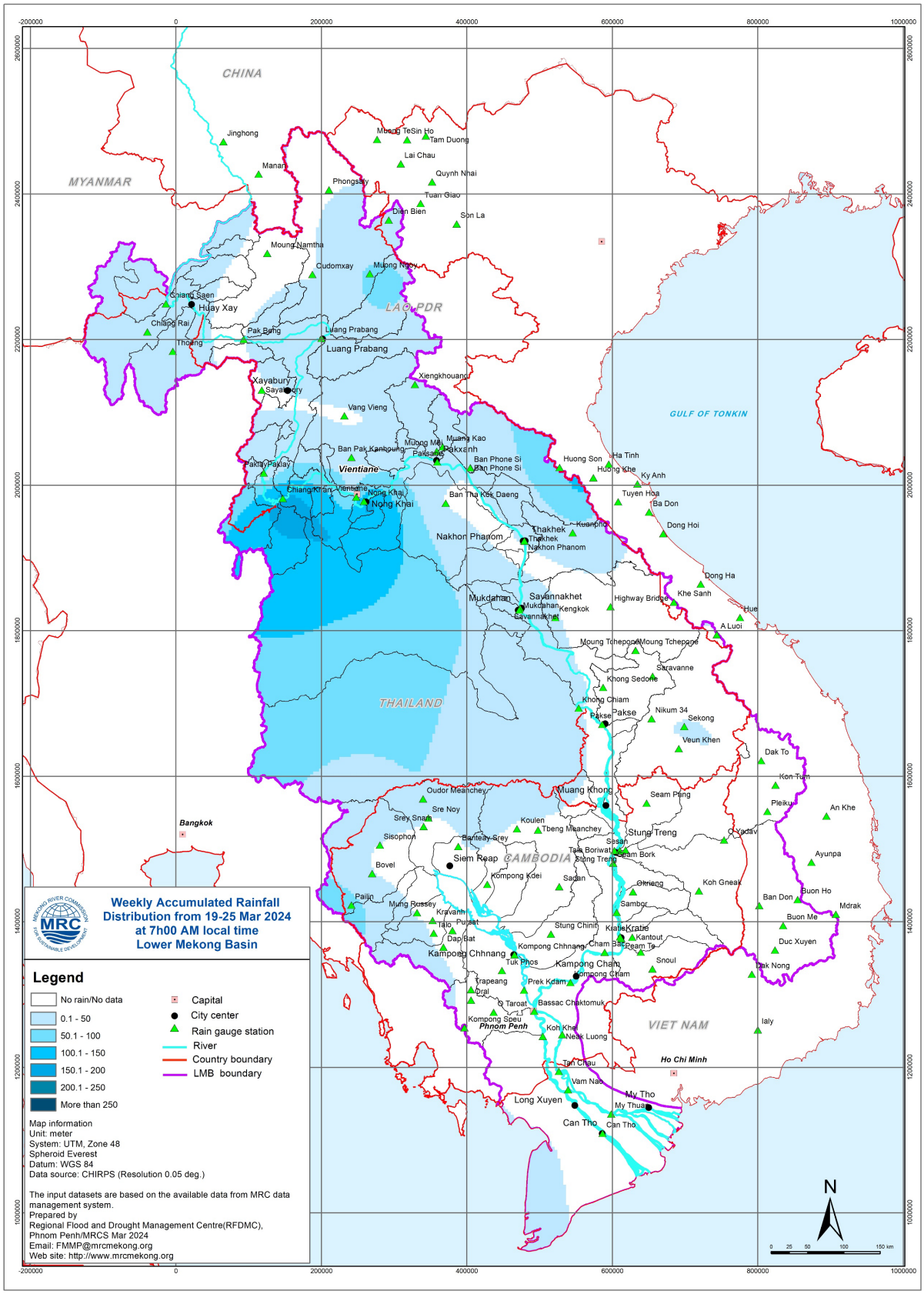


Figure 4: Weekly rainfall distribution over the LMB during 19 – 25 March 2024

3.2. Water level monitoring

The hydrological regimes of the Mekong mainstream are illustrated by recorded water levels and flows at key mainstream stations: at Chiang Saen to capture mainstream flows entering from the Upper Mekong Basin (UMB); at Vientiane to present flows generated by climate conditions in the upper part of the LMB; at Pakse to investigate flows influenced by inflows from the larger Mekong tributaries; at Kratie in Cambodia to capture overall flows of the Mekong Basin; and at Viet Nam's Tan Chau and Chau Doc to monitor flows to the Delta.

The key stations along the LMB and their respective model application for River Flood Forecasting during the wet season from June to October and River Monitoring during the dry season from November to May are presented in **Figure 5**. The hydrograph for each key station is available from the MRC's River Flood Forecasting: http://ffw.mrcmekong.org/overview.php.

During 19 – 25 March 2024, the observed water level (WL) at Jinghong hydrological station[1], was almost constant and ranges between 535.24 m and 535.23 m, which are corresponding to the outflow between 833.00 m^3/s to 827.00 m^3/s (recorded on 7:00 am), respectively (**Figure 6**). However, during that period, the water level at Jinghong jumped up to 536.08m on 24 March 2024. The water level in Chiang Saen station also indicated a slight fluctuation ranging from 1.44 m to 1.48 m with a slight increasing trend. At the same period, the water level in Luang Prabang station also slightly decreased with an approximate value of 0.04 m from 8.52 m to 8.48 m as compared to the previous week.

During the same period, the water levels observed at Chiang Khan, Vientiane and Nong Khai stations were slightly decreasing with values ranging from 3.10 m to 3.03 m, 1.16 m to 1.05 m, and 0.66 m to 0.57 m, respectively. In contrast, the water levels at Paksane, Nakhon Phanom, Thakhek, and Savannakhet stations have slightly increased from 1.93 m to 2.00 m, 1.01 m to 1.03 m, 2.29 m to 2.39 m, and 0.66 m to 0.70 m, respectively. Moving downstream at Mukdahan, Khong Chiam, Pakse, Stung Treng and Kratie stations has a slightly decreasing trend ranging from 1.56 m to 1.54 m, 1.96 m to 1.88 m, 0.98 m to 0.90 m, 2.54 m to 2.51 m, and 7.03 m to 6.82 m, respectively as compared to the previous week. Further downstream, water levels at Kampong Cham, Phnom Penh (Bassac), Phnom Penh Port, Koh Khel, Prek Kdam and Neak Luong, have slightly decreased and varied in ranges of 2.50-2.50 m, 2.05-1.77 m, 1.07-0.87 m, 2.23-1.54 m, and 1.36-1.22 m respectively. Similar to the previous week, the water levels from 19 to 25 March 2024 at Viet Nam's Tan Chau and Chau Doc fluctuated between their LTA values due to daily tidal effects from the sea. At the Tan Chau station, the water levels varied between -0.33 m and 0.99 m, while at the Chau Doc station, they ranged from 0.02 m to 1.16 m.

[1] Near-real time data of hydro-meteorological monitoring at the Jinghong hydrological station is available at https://portal.mrcmekong.org/monitoring/river-monitoring-telemetry.

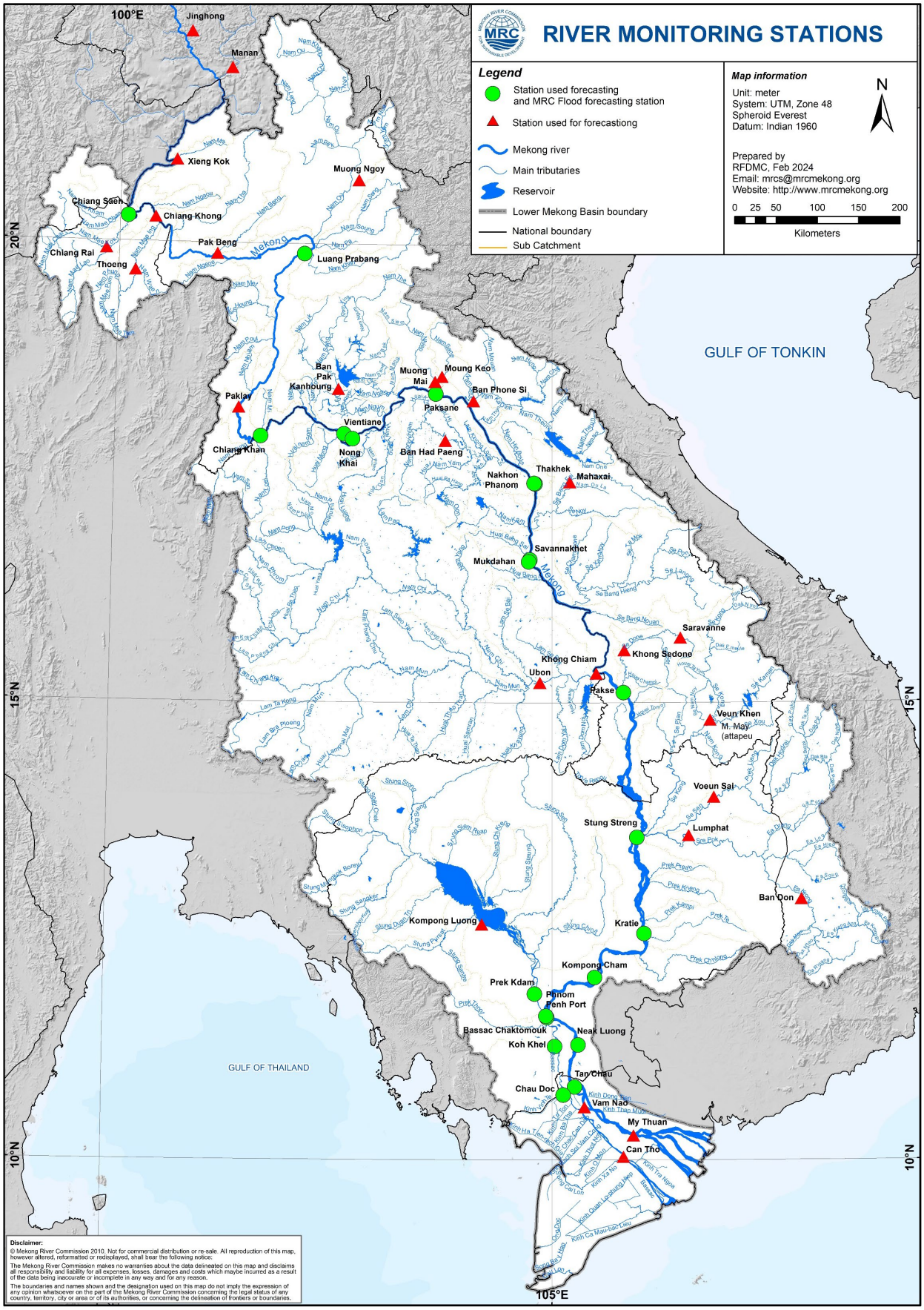


Figure 5: The key stations along LMB for river flood forecasting

The water levels in all key monitoring stations on 25 March 2024 are below their long-term averages (LTAs) except for the Luang Prabang, Stung Treng, Kratie, Tan Chau and Chau Doc monitoring stations. Moreover, all stations with available (PMFM thresholds) are in normal conditions. The graphics of water level monitoring in all key stations are presented in **Annex A** and the weekly water levels and rainfall at each key station are summarised in **Annex B**.

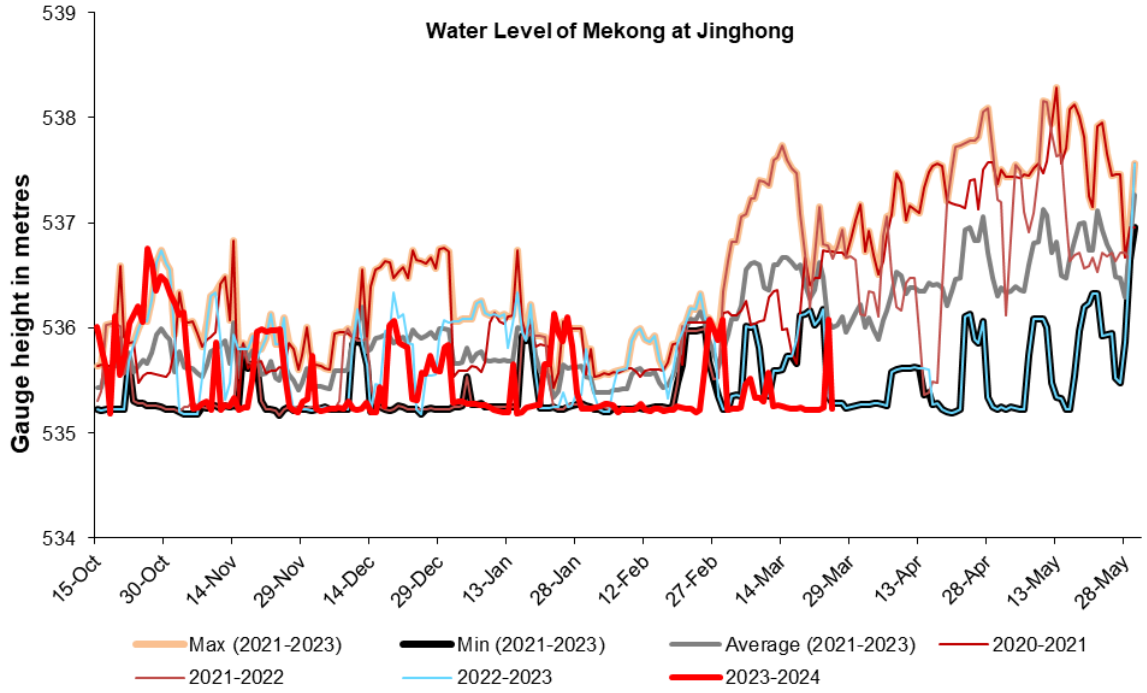


Figure 6. Water level at the Jinghong hydrological station up to 25 March 2024.

At the end of the wet season, when water levels along the Mekong River subside, the outflow of the Tonle Sap Lake (TSL) returns to the Mekong River and then to the Delta. This phenomenon normally takes place between September and October. Based on flow observation at Prek Kdam monitoring station, the outflow of the Tonle Sap Lake took place since 28 September 2023.

The outflow flow is calculated based on a formula of rating-curves using by difference of water levels at Kompong Luong and Phnom Penh Port stations for slop and Prek Kdam as cross-section of the Lake. The formula of flow is as follows:

$$Flow = WL_{Prek\ Kdam}^{1.2} \times \sqrt{|WL_{Phnom\ Penh\ Port} - WL_{Kampong\ Luong}|}$$

Where, WL is water level in m (msl).

The seasonal changes of the inflow/reverse flow and the outflow of the TSL at Prek Kdam in comparison with the flows of 2020, 2021 and 2022, 2023 and their LTA level (1997-2023) are illustrated in **Figure 8**. Up to 25 March 2024, it was observed that the main outflow to Tonle Sap Lake decreased due to no rainfall and less inflows from upstream **(Figure 8)**. This decreased outflow of Tonle Sap Lake was most likely caused by low inflows from its tributaries.

The seasonal changes in monthly flow volumes up to 25 March 2024 for the TSL compared with that in 2020, 2021, 2022, 2023 and their LTAs, and the fluctuation levels (1997–2023) are presented in **Table 8**. The mean monthly water volume of the Tonle Sap Lake in February 2024 is lower than its LTA (about 74.58 %), 2023 and 2022 but higher than that in 2019, 2020, and 2021 during the same period **(Figure 8 and Table 1)**. However, with updated data until 25 March 2024, the water volume of TSL is approximately 81.98% of its LTA.

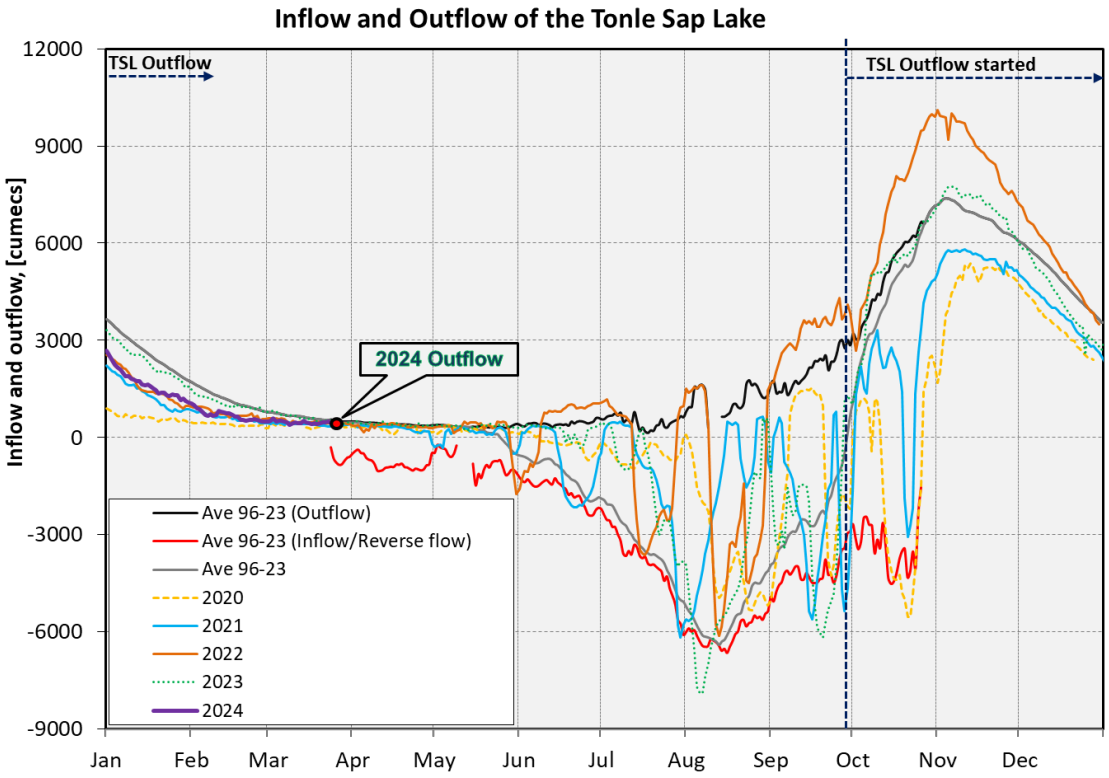


Figure 7: Seasonal change of inflows and outflows of Tonle Sap Lake.

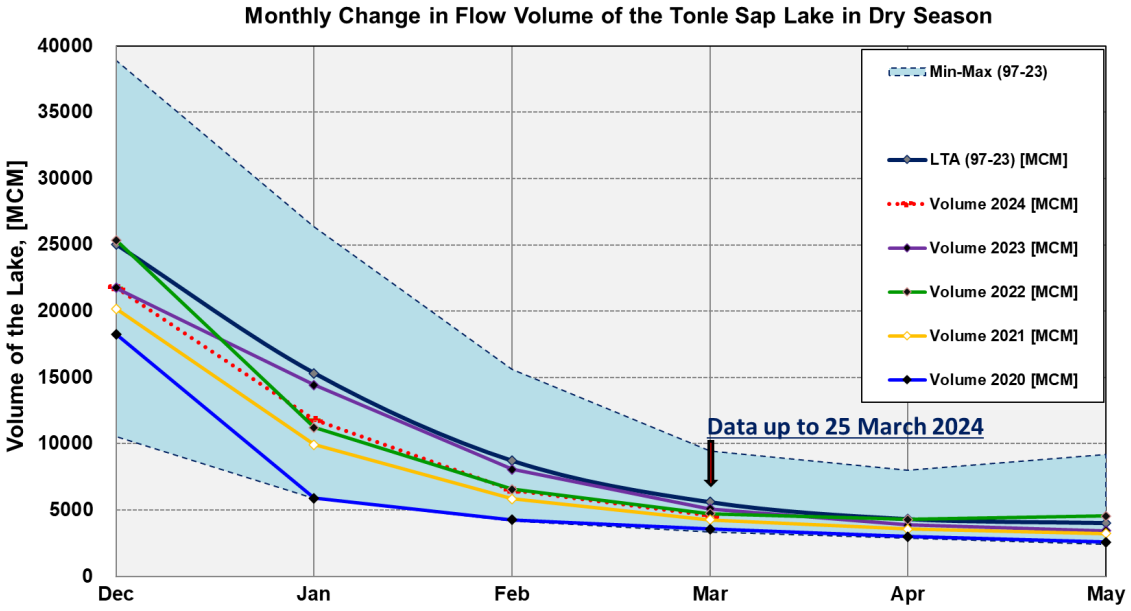


Figure 8. The seasonal change in monthly flow volume of Tonle Sap Lake.

Table 1. The monthly change in the flow volume of Tonle Sap Lake.

Month	LTA (97-22) [MCM]	Max Volume [MCM]	Min Volume [MCM]	Volume 2019 [MCM]	Volume 2020 [MCM]	Volume 2021 [MCM]	Volume 2022 [MCM]	Volume 2023 [MCM]	Volume 2024 [MCM]	Volume in 2024 [%], compared with its LTA
Jan	15322.86	26357.53	5906.80	10285.31	5906.80	9923.80	11214.32	14422.11	11824.86	77.17
Feb	8723.39	15596.22	4198.60	6019.30	4264.19	5832.97	6558.79	8069.29	6505.88	74.58
Mar	5602.68	9438.24	3347.07	4354.62	3553.99	4264.88	4736.52	5080.64	4592.99	81.98
Apr	4327.36	8009.14	2866.91	3667.47	2992.61	3556.68	4288.31	3884.16		
May	4027.82	9176.93	2417.81	3266.43	2594.92	3240.78	4556.83	3438.66		
Jun	5699.50	13635.01	2468.70	3517.06	2641.88	3798.29	7489.04	3689.97		
Jul	11188.79	28599.56	2925.86	4001.99	2925.86	5346.73	9703.79	9953.41		
Aug	24070.98	39015.12	4433.46	7622.71	5941.07	10547.80	19554.70	13694.57		
Sep	38787.47	65632.35	12105.31	24194.19	12105.31	16382.34	32860.34	23550.60		
Oct	46562.09	73757.23	19705.50	30358.38	20799.13	27318.21	48199.12	37141.40		
Nov	37739.30	60367.33	18534.61	19112.65	27546.80	28982.93	39452.53	33929.52		
Dec	25009.52	38888.95	10563.49	10577.29	18251.65	20170.76	25346.65	21757.70		
	Critical situation: lower than long-term minimum values (LTMIN)									
	Normal condition: within the range of long-term min (LTMIN) and max (LTMAX) values									
	Low volume situation: lower than long-term average (LTA)									
Unit: Million Cubic Meter (1 MCM= 0.001 km^3)										

Remarks: the volume of Tonle Sap Lake in 2024 is updated untill 25 March 2024.

4. Flash Flood in the Lower Mekong Basin

During the weekly monitoring period from 19 - 25 March, the LMB received light to heavy rain in some areas.

According to the MRC-Flash Flood Guidance System (MRC-FFGS) and analysis, flash flood events were not detected during the reporting period over the LMB.

5. Drought Monitoring in the Lower Mekong Basin

5.2. Weekly drought monitoring from March 19 to 25

Drought monitoring data for 2024 are available from Monday to Sunday every week; thus, the reporting period is normally delayed by one day compared to Flood and Flash Flood reports. We adopt the Index of Soil Water Fraction (ISWF) data obtained from FFGS to represent soil moisture of agricultural indicator for both dry and wet seasons.

- **Weekly Standardised Precipitation Index (SPI1)**

Meteorological drought conditions of the LMB from 19 to 25 March 2024, as shown in **Figure 9**, was moderately and severely dry over Cambodia's north and northwest, Lao PDR's southern part, Thailand's southern area, and Viet Nam's Kon Tum, Dak Lak, and Dak Nong.

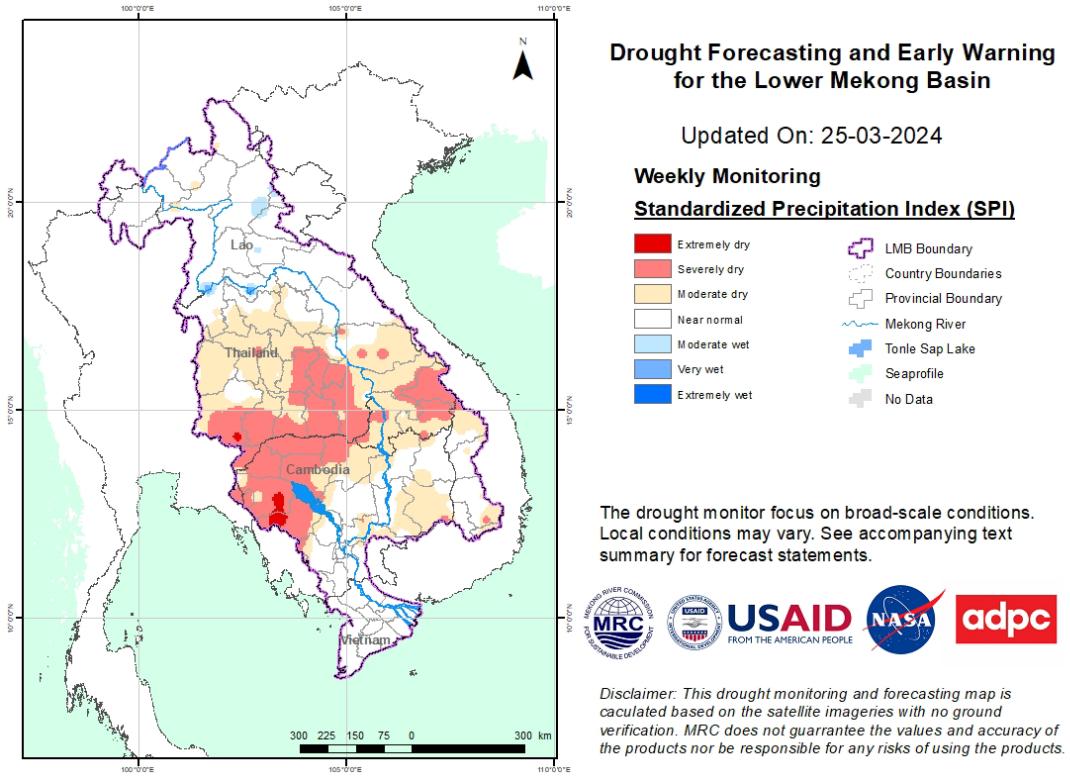


Figure 9: Weekly standardised precipitation index from March 19 to 25.

- **Weekly Index of Soil Water Fraction (ISWF)**

Soil moisture conditions from March 19 to 25, as displayed in **Figure 10**, were severely dry from the north to the south due to absence of rainfall. The conditions were similar to those of the previous week.

Note: The index of soil water fraction presents the current soil water fraction conditions compared with normal month; therefore, it normally shows extremely dry during dry season which is completely different from SPI that is standardized to its specific month of the years. However, this does not mean that the areas are threatened by agricultural drought as generally during transition period of wet and dry seasons and dry season only the irrigated areas are used for agricultural plantation.

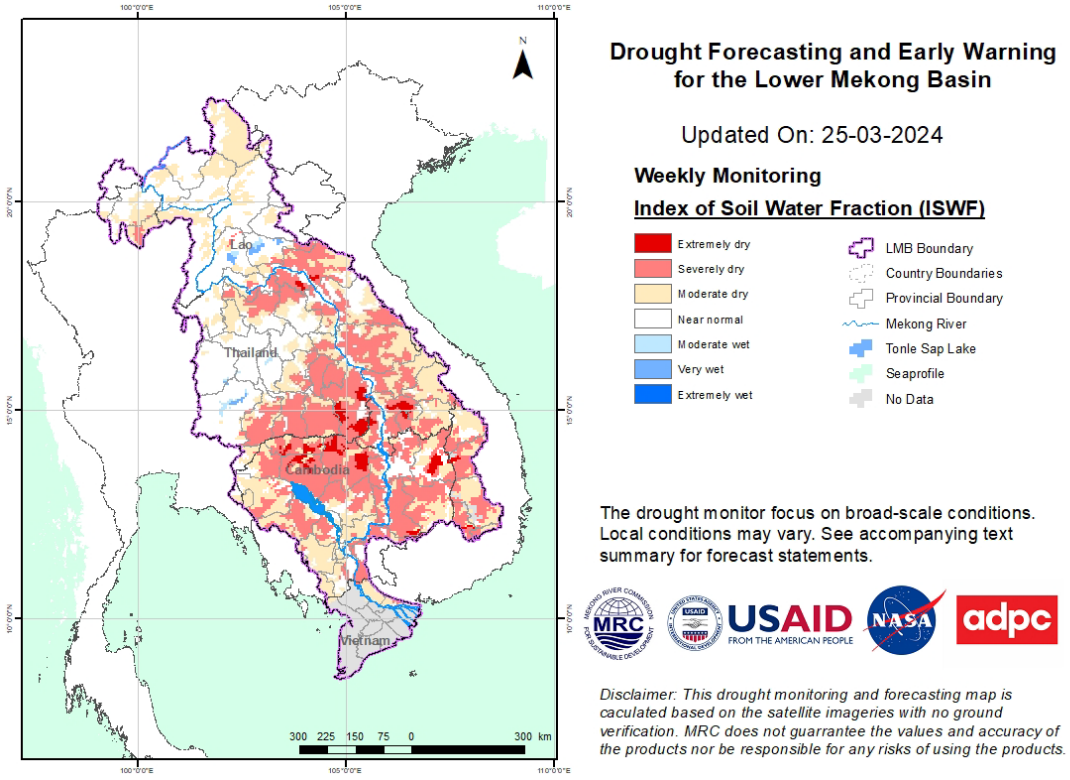


Figure 10: Weekly Index of Soil Water Fraction from March 19 to 25.

- **Weekly Combined Drought Index (CDI)**

With the dry conditions of soil moisture, the combined drought indicator (displayed in **Figure 11** reveals that during 19-25 March 2024, the LMB was facing from moderate to severe drought mainly over the middle and the south of the region. The impacted areas are listed below:

Number	Country	Province	Mderate	Severe	Extreme	Exceptiona	Number	Country	Province	Mderate	Severe	Extreme	Exceptiona	Number	Country	Province	Mderate	Severe	Extreme	Exceptiona
1	Cambodia	Battamabang		S	S		24	Lao PDR	Oudomxai					47	Thailand	Udon Thani		S		
2	Cambodia	Banteay Meanchey		S			25	Lao PDR	Loungprabang					48	Thailand	Sakon Nakhon		S		
3	Cambodia	Kampong Cham					26	Lao PDR	Xayaburi					49	Thailand	Bueng Kan		L		
4	Cambodia	Pursat		S	S		27	Lao PDR	Xiengkhouang					50	Thailand	Nakhon Phanom				
5	Cambodia	Kampong Chhnang					28	Lao PDR	Vientiane					51	Thailand	Kalasin				
6	Cambodia	Otdar Meanchey		L	S		29	Lao PDR	Vientiane Capital					52	Thailand	Mukdahan		S		
7	Cambodia	Preah Vihear		S	S		30	Lao PDR	Xaisomboun					53	Thailand	Roi Et		S		
8	Cambodia	Kampong Thom		S			31	Lao PDR	Borikhamxai		S			54	Thailand	Yasothon		S		
9	Cambodia	Kratie		S			32	Lao PDR	Khammouan					55	Thailand	Amnat Charoen		S		
10	Cambodia	Mondulkiri		S			33	Lao PDR	Savanakhet		S			56	Thailand	Ubon Ratchathani		S	S	
11	Cambodia	Ratanakiri		L	S		34	Lao PDR	Salavan		S			57	Thailand	Si Sa Ket		S	S	
12	Cambodia	Tbong Khmum					35	Lao PDR	Xekong		S			58	Thailand	Surin		S	S	
13	Cambodia	Prey Veng					36	Lao PDR	Attapu		S			59	Thailand	Buri Ram		S	S	
14	Cambodia	Kampot					37	Lao PDR	Champasack		S	S		60	Thailand	Nakhon Ratchasima		S		
15	Cambodia	Takeo					38	Thailand	Chiang Mai					61	Viet Nam	Kon Tum		S		
16	Cambodia	Svai Rieng					39	Thailand	Chiang Rai					62	Viet Nam	Gia Lai		S		
17	Cambodia	Stung Treng		S			40	Thailand	Payao					63	Viet Nam	Dak Nong				
18	Cambodia	Kampong Speu		S			41	Thailand	Loei					64	Viet Nam	Dak Lak		S		
19	Cambodia	Kandal					42	Thailand	Nong Bua Lam Phu					65	Viet Nam	Dong Thap				
20	Cambodia	Siem Reap		L	S		43	Thailand	Khon Kaen					66	Viet Nam	Tien Giang				
21	Lao PDR	Bokeo					44	Thailand	Nong Khai		S			67	Viet Nam	An Giang				
22	Lao PDR	Luangnamtha					45	Thailand	Chaiyaphum						Other provinces of the Mekong Delta of Viet Nam have no data					
23	Lao PDR	Phongsali					46	Thailand	Maha Sarakham						Moderate		Severe			
S: Short-term impacts (less than 4 weeks); L: long-term impacts (more than 4 weeks)															Severe		Exceptional			

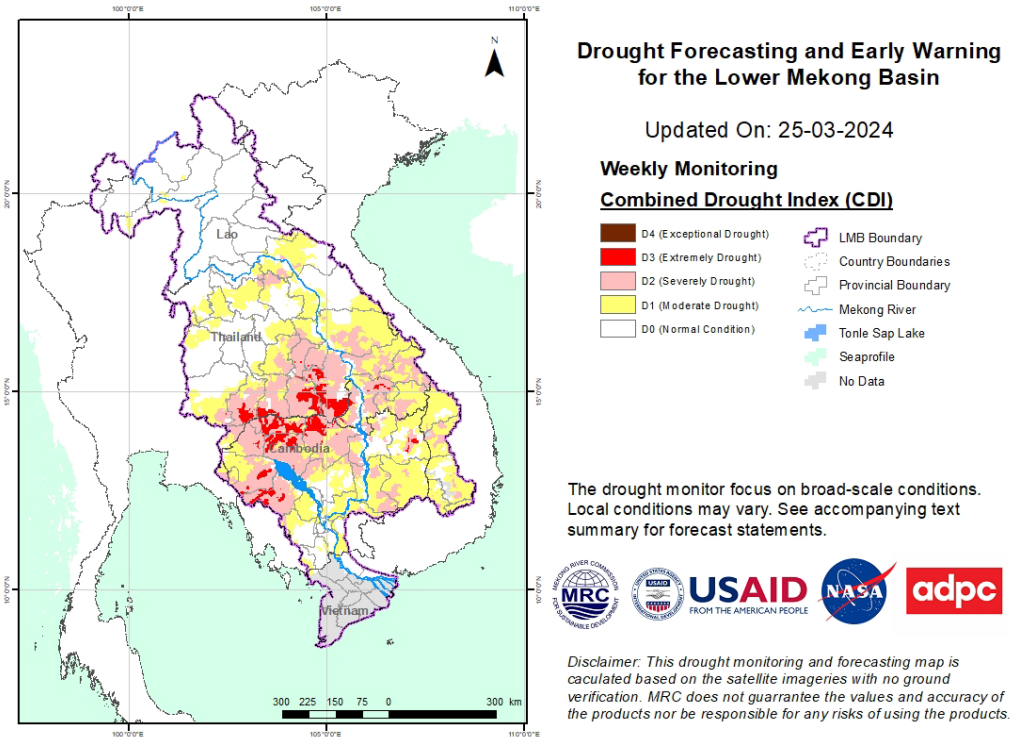


Figure 11: Weekly Combined Drought Index from March 19 to 25.

More information on Drought Forecasting and Early Warning (DFEW) as well as the explanation is available here: http://droughtforecast.mrcmekong.org/templates/view/our-product. DFEW provides not only weekly monitoring and forecasting information but also a three-month forecast of drought indicators with seasonal outlook which are updated every month based on international weather forecast models. Details on drought forecast are described in section 6.4 of this report.

6 Weather and Water Level Forecast and Flash Flood information

6.1 Rainfall forecast

During 26 March – 08 April 2024, the accumulated rainfall over the entire Lower Mekong Basin is distributed with light rain based on CHIRPS-GFS (**Figure 12**). The light accumulated rain can be observed almost entire Lower Mekong Basin from the lower to central part. However, the rainfall is not likely to be observed at the upper part of the basin.

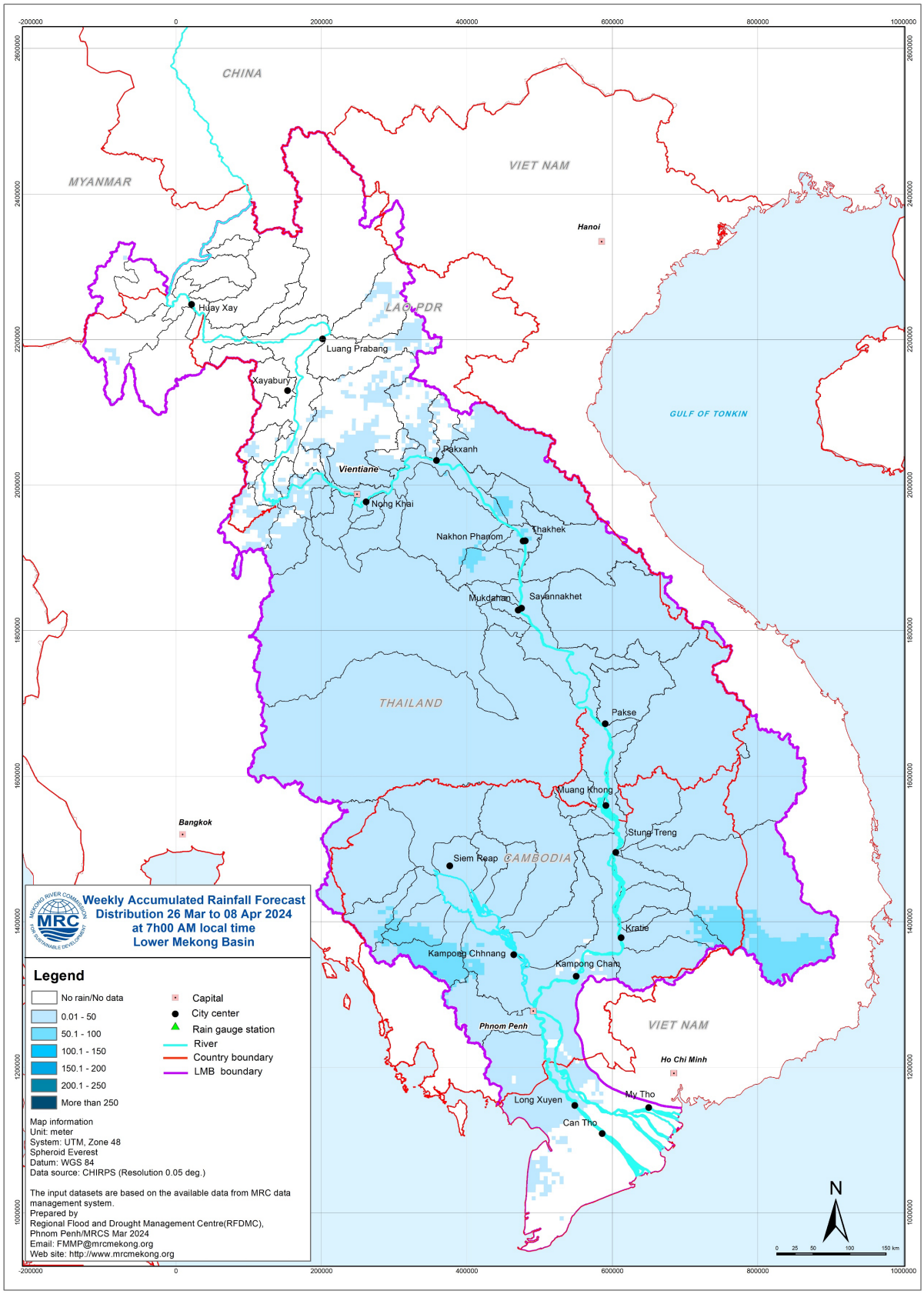


Figure 12: Accumulated rainfall forecast from CHIRP-GFS (26 March – 08 April 2024)

6.2 Water level forecast

In Chiang Saen monitoring station, the water level is expected to be fluctuated over the forecasting period of 26 March – 01 April 2024. However, it will slightly increase from 1.45 m to 1.55 m. The water level in Luang Prabang stations affected by backwater is likely slightly increasing from 8.50 m to 8.56 m.

It is observed that at the stations along the Mekong mainstream, the water levels at all forecasting stations from Chiang Khan to Kratie are predicted to have increasing trends. At Chiang Khan, Vientiane, Nong Khai, Paksane, Nakhon Phanom, Thakhek, Mukdahan, Savannakhet, Khong Chiam, Pakse, Stung Treng, and Kratie stations, water levels is forecasted to slight rise approximately 0.58 m, 0.33 m, 0.30 m, 0.22 m, 0.19 m, 0.18 m, 0.21 m, 0.16 m, 0.09 m, 0.00 m, and 0.03 m, respectively. Moving down to the downstream stations at Kampong Cham, Phnom Penh (Bassac), Phnom Penh Port, Koh Khel, Neak Luong and Prek Kdam, the water levels are predicted to slightly drop of approximately 0.09 m, 0.08 m, 0.08 m, 0.07 m, 0.11 m and 0.01 m, respectively.

For the Tan Chau station on the Mekong River and Chau Doc station on the Bassac River, water levels will decrease approximately 1.19 m and 1.43 m, respectively, following daily tidal effects from the sea.

The water levels at all stations are forecasted to be below their LTAs except for Luang Prabang, Stung Treng, and Kratie stations from 26 March to 01 April 2024.

The weekly River Monitoring Bulletin and forecasting issued on 25 March 2024 can be found in **Table 2.** Results of the weekly river monitoring and forecasting bulletin are also available at http://ffw.mrcmekong.org/bulletin.php

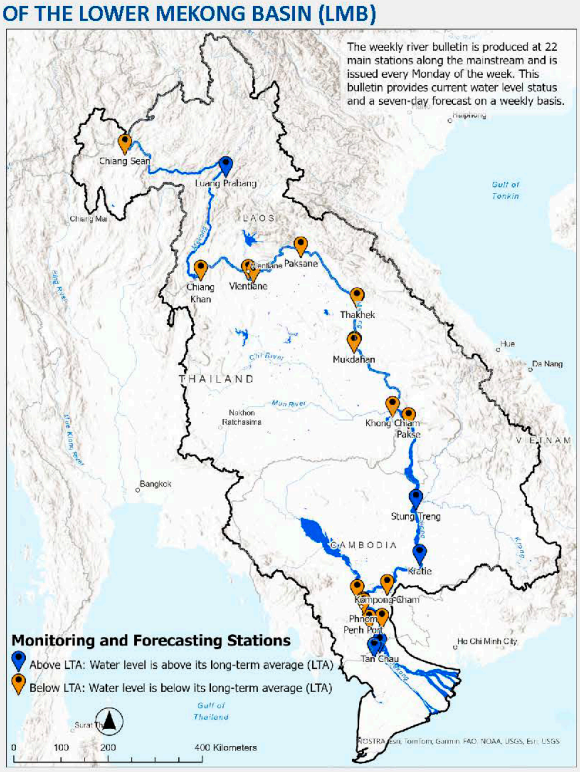
Table 2. Weekly River Monitoring Bulletin.

MEKONG RIVER MONITORING AND FORECASTING BULLETIN

Monitoring on 25 March 2024 and weekly forecasting from 26 March to 01 April 2024

Highlights: *Water levels at all stations are below their long-term average except for Luang Prabang, Stung Treng, Kratie, Tan Chau and Chao Doc stations. However, water levels are in normal conditions based on the PMFM (Article 6A).*

THE FORECASTING HYDROLOGICAL STATION MAP OF THE LOWER MEKONG BASIN (LMB)



NOTES

- Water levels are forecasted to be increasing at the upper stretches of the Mekong mainstream from Chiang Saen to Kratie stations and decreasing from Kampong Cham to Tan Chau stations, except for Neak Luong station from 26 March to 01 April 2024.
- Water levels at most of the stations are expected to be below their long-term averages (LTAs) except for Luang Prabang, Stung Treng, and Kratie stations from 26 March to 01 April 2024.

CURRENT WATER LEVEL STATUS

Monitoring Station	Rainfall (mm)	Zero gauge amsl (m)	Water level againts zero gauge (m)	Current Status	Flow Threshold (PMFM*6A)
Jinhong	0.0	-	535.23		
Chiang Saen	0.0	357.110	1.48	Below LTA	Normal
Luang Prabang**	0.0	267.195	8.48	Above LTA	
Chiang Khan	0.0	194.118	3.03	Below LTA	
Vientiane	0.0	158.040	1.02	Below LTA	Normal
Nongkhai	0.0	153.648	0.57	Below LTA	
Paksane	0.0	142.125	2.00	Below LTA	
Nakhon Phanom	2.3	130.961	1.03	Below LTA	
Thakhek	1.5	129.629	2.39	Below LTA	
Mukdahan	0.0	124.219	1.54	Below LTA	
Savannakhet	0.0	125.410	0.70	Below LTA	
Khong Chiam	0.0	89.030	1.88	Below LTA	Normal
Pakse	0.0	86.490	0.90	Below LTA	Normal
Stung Treng	0.0	36.790	2.51	Above LTA	Normal
Kratie	0.0	-1.080	6.82	Above LTA	Normal
Kompong Cham	0.0	-0.930	2.50	Below LTA	
Phnom Penh (Bassac)	0.0	-1.020	1.77	Below LTA	Normal
Phnom Penh Port	nr	0.000	0.87	Below LTA	
Koh Khel	0.0	-1.000	1.54	Below LTA	
Neak Luong	0.0	-0.330	1.22	Below LTA	
Prek Kdam	0.0	0.080	0.96	Below LTA	
Tan Chau	0.0	0.000	0.99	Above LTA	
Chau Doc	nr	0.000	1.16	Above LTA	

** Procedures for Maintenance of Flows on the Mainstream*
*** Luang Prabang station is influenced by hydropowers at its upstream and downstream*

WEEKLY WATER LEVEL FORECAST

Forecasting Station	Forecasted Water Levels (m)							Status	Trend
	26-Mar	27-Mar	28-Mar	29-Mar	30-Mar	31-Mar	01-Apr		
Jinhong	-	-	-	-	-	-	-	-	-
Chiang Saen	1.45	1.40	1.90	1.92	1.65	1.60	1.55	Below LTA	Increasing
Luang Prabang	8.50	8.52	8.62	8.77	8.84	8.76	8.56	Above LTA	Increasing
Chiang Khan	3.00	3.10	3.20	3.22	3.30	3.61	3.58	Below LTA	Increasing
Vientiane	0.94	0.99	1.05	1.07	1.16	1.25	1.27	Below LTA	Increasing
Nongkhai	0.45	0.46	0.50	0.55	0.62	0.71	0.75	Below LTA	Increasing
Paksane	1.83	1.85	1.88	1.90	1.93	1.98	2.05	Below LTA	Increasing
Nakhon Phanom	1.00	1.05	1.13	1.20	1.22	1.26	1.28	Below LTA	Increasing
Thakhek	2.33	2.36	2.40	2.45	2.48	2.50	2.52	Below LTA	Increasing
Mukdahan	1.50	1.52	1.56	1.58	1.62	1.65	1.68	Below LTA	Increasing
Savannakhet	0.75	0.78	0.82	0.85	0.89	0.93	0.96	Below LTA	Increasing
Khong Chiam	1.86	1.84	1.88	1.93	1.95	1.99	2.02	Below LTA	Increasing
Pakse	0.89	0.85	0.86	0.90	0.93	0.95	0.98	Below LTA	Increasing
Stung Treng	2.50	2.47	2.45	2.43	2.45	2.47	2.50	Above LTA	Increasing
Kratie	6.85	6.82	6.80	6.77	6.79	6.85	6.88	Above LTA	Increasing
Kompong Cham	2.48	2.49	2.44	2.43	2.41	2.39	2.39	Below LTA	Decreasing
Phnom Penh (Bassac)	1.73	1.71	1.71	1.70	1.69	1.67	1.65	Below LTA	Decreasing
Phnom Penh Port	0.83	0.81	0.81	0.80	0.79	0.77	0.75	Below LTA	Decreasing
Koh Khel	1.52	1.50	1.49	1.49	1.48	1.47	1.45	Below LTA	Decreasing
Neak Luong	1.41	1.37	1.32	1.33	1.32	1.31	1.30	Below LTA	Increasing
Prek Kdam	0.92	0.92	0.98	0.96	0.95	0.93	0.91	Below LTA	Decreasing
Tan Chau	0.91	0.30	0.12	-0.10	-0.15	-0.23	-0.28	Below LTA	Decreasing
Chau Doc	1.20	1.00	0.50	0.01	-0.10	-0.18	-0.23	Below LTA	Decreasing

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E: floodforecast@mrcmekong.org | T: +855 23 425 353

http://www.mrcmekong.org/
http://ffw.mrcmekong.org/bulletin_dry.php
http://ffw.mrcmekong.org/report_dry.php
https://pmfm.mrcmekong.org/

6.3 Flash Flood Information

Flash flood events are not likely to happen in the LMB next week. However, local heavy rain in a short period of time might still be possible with unexpected short flash floods. During the dry season if extreme weather occurs, the information on flash flood guidance for the next one, three, and six hours is updated at http://ffw.mrcmekong.org/ffg.php.

Further detailed information on Flash Flood Information Warning, as well as on its explanation, is available for download here.

6.4 Drought forecast

There are several climate-prediction models with different scenarios in the upcoming months. The MRC's DFEWS adopts the global scale of North America Multi-Model Ensemble (NMME) that predicts average rainfall in daily average for the next coming three months.

Figure 13 below shows the average daily rainfall forecast for March, April and May 2024 over the LMB area.

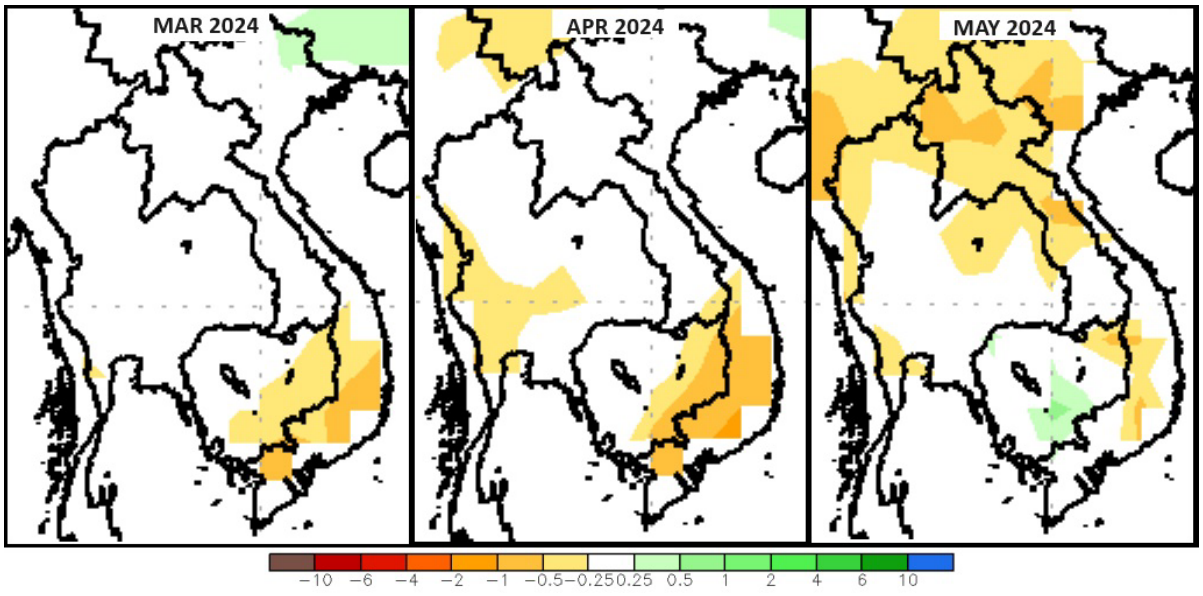


Figure 13. Monthly forecast of rainfall from NMME for March, April, and May 2024.

Figure 13 indicates that below average rainfall is predicted for southern part of the LMB during March 2024 covering mainly south-eastern Cambodia and Viet Nam; similar prediction goes for April plus a bit less than average rainfall in some area of Thailand in the central area; while during May the forecast indicates below average rainfall over the northern part covering Laos and some areas of Thailand and the 3S area of the southern region of the LMB.

7 Summary and Possible Implications

7.1Rainfall and its forecast

In the period of 19- 25 March 2024, Over the entire basin, the rainfall has been significantly observed to be between light to relatively heavy. However, heavy rainfall occurrence has been found in the central part of LMB in Thailand (particularly in Chiang Khan and Nong Khai) and Lao PDR (Vientiane). The light accumulated rain can be observed almost entire Lower Mekong Basin from the lower to central part. However, the rainfall is not likely to be observed at the upper part of the basin.

7.2 Water level and its forecast

At 22 key monitoring stations along the Mekong mainstream from 19 – 25 March 2024, water levels are below the long-term averages (LTAs) except for water level at Luang Prabang, Stung Treng, Kratie, Tan Chau and Chau Doc monitoring stations. However, the 9 monitoring stations remain in normal condition with respect to the flow threshold (PMFM for Observed Water Level). It is also the same condition for Tan Chau and Chau Doc monitoring stations, which are significantly influenced by sea tidal fluctuation.

In the period of 26 March – 01 April 2024, the water levels at key stations located at upper to middle stretches are expected to slightly increase from Chiang Saen to Kratie stations, while from Kampong Cham to Prek kdam are predicted to slightly drop except for Neak Luong station from 25 March to 01 April 2024. At Tan Chau and Chau Doc stations, the water levels are predicted to be decreasing, resulting from the influence of sea tidal patterns. The water levels at almost all stations are predicted to be below their LTAs except for Luang Prabang, Stung Treng, and Kratie, stations.

7.3 Flash flood and its trends

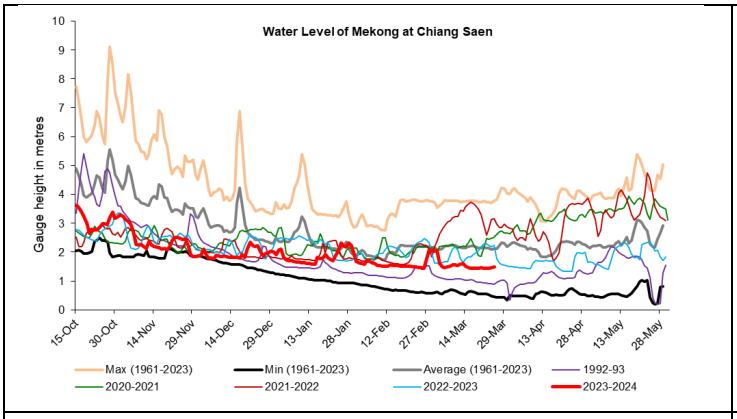
With the predicted of rainfall for the coming week as mentioned earlier in section 6.1, major flash floods are not likely to happen in the LMB.

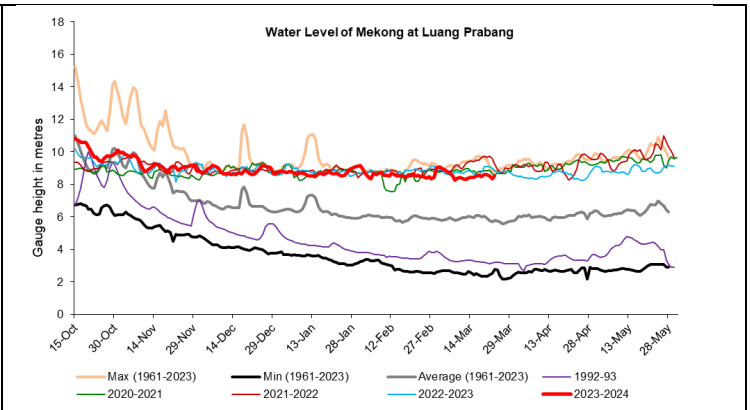
7.4 Drought condition and its forecast

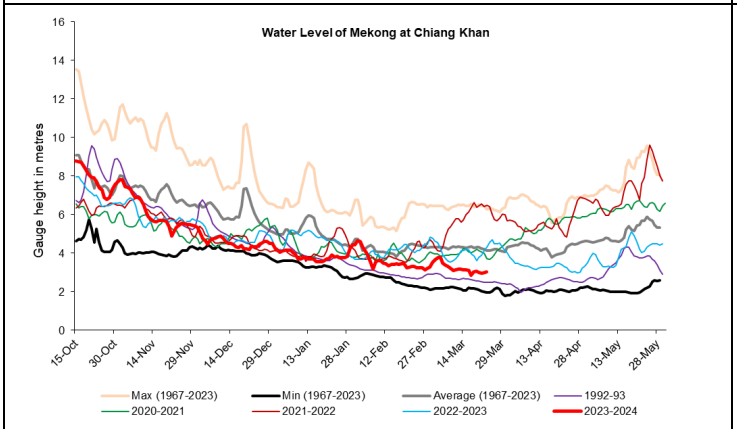
During 19-25 Mar 2024, the LMB was facing from moderate to severe drought from the middle to the south of the region. List of the impacted provinces is presented at figure 11 above.

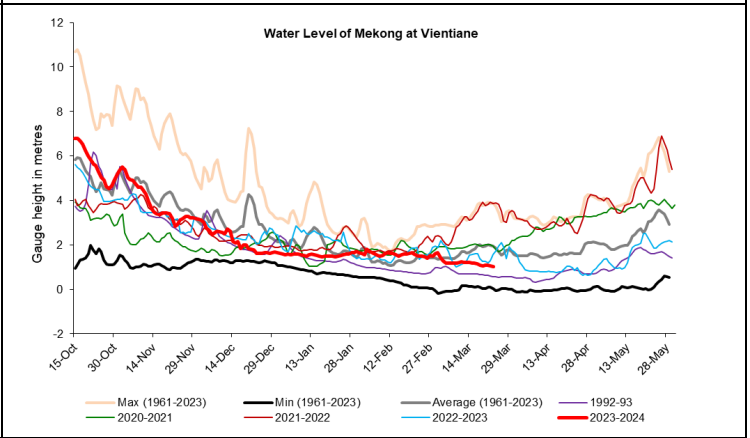
The next three-month forecast of rainfall indicates that below average rainfall is predicted for southern part of the LMB during March 2024 covering mainly south-eastern Cambodia and Viet Nam; similar prediction goes for April plus a bit less than average rainfall in some area of Thailand in the central area; while during May the forecast indicates below average rainfall over the northern part covering Laos and some areas of Thailand and the 3S area of the southern region of the LMB.

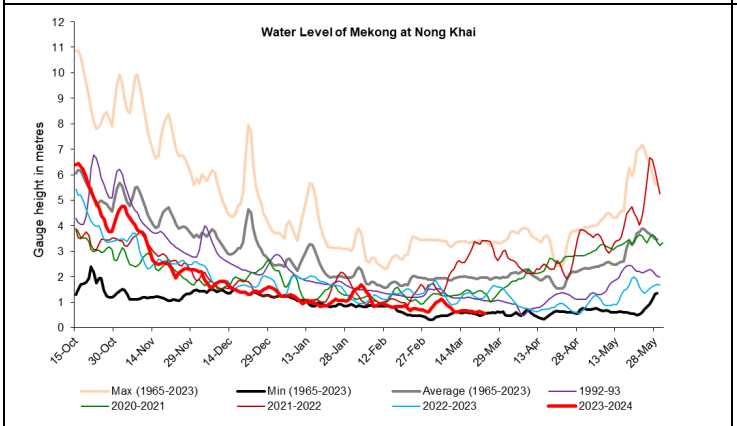
Annex A: Weekly water level monitoring at the 22 key stations

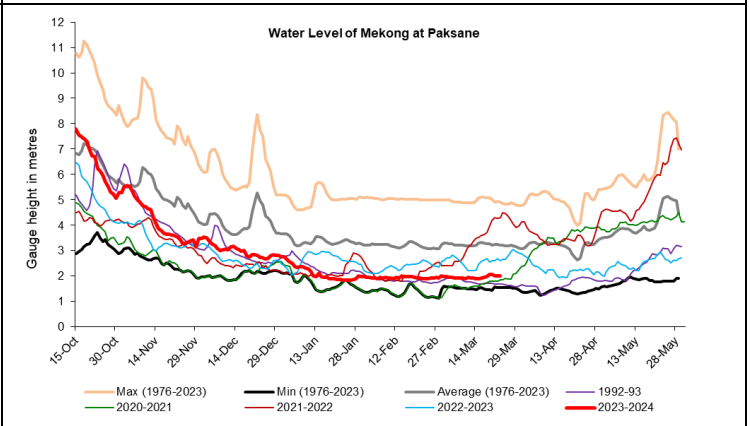


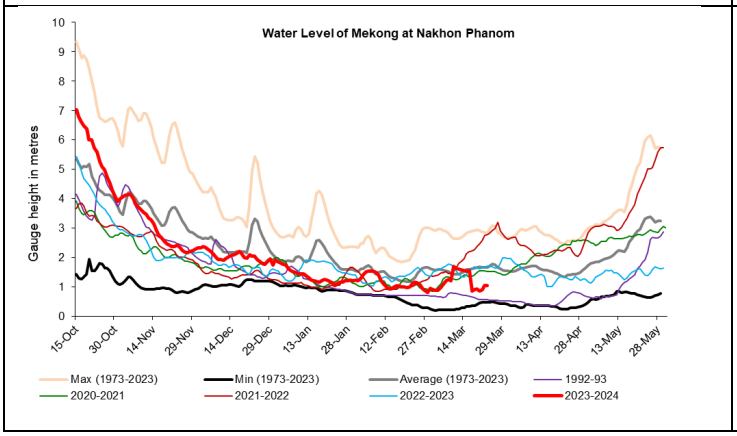


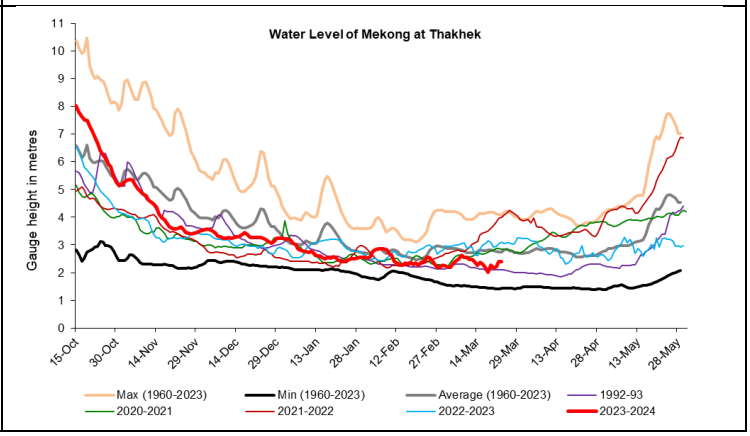


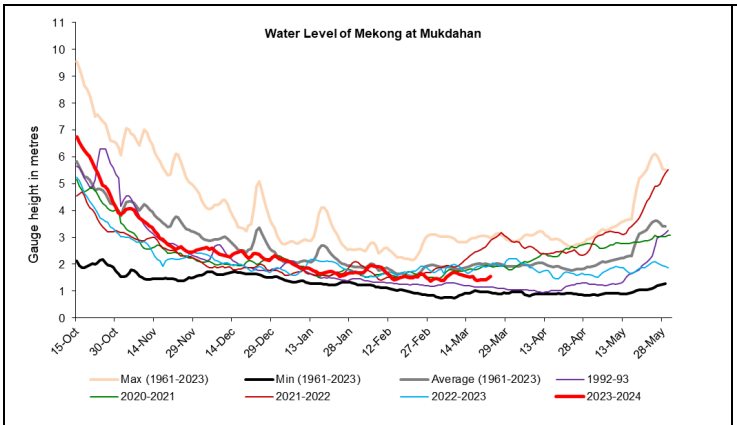


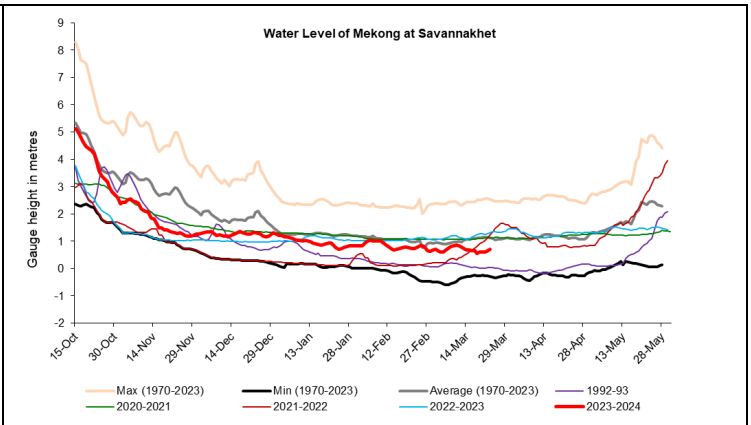


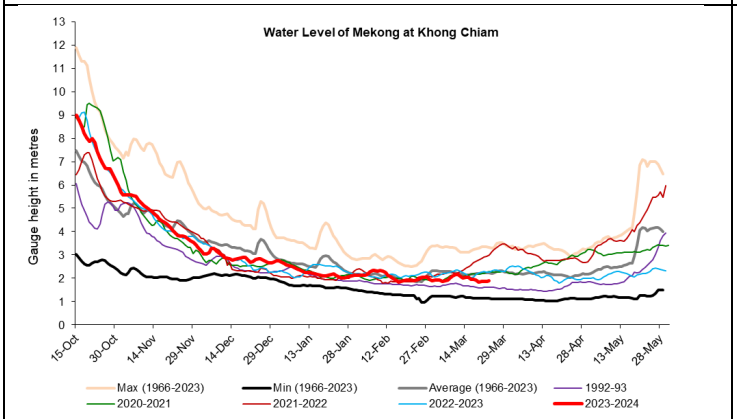


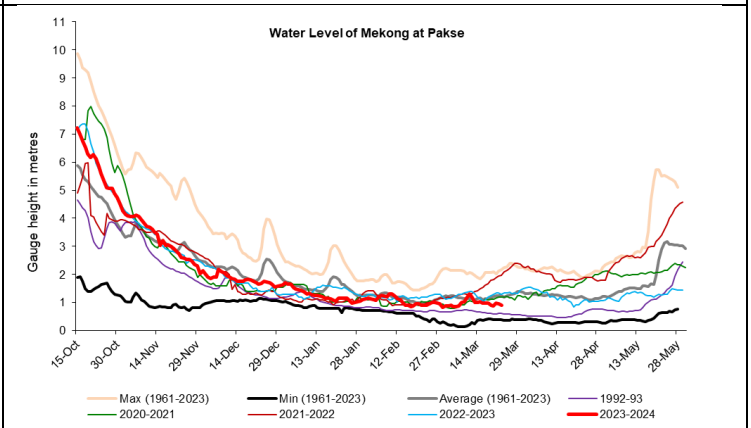


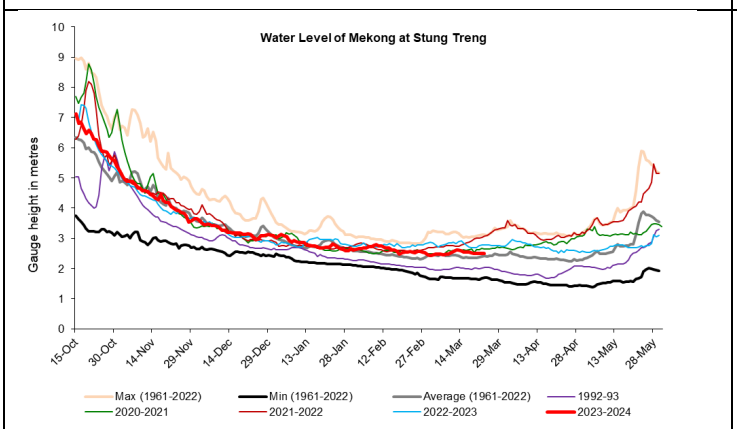


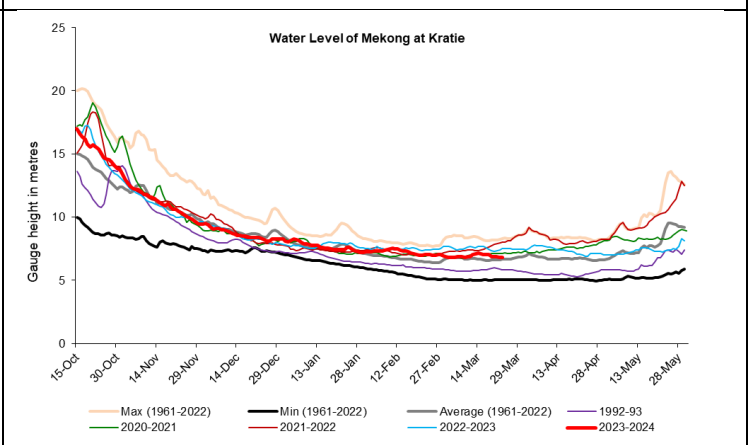

Water Level of Mekong at Mukdahan
Gauge height in metres
Max (1961-2023)
Min (1961-2023)
Average (1961-2023)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

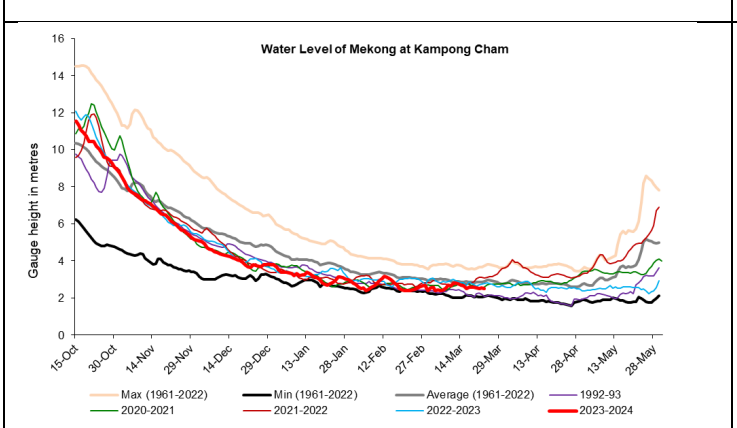

Water Level of Mekong at Savannakhet
Gauge height in metres
Max (1970-2023)
Min (1970-2023)
Average (1970-2023)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

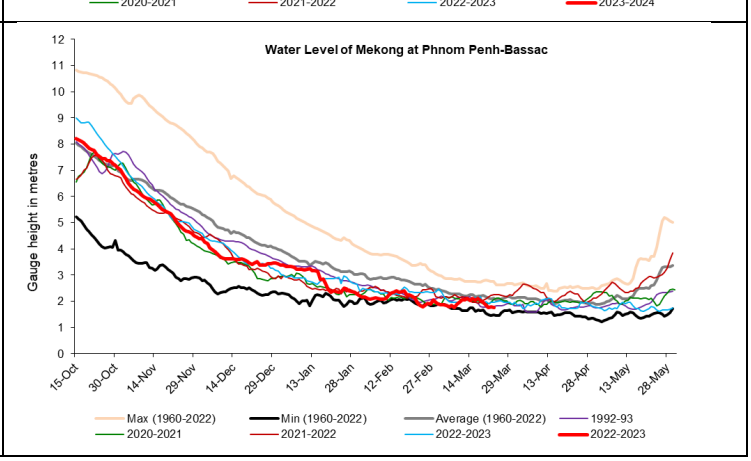

Water Level of Mekong at Khong Chiam
Gauge height in metres
Max (1966-2023)
Min (1966-2023)
Average (1966-2023)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

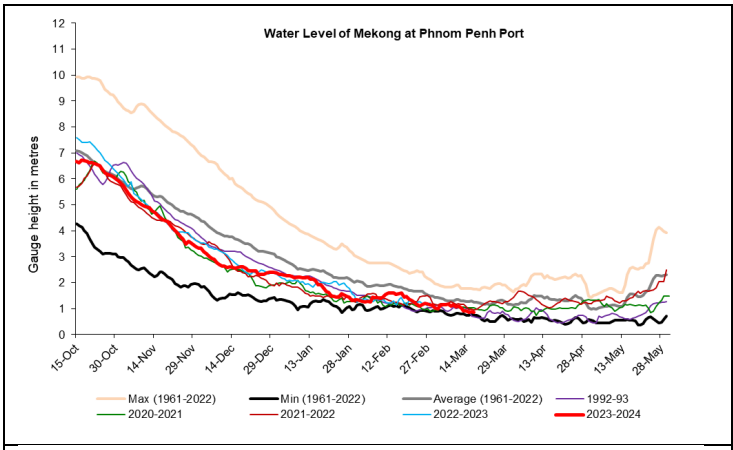

Water Level of Mekong at Pakse
Gauge height in metres
Max (1961-2023)
Min (1961-2023)
Average (1961-2023)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

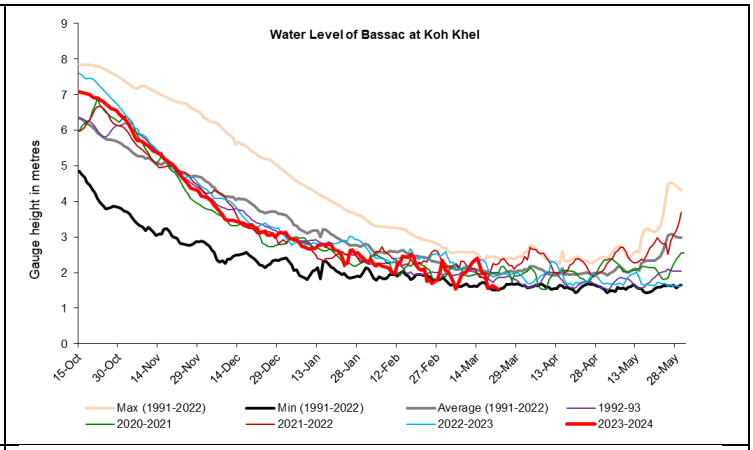

Water Level of Mekong at Stung Treng
Gauge height in metres
Max (1961-2022)
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

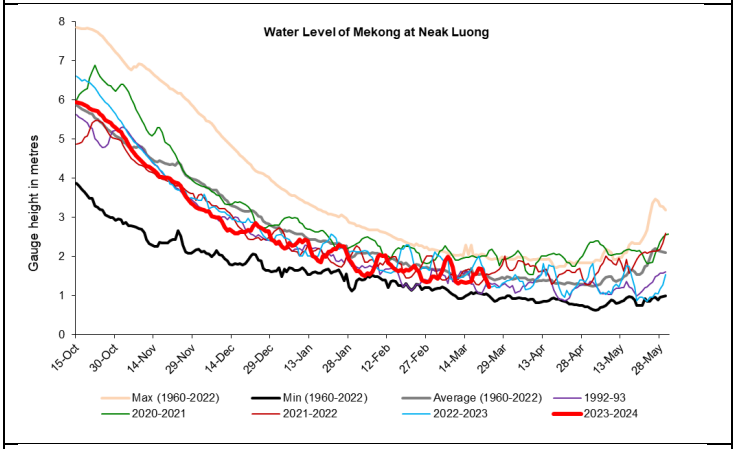

Water Level of Mekong at Kratie
Gauge height in metres
Max (1961-2022)
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

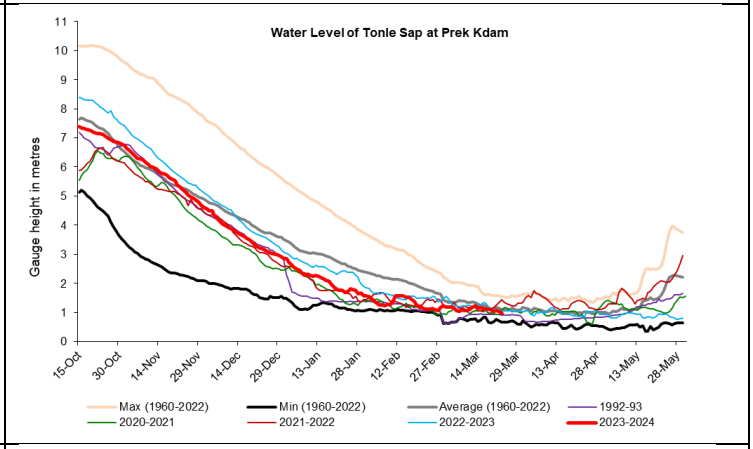

Water Level of Mekong at Kampong Cham
Gauge height in metres
Max (1961-2022)
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

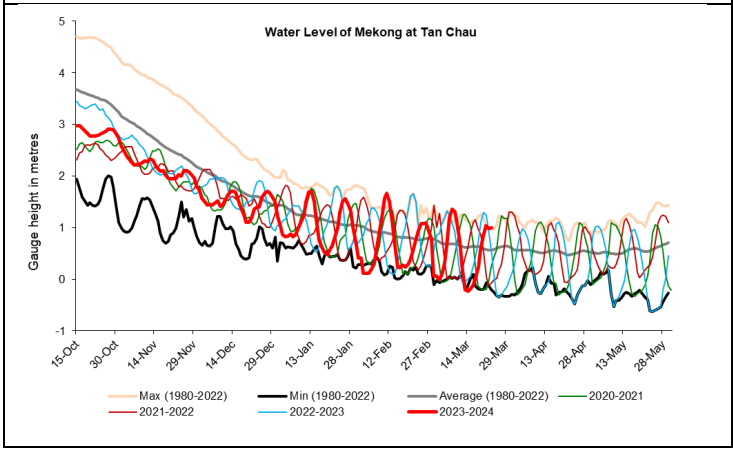

Water Level of Mekong at Phnom Penh-Bassac
Gauge height in metres
Max (1960-2022)
Min (1960-2022)
Average (1960-2022)
1992-93
2020-2021
2021-2022
2022-2023
2022-2023

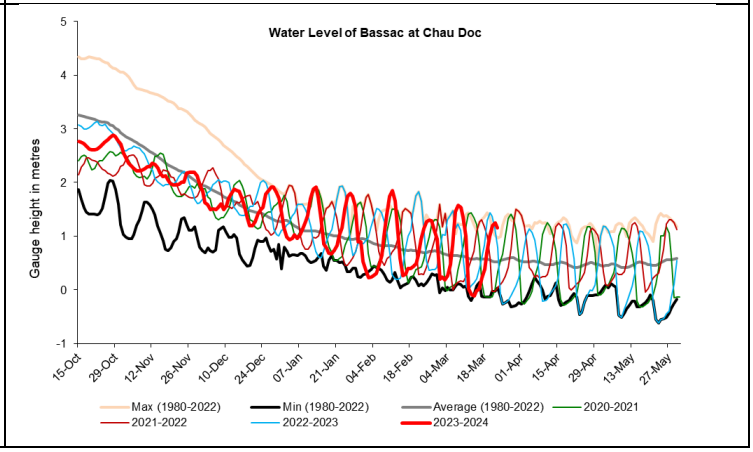

Water Level of Mekong at Phnom Penh Port
Gauge height in metres
Max (1961-2022)
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024


Water Level of Bassac at Koh Khel
Gauge height in metres
Max (1991-2022)
Min (1991-2022)
Average (1991-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024


Water Level of Mekong at Neak Luong
Gauge height in metres
Max (1960-2022)
Min (1960-2022)
Average (1960-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024


Water Level of Tonle Sap at Prek Kdam
Gauge height in metres
Max (1960-2022)
Min (1960-2022)
Average (1960-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024


Water Level of Mekong at Tan Chau
Gauge height in metres
Max (1980-2022)
Min (1980-2022)
Average (1980-2022)
2020-2021
2021-2022
2022-2023
2023-2024


Water Level of Bassac at Chau Doc
Gauge height in metres
Max (1980-2022)
Min (1980-2022)
Average (1980-2022)
2020-2021
2021-2022
2022-2023
2023-2024

Annex B: Tables for weekly updated water levels and rainfall at the Key Stations

Table A1: Weekly observed water levels

2024	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
19-03-2024	535.22	1.44	8.54	2.86	1.15	0.65	1.95	0.84	2.19	1.43	0.65	1.96	0.98	2.55	7.01	2.60	2.10	1.10	1.97	1.52	1.10	0.04	0.23
20-03-2024	535.22	1.47	8.44	3.03	1.08	0.63	1.96	0.90	2.02	1.40	0.55	1.92	0.98	2.52	7.02	2.58	2.03	1.02	1.97	1.54	1.12	0.23	0.38
21-03-2024	535.22	1.44	8.58	3.07	1.05	0.59	2.05	0.93	2.28	1.43	0.60	1.84	0.90	2.51	6.88	2.58	1.96	0.92	1.56	1.68	1.08	0.57	0.69
22-03-2024	535.22	1.43	8.60	3.00	1.09	0.62	2.05	0.86	2.17	1.43	0.59	1.86	0.88	2.51	6.84	2.54	1.87	0.90	1.60	1.67	1.05	0.83	1.00
23-03-2024	535.24	1.45	8.48	2.95	1.07	0.64	2.00	0.90	2.22	1.43	0.61	1.87	0.98	2.49	6.84	2.50	1.75	0.85	1.63	1.48	1.06	1.04	1.19
24-03-2024	536.08	1.47	8.34	2.98	1.05	0.58	2.01	1.03	2.39	1.46	0.64	1.86	0.96	2.49	6.82	2.56	1.79	0.89	1.57	1.38	1.03	0.98	1.25
25-03-2024	535.23	1.48	8.48	3.03	1.02	0.57	2.00	1.03	2.39	1.54	0.70	1.88	0.90	2.51	6.82	2.50	1.77	0.87	1.54	1.22	0.96	0.99	1.16

Table A2: Weekly observed rainfall

2024	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
19-03-2024	0	0	0	0	0	0	0	0	0	0	9.6	1.5	0	0	0	0	0		0	0	0	0	0
20-03-2024	0	5.3	21.6	167	26.2	176	3.3	0	0	34	14.6	0	0	0	0	0	0		0	0	0	0	0
21-03-2024	0	0	0	0	1	2.2	5.6	0.2	0.9	0	0	0	0	0	0	0	0		0	0	0	0	0
22-03-2024	6.5	0	0	0	0	1.4	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
23-03-2024	0	0	11.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
24-03-2024	0	0	0	0	0	0	0	3.3	0	0	0	0	0	0	0	0	0		0	0	0	0	0
25-03-2024	0	0	0	0	0	0	0	2.3	1.5	0	0	0	0	0	0	0	0		0	0	0	0	0
Sum	6.5	5.3	33.4	166.5	27.2	179.6	8.9	5.8	2.4	34.0	24.2	1.5	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0

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