Mekong River Commission

Weekly Dry Season Situation Report in the Lower Mekong River Basin

09 – 15 April 2024

Prepared by
The Regional Flood and Drought Management Centre
16 April 2024

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Mekong River Commission
Documentation and Learning Centre
184 Fa Ngoum Road, Unit 18, Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
Telephone: +856-21 263 263 | E-mail: mrcs@mrcmekong.org | www.mrcmekong.org

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Key Messages

Key messages for this weekly report are presented below.

Rainfall monitoring and forecast

- In the period of 09 – 15 April 2024, there has been light to moderate rainfall in some areas in the Northern part of Lao PDR, Northwestern part of Thailand, and the 3S area; the remaining areas in the Lower Mekong Basin have not received any rainfall.
- From 16 – 22 April 2024, Light to moderate rainfall is forecasted to be sparely distributed almost entire the basin. However, there will be no rainfall will occur at the upper parts of the basin including Chiang Saen and Luang Prabang areas and lower part (Mekong Delta).

Water level monitoring and forecast

- At 22 key monitoring stations along the Mekong mainstream from 09 – 15 April 2024, water levels are below the long-term averages (LTAs) except for water level at Luang Prabang, Stung Treng, Kratie, Neak Luong, Koh Khel, Neak Luong and Prek Kdam monitoring stations. However, the 6 monitoring stations remain in normal condition with respect to the flow threshold (PMFM Thresholds). 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 16 – 22 April 2024, Water levels are forecasted to be increasing at stations from upper part at Chiang Saen to Nong Khai and decreasing from Paksane to Thakhek stations. Moving down to lower part from Mukdahan to Prek Kdam, water level will be slightly rising except for Koh Khel station. At Tan Chau and Chau Doc stations, the water levels are predicted to be also increasing, resulting from the influence of sea tidal patterns. Water levels at most of the stations are expected to be below their long-term averages (LTAs) except for Luang Prabang, Thakhek, Mukdahan, Khong Chiam, Pakse, Stung Treng, Kratie, Neak Luong, Prek Kdam, Tan Chau and Chau Doc stations.

Drought condition and forecast

- During 9-15 April 2024, the LMB was facing from moderate to severe drought mainly in the southern part. The severe and extreme droughts, specifically, covered some areas of most provinces of Cambodia, Attapu, Champasack, Ubon Ratchathani, Si Sa Ket, Nakhon Ratchasima, Kon Tum and Gia Lai.
- The next three-month forecast of rainfall indicates that much below average rainfall is predicted for the whole LMB area during the upcoming April and May. While June is forecasted to be relatively wet over the northern and southern parts. Moderate and severe meteorological drought is likely taking place in the eastern region covering mainly some area of Thailand and southern Lao PDR.

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 **09** – **15 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.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 influenced by a high-pressure system from 09 – 11 April, then during from 12 – 15 April, the heat low-pressure covered upper the LMB. there has been light to moderate rainfall in some areas in the Northern part of Lao PDR, Northwestern part of Thailand, and the 3S area; the remaining areas in the Lower Mekong Basin have not received any 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 heat low-pressure system from 16 – 22 April. It is likely to occur isolated thunderstorms, and gusty wind in the Northeastern part of Thailand and the Northern part of Laos during 16 – 17 April.

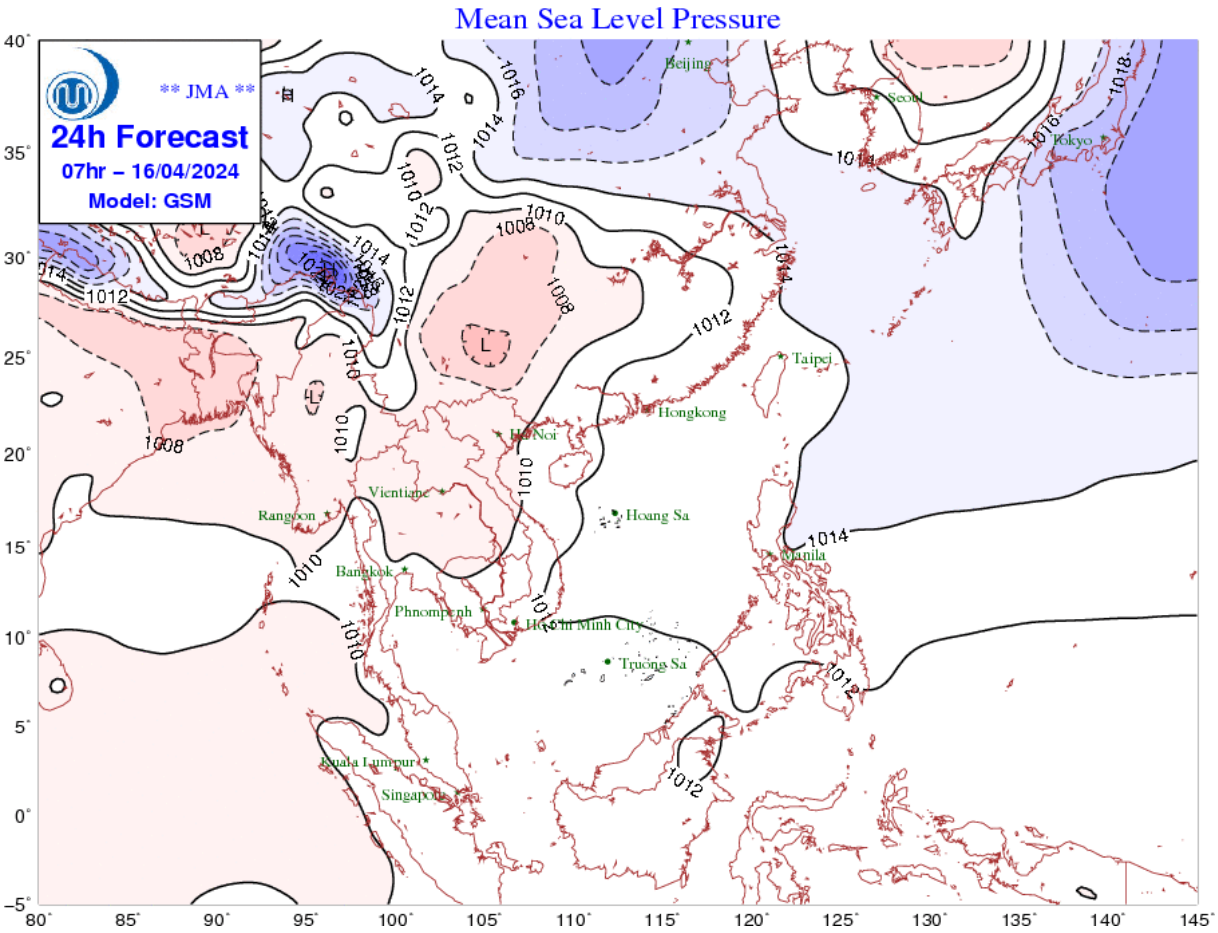


Figure 1: Weather conditions over the LMB

According to the ASEAN Specialised Meteorological Centre (ASMC, http://asmc.asean.org/home/), the subseasonal weather outlook (15 – 28 April 2024) indicates that the drier condition is predicted to occur almost entire LMB, particularly in Thailand, Cambodia and Viet Nam. Moreover, the warmer conditions are predicted to occur in the entire LMB. **Figure 2** shows the outlook of weather condition from 15 to 28 April 2024 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

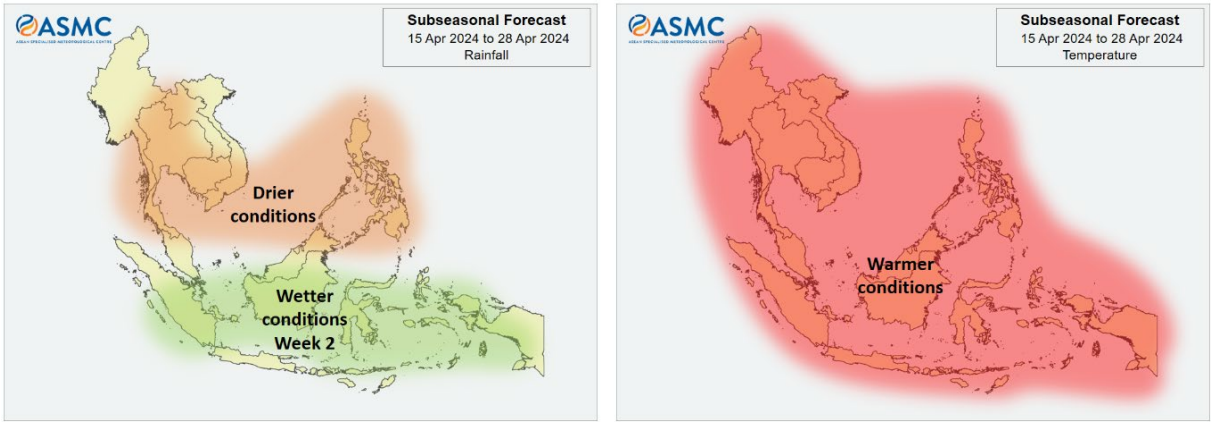


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

Based on the tropical storm risk (TS) (https://www.tropicalstormrisk.com/), there is no active NW pacific system as of 15 April 2024 as displayed in **Figure 3.**

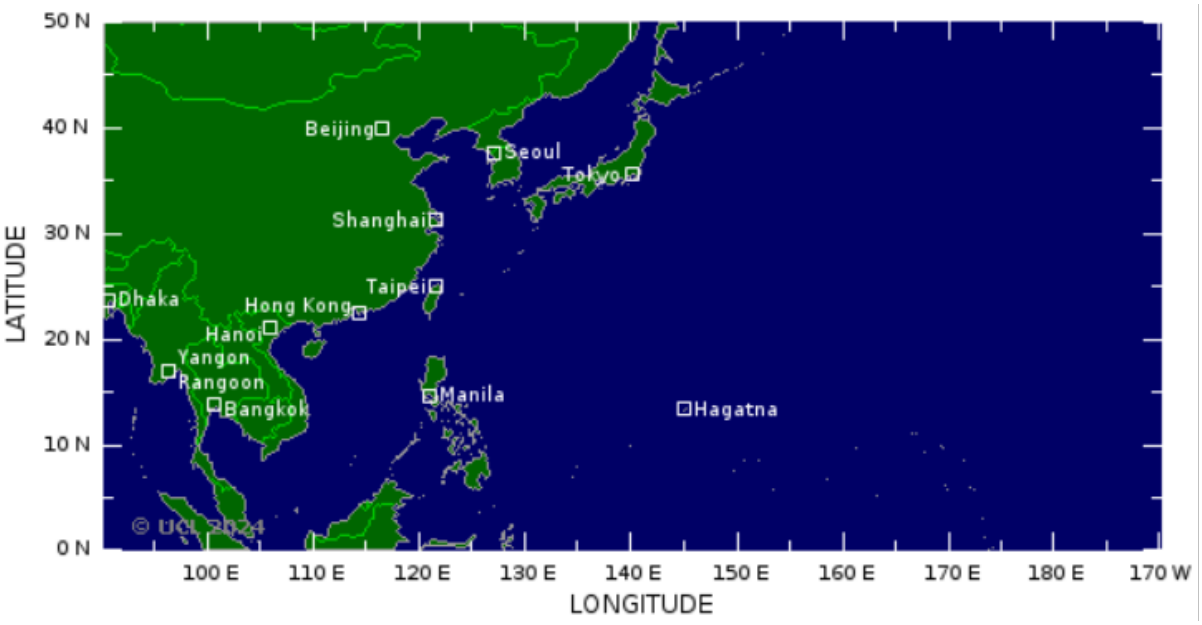


Figure 3: No tropical storm risk observed on 15 April 2024

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 09 to 15 April 2024 (**Figure 4**). The light to moderate rainfall has been only observed in the central part of the LMB including southern part of Lao PDR, easter part of Thailand, northern part of Cambodia and 3S basins.

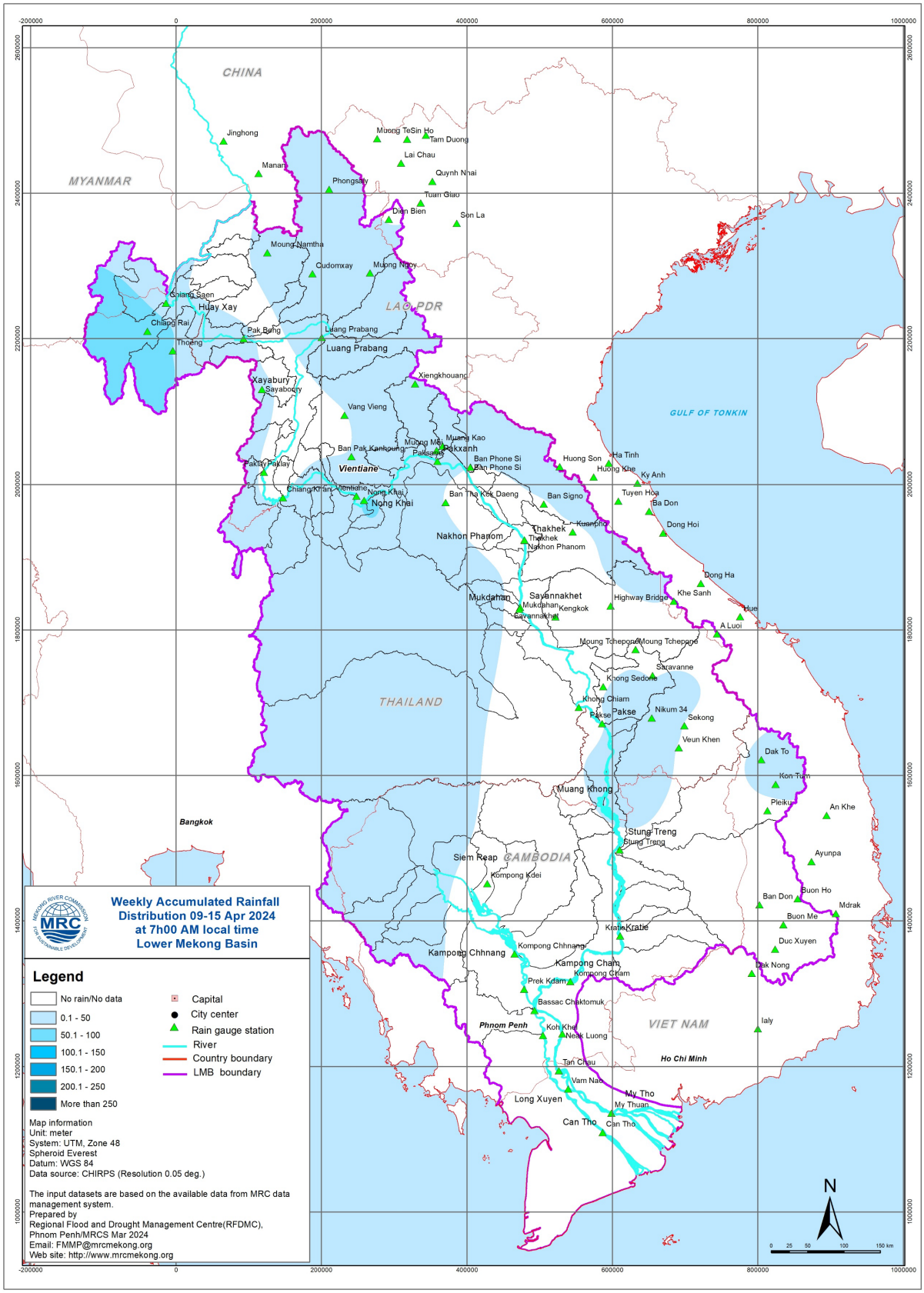


Figure 4: Weekly rainfall distribution over the LMB during 09 – 15 April 2024

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 09 – 15 April 2024, the observed water level (WL) at Jinghong hydrological station[1], was almost constant and ranges between 535.75 m and 535.76 m, which are corresponding to the outflow between 1,180.00 m^3/s to 1,190.00 m^3/s (recorded on 7:00 am), respectively (**Figure 6**). The water level in Chiang Saen station also indicated a slight fluctuation ranging from 1.55 m to 1.80 m. At the same period, the water level in Luang Prabang station also slightly increased with an approximate value of 0.1 m from 8.60 m to 8.70 m as compared to the previous week.

During the same period, the water levels observed at upper parts of the basin from Chiang Khan to Kratie stations, water levels have been slightly increasing except for Vientiane and Nong Khai. At Chiang Khan,Paksane, Nakhon Phanom, Thakhek, Mudahan, Savannakhet, Khong Chiam, Pakse, Stung Treng and Kratie stations were slightly increasing with values ranging from 3.26 m to 3.32 m, 3.33 m to 3.43 m, 1.19 m to 1.36 m, 2.6 m to 2.72 m, 1.68 m to 1.83 m, and 0.84 m to 0.86 m, 2.14 m to 2.22 m, 1.02 m to 1.16 m, 2.58 m to 2.58 m, and 6.98 m to 7.04 m, respectively, while water levels at Vientiane and Nong Khai stations slightly decreased from 1.17 m to 1.12 m and 0.76 m to 0.75 m, respectively. Further downstream, water levels at Kampong Cham, Phnom Penh (Bassac), Phnom Penh Port, Koh Khel, and Prek Kdam, have been slightly fluctuated with increasing trend and with ranges of 2.40-2.68 m, 1.45-1.98 m, 0.63-0.91 m, 1.58-2.29 m, and 0.78-1.17 m, respectively. However, only water level at Neak Luong station slightly decreased from 1.55 m to 1.39 m. Similar to the previous week, the water levels from 09 to 15 April 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 1.08 m and -0.31 m, while at the Chau Doc station, they ranged from 1.25 m to -0.11 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.

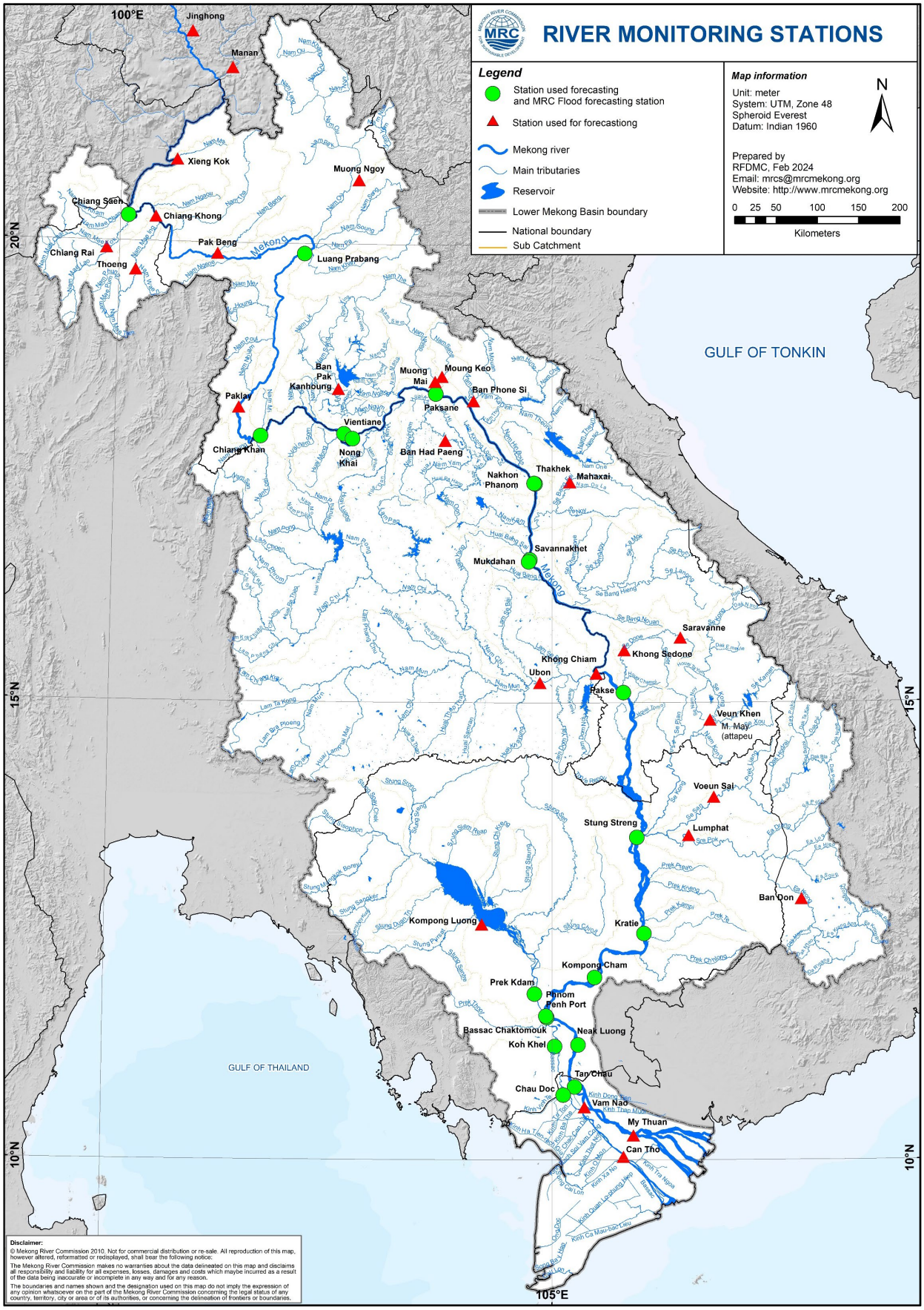


Figure 5: The key stations along LMB for river flood forecasting

The water levels in all key monitoring stations on 15 April 2024 are below their long-term averages (LTAs) except for the Luang Prabang, Stung Treng, Kratie, Neak Luong, Koh Khel, Neak Luong, and Prek Kdam 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**.

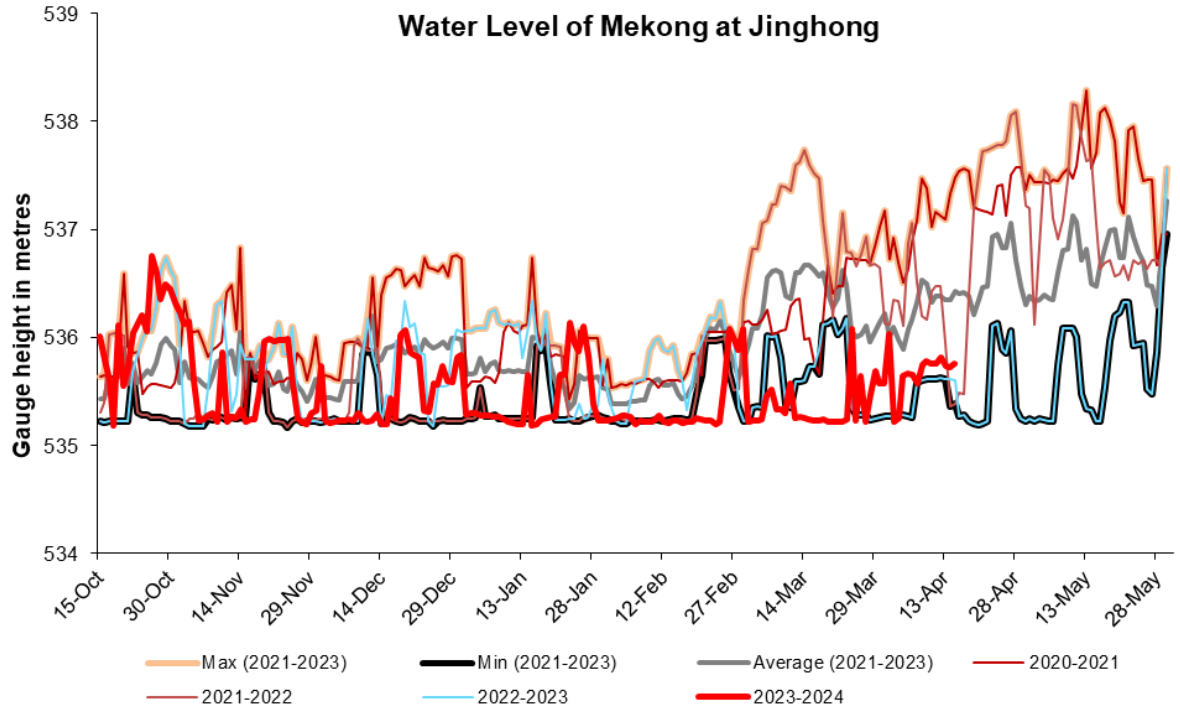


Figure 6. Water level at the Jinghong hydrological station up to 15 April 2024.

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 15 April 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 08 April 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 March 2024 is lower than its LTA (about 80.11 %), 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 15 April 2024, the water volume of TSL is approximately 83.53% of its LTA.

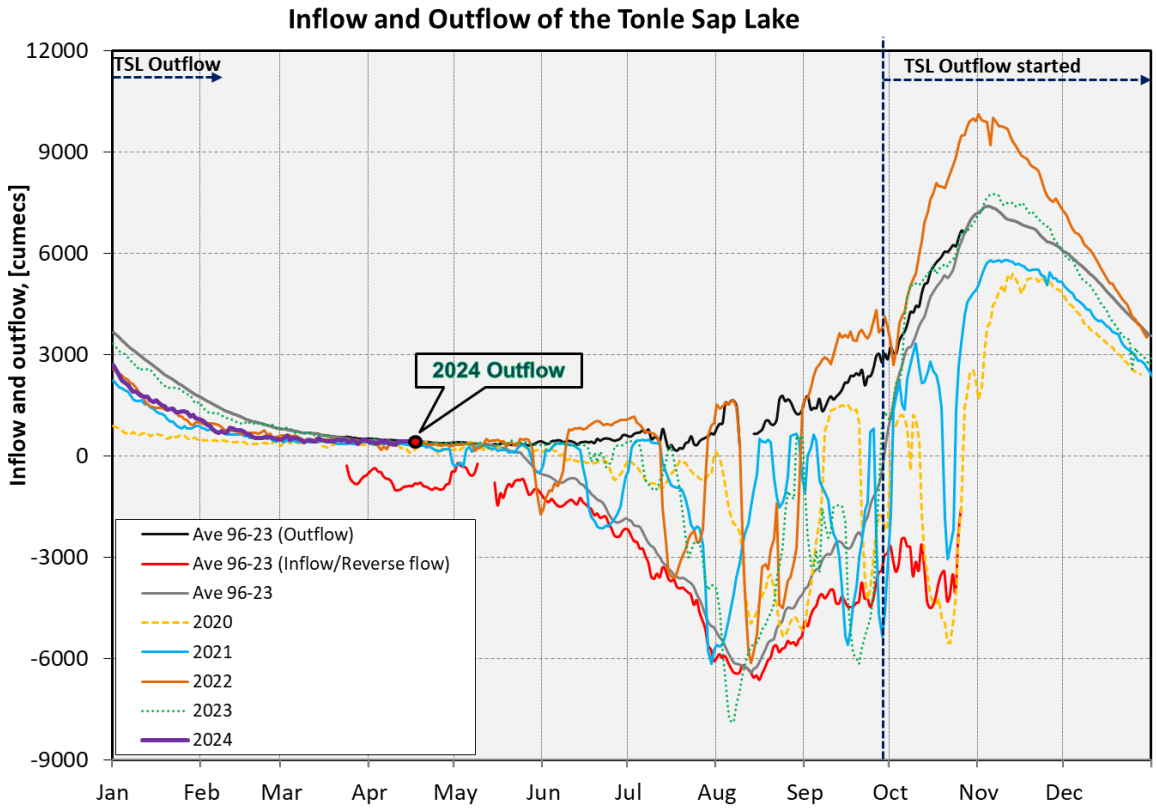


Figure 7: Seasonal change of inflows and outflows of Tonle Sap Lake.

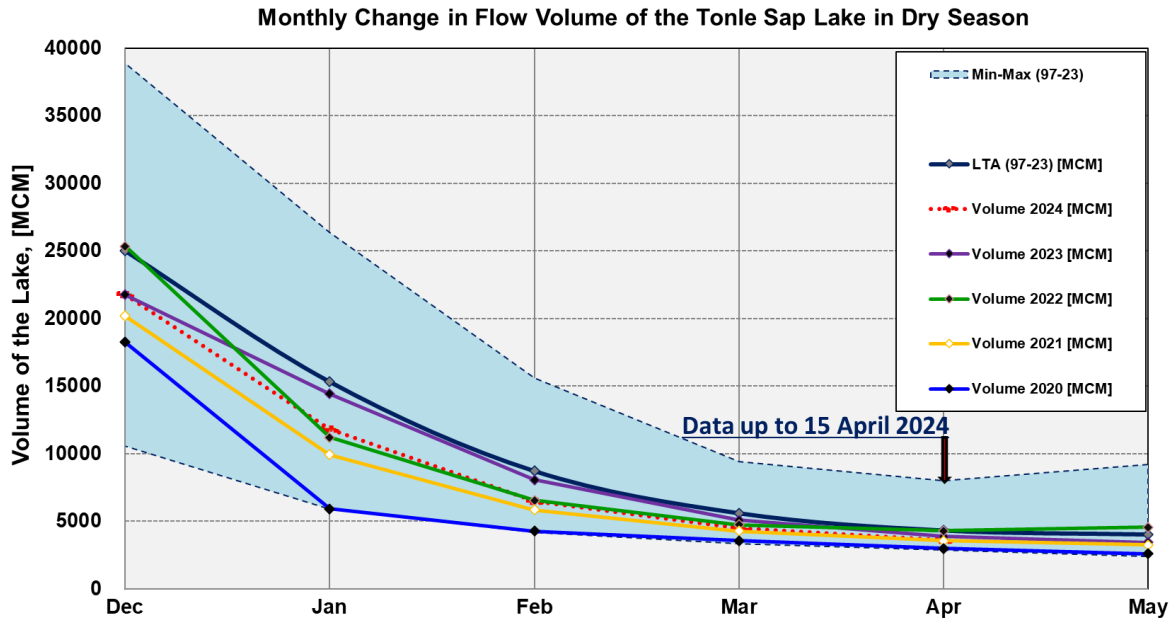


Figure 8. The seasonal change in monthly flow volume of Tonle Sap Lake.

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	4488.23	80.11
Apr	4327.36	8009.14	2866.91	3667.47	2992.61	3556.68	4288.31	3884.16	3614.56	83.53
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 15 April 2024.

4. Flash Flood in the Lower Mekong Basin

During the weekly monitoring period from 09 - 15 April, the LMB received light to moderate 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 April 9 to 15

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 9 to 15 April 2024, as shown in **Figure 9**, were moderately and severely dry over the southern part covering entire area of Cambodia, Salavan, Xekong, Attapu, Champasack, Sisaket, Ubon R, Surin Buriram, Nakhon R, Kon Tum, Gia Lai, Dak Nong and Dong Thap.

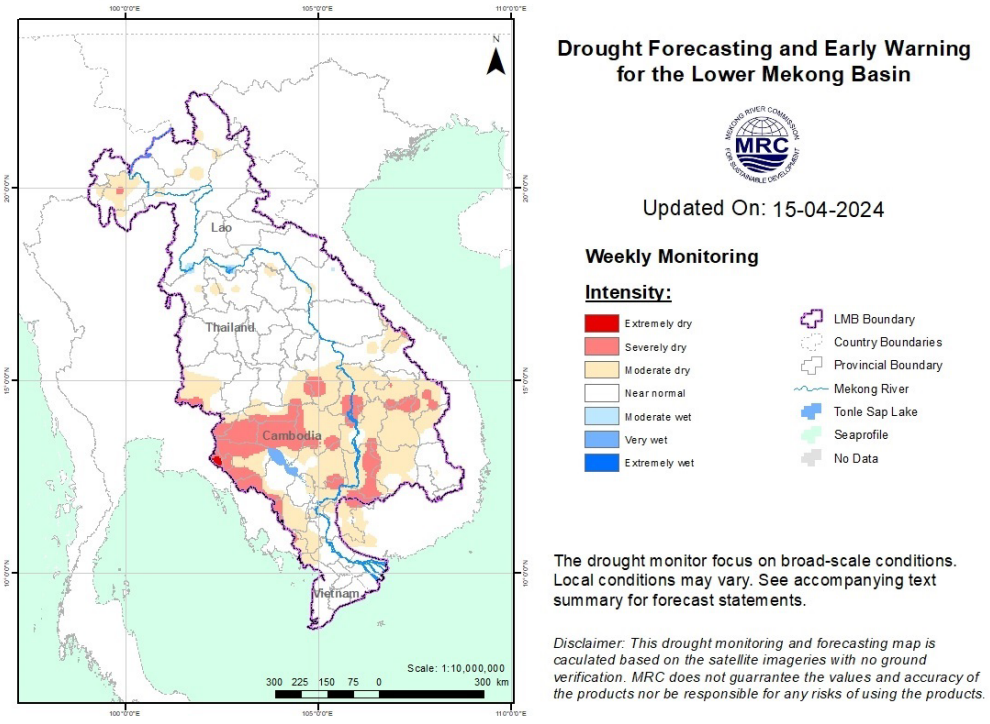


Figure 9: Weekly standardised precipitation index from Apr 9 to 15.

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

Soil moisture conditions from April 9 to 15, as displayed in **Figure 10**, were severely dry mainly in the south due to absence of rainfall. The conditions were much better than 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.

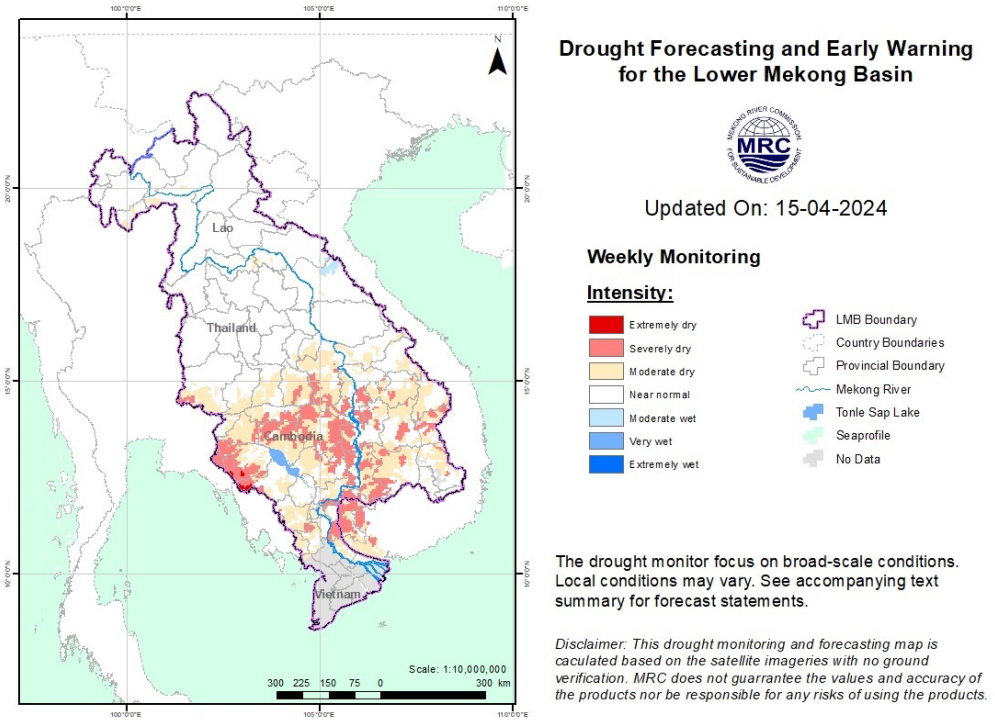


Figure 10: Weekly Index of Soil Water Fraction from April 9 to 15.

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

With the dry conditions of soil moisture, the combined drought indicator (displayed in **Figure 11** reveals that during 9-15 April 2024, the LMB was facing from moderate to severe drought mainly over the south of the region. Specifically, the severe and extreme droughts covered some areas of most provinces of Cambodia, Attapu, Champasack, Ubon Ratchathani, Si Sa Ket, Nakhon Ratchasima, Kon Tum and Gia Lai. 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		L	S		24	Lao PDR	Oudomxai					47	Thailand	Udon Thani				
2	Cambodia	Banteay Meanchey		S			25	Lao PDR	Loungprabang					48	Thailand	Sakon Nakhon				
3	Cambodia	Kampong Cham		S	S		26	Lao PDR	Xayaburi					49	Thailand	Bueng Kan				
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			29	Lao PDR	Vientiane Capital					52	Thailand	Mukdahan				
7	Cambodia	Preah Vihear		L			30	Lao PDR	Xaisomboun					53	Thailand	Roi Et				
8	Cambodia	Kampong Thom		S			31	Lao PDR	Borikhamxai					54	Thailand	Yasothon				
9	Cambodia	Kratie		S	S		32	Lao PDR	Khammouan					55	Thailand	Amnat Charoen				
10	Cambodia	Mondulkiri		S			33	Lao PDR	Savanakhet					56	Thailand	Ubon Ratchathani		S		
11	Cambodia	Ratanakiri		S			34	Lao PDR	Salavan					57	Thailand	Si Sa Ket		S		
12	Cambodia	Tbong Khmum		S			35	Lao PDR	Xekong					58	Thailand	Surin				
13	Cambodia	Prey Veng		S			36	Lao PDR	Attapu		S			59	Thailand	Buri Ram				
14	Cambodia	Kampot					37	Lao PDR	Champasack		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					41	Thailand	Loei					64	Viet Nam	Dak Lak				
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					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
	Severe		Exceptional

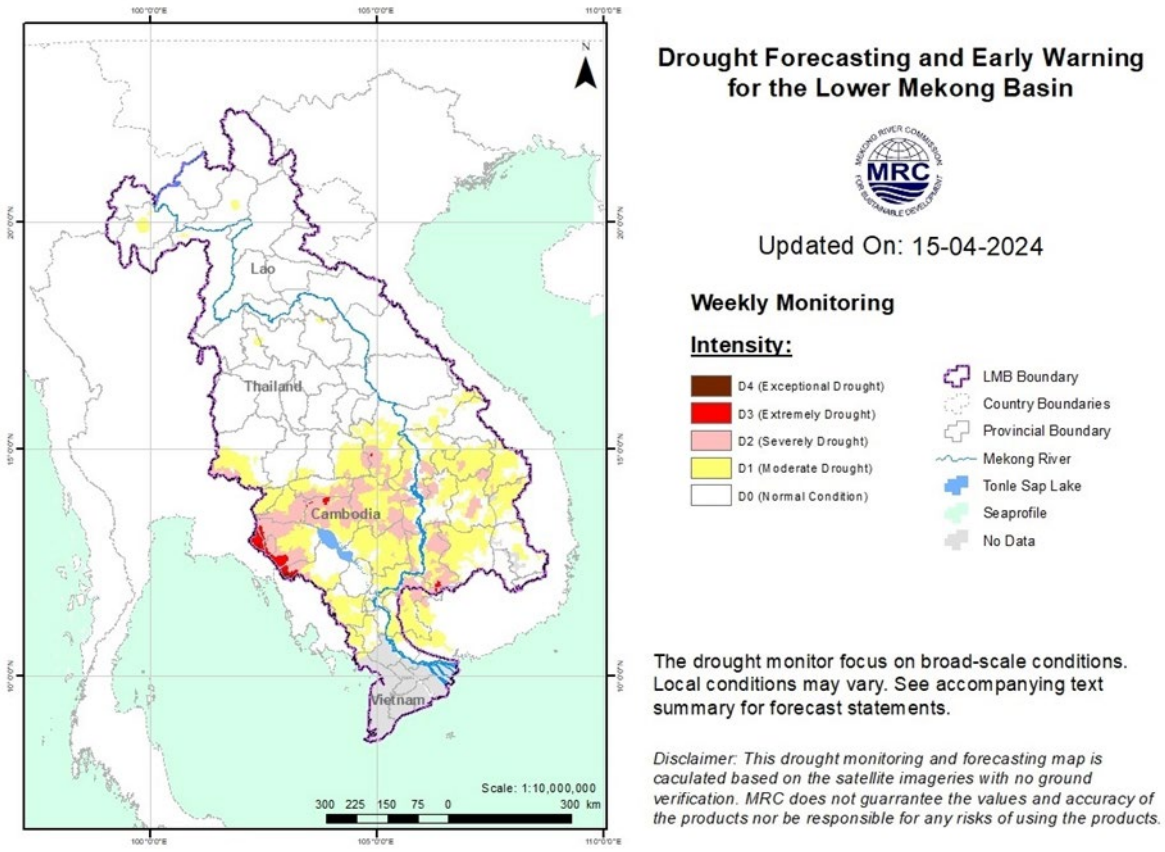


Figure 11: Weekly Combined Drought Index from April 9-15.

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 16 – 22 April 2024, the accumulated rainfall over the entire Lower Mekong Basin is distributed with light rain based on CHIRPS-GFS (**Figure 12**). Light to moderate rainfall is forecasted to be sparely distributed almost entire the basin. However, there will be no rainfall will occur at the upper parts of the basin including Chiang Saen and Luang Prabang areas and lower part (Mekong Delta).

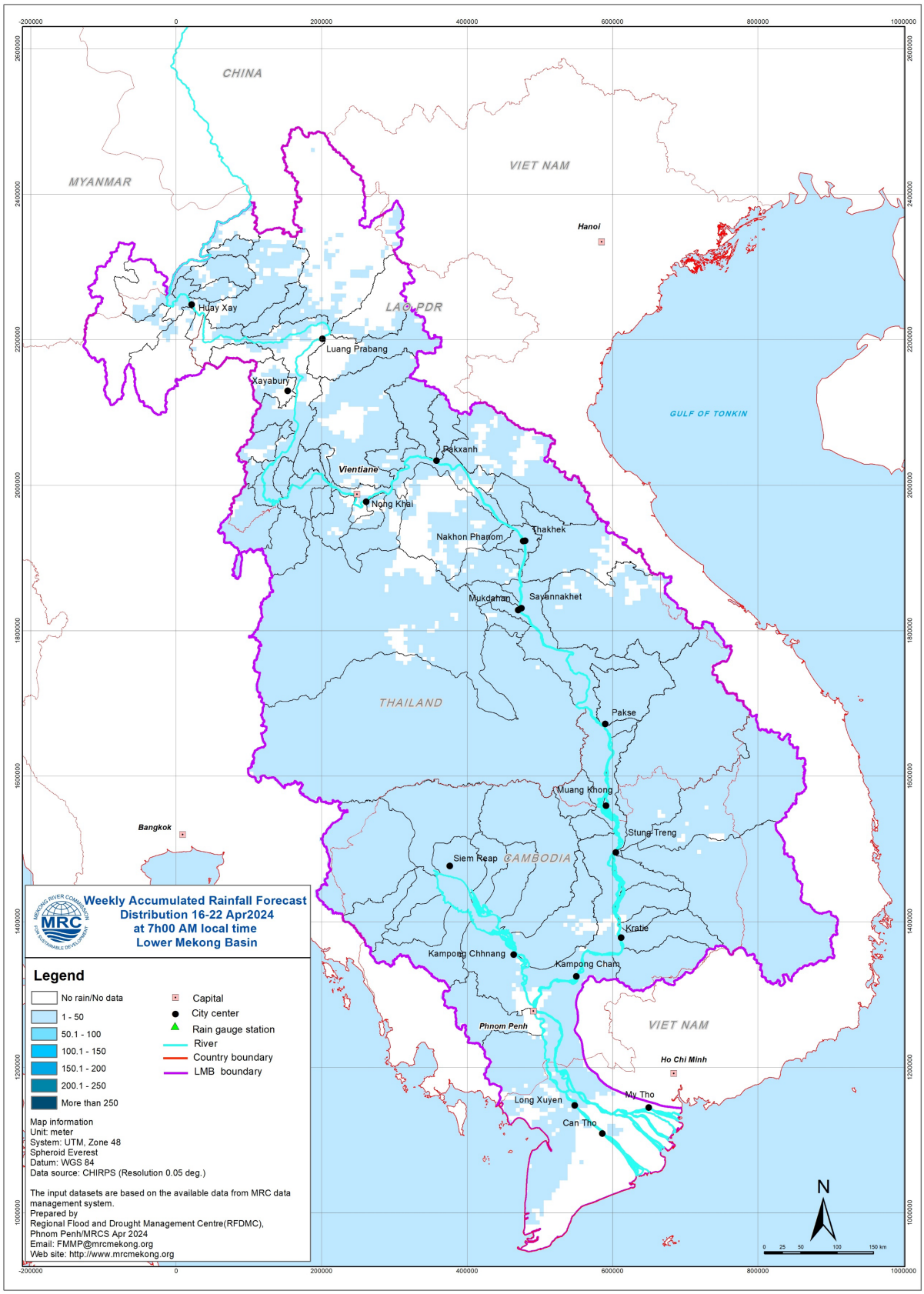


Figure 12: Accumulated rainfall forecast from CHIRP-GFS (16 – 22 April 2024)

6.2 Water level forecast

In Chiang Saen monitoring station, the water level is expected to be fluctuated over the forecasting period of 16 – 22 April 2024. However, it will slightly increase from 1.80 m to 1.92 m. The water level in Luang Prabang stations affected by backwater is likely slightly increasing from 8.70 m to 8.80 m.

Along the Mekong mainstream, the water levels at upper stretch at Chiang Khan, Vientiane and Nong Khai, will slightly rise of approximately 0.11 m, 0.01 m, and 0.05 m, respectively. However, moving down to Paksane, Nakhong Phanom, and Thakhek, water levels are predicted to be decreasing approximately 0.03 m, 0.09 m, and 0.01 m, respectively. Moreover, water levels from Mukdahan to Tan Chau are expected to rise except for Koh Khel (significantly affected by sea tidal fluctuation). Water levels at Mukdahan, Savannakhet, Khong Chiam, Pakse, Stung Treng, Kratie, Kompong Cham, Phnom Penh (Bassac), Phnom Penh Port, and Prek Kdam, are expected to slightly increase with approximately values of 0.03 m, 0.01 m, 0.11, 0.11 m, 0.15 m, 0.15 m, 0.18 m, 0.07 m, 0.01 m, and 0.03 m respectively. However, only at Koh Khel station, water level is predicted to be decreasing with approximated value of 0.59 m.

For the Tan Chau station on the Mekong River and Chau Doc station on the Bassac River, water levels will increase approximately 0.81 m and 0.96 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, Thakhek, Mukdahan, Khong chiam, Pakse, Stung Treng, Kratie, Neak Luong, Prek Kdam, Tan Chau and Chau Doc stations from 16 to 22 April 2024.

The weekly River Monitoring Bulletin and forecasting issued on 15 April 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

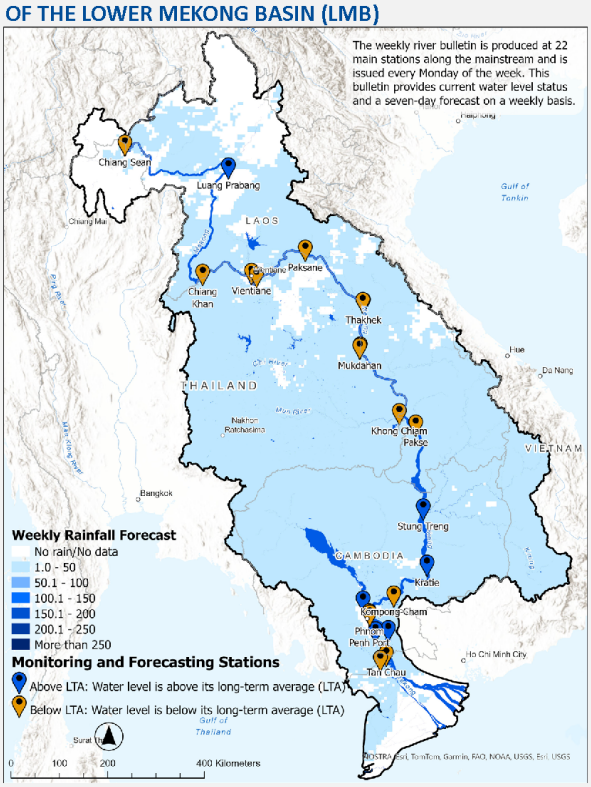
Table 2. Weekly River Monitoring Bulletin.

MEKONG RIVER MONITORING AND FORECASTING BULLETIN

Monitoring on 15 April 2024 and weekly forecasting from 16 April to 22 April 2024

Highlights: *Water levels at most of stations are below their long-term average except for Luang Prabang, Stung Treng, Kratie, Koh Khel, Neak Luong, and Prek Kdam 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)



CURRENT WATER LEVEL STATUS

Monitoring Station	Rainfall (mm)	Zero gauge amsl (m)	Water level againts zero gauge (m)	Current Status	Flow Threshold (PMFM*6A)
Jinghong	0.0	-	535.76		
Chiang Saen	0.0	357.110	1.80	Below LTA	Normal
Luang Prabang**	0.0	267.195	8.70	Above LTA	-
Chiang Khan	0.0	194.118	3.32	Below LTA	-
Vientiane	0.0	158.040	1.12	Below LTA	Normal
Nongkhai	0.0	153.648	0.75	Below LTA	-
Paksane	0.0	142.125	2.43	Below LTA	-
Nakhon Phanom	0.0	130.961	1.36	Below LTA	-
Thakhek	0.0	129.629	2.72	Below LTA	-
Mukdahan	0.0	124.219	1.83	Below LTA	-
Savannakhet	0.0	125.410	0.86	Below LTA	-
Khong Chiam	0.0	89.030	2.22	Below LTA	Normal
Pakse	0.0	86.490	1.16	Below LTA	Normal
Stung Treng	0.0	36.790	2.58	Above LTA	Normal
Kratie	0.0	-1.080	7.04	Above LTA	Normal
Kompong Cham	0.0	-0.930	2.68	Below LTA	-
Phnom Penh (Bassac)	0.0	-1.020	1.98	Below LTA	-
Phnom Penh Port	nr	0.000	0.91	Below LTA	-
Koh Khel	0.0	-1.000	2.29	Above LTA	-
Neak Luong	0.0	-0.330	1.39	Above LTA	-
Prek Kdam	0.0	0.080	1.17	Above LTA	-
Tan Chau	0.0	0.000	-0.31	Below LTA	-
Chau Doc	0.0	0.000	-0.11	Below 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
	16-Apr	17-Apr	18-Apr	19-Apr	20-Apr	21-Apr	22-Apr		
Jinghong	-	-	-	-	-	-	-	-	-
Chiang Saen	1.84	1.88	1.93	1.95	1.97	1.94	1.92	Below LTA	Increasing
Luang Prabang	8.68	8.65	8.62	8.65	8.67	8.79	8.80	Above LTA	Increasing
Chiang Khan	3.35	3.37	3.40	3.43	3.45	3.42	3.43	Below LTA	Increasing
Vientiane	1.10	1.07	1.03	1.05	1.08	1.11	1.13	Below LTA	Increasing
Nongkhai	0.76	0.78	0.80	0.82	0.80	0.78	0.80	Below LTA	Increasing
Paksane	2.40	2.38	2.35	2.33	2.35	2.37	2.40	Below LTA	Decreasing
Nakhon Phanom	1.32	1.30	1.27	1.24	1.21	1.25	1.27	Below LTA	Decreasing
Thakhek	2.70	2.67	2.65	2.61	2.64	2.68	2.71	Above LTA	Decreasing
Mukdahan	1.82	1.87	1.85	1.83	1.85	1.86	1.86	Above LTA	Increasing
Savannakhet	0.85	0.83	0.80	0.77	0.80	0.83	0.87	Below LTA	Increasing
Khong Chiam	2.25	2.28	2.31	2.30	2.27	2.30	2.33	Above LTA	Increasing
Pakse	1.19	1.22	1.25	1.28	1.25	1.23	1.27	Above LTA	Increasing
Stung Treng	2.60	2.63	2.65	2.68	2.71	2.72	2.73	Above LTA	Increasing
Kratie	7.06	7.08	7.12	7.15	7.18	7.18	7.19	Above LTA	Increasing
Kompong Cham	2.64	2.68	2.75	2.77	2.79	2.83	2.86	Below LTA	Increasing
Phnom Penh (Bassac)	1.93	1.91	1.93	1.96	1.99	2.02	2.05	Below LTA	Increasing
Phnom Penh Port	0.86	0.84	0.86	0.89	0.92	0.95	0.98	Below LTA	Increasing
Koh Khel	2.30	2.27	2.16	2.02	1.82	1.72	1.70	Below LTA	Decreasing
Neak Luong	1.36	1.36	1.34	1.34	1.35	1.38	1.40	Above LTA	Increasing
Prek Kdam	1.14	1.11	1.12	1.15	1.18	1.20	1.20	Above LTA	Increasing
Tan Chau	-0.27	-0.23	-0.18	-0.15	-0.14	0.20	0.50	Above LTA	Increasing
Chau Doc	-0.08	-0.03	0.14	0.23	0.36	0.59	0.85	Above LTA	Increasing

NOTES

- Light to moderate accumulated rainfall is forecasted to be distributed for entire Lower Mekong Basin (LMB). However, it will not be occurring remarkably in the Lower part (Mekong Delta) and upper part (Chiang Saen and Luang Prabang areas).
- Water levels are forecasted to be slightly increasing at stations from upper part from Chiang Saen to Nong Khai station and decreasing from Paksane to Thakhek station. Moving down, water level will be slightly rising for all stations from Mukdahan to Chau Doc station from 16 to 22 April 2024.
- Water levels at most of the stations are expected to be below their long-term averages (LTAs) except for Luang Prabang, Thakhek, Mudahan, Khong Chiam, Pakse, Stung Treng, Kratie, Neak Luong, Prek kdam, Tan Chau and Chau Doc stations from 16 to 22 April 2024.

MRC Secretariat, Vientiane, Lao PDR | E: mrcs@mrcmekong.org | T: +856 21 263 263
MRC Regional Flood and Drought Management Centre, Phnom Penh, Cambodia |
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 April, May, and June 2024 over the LMB area.

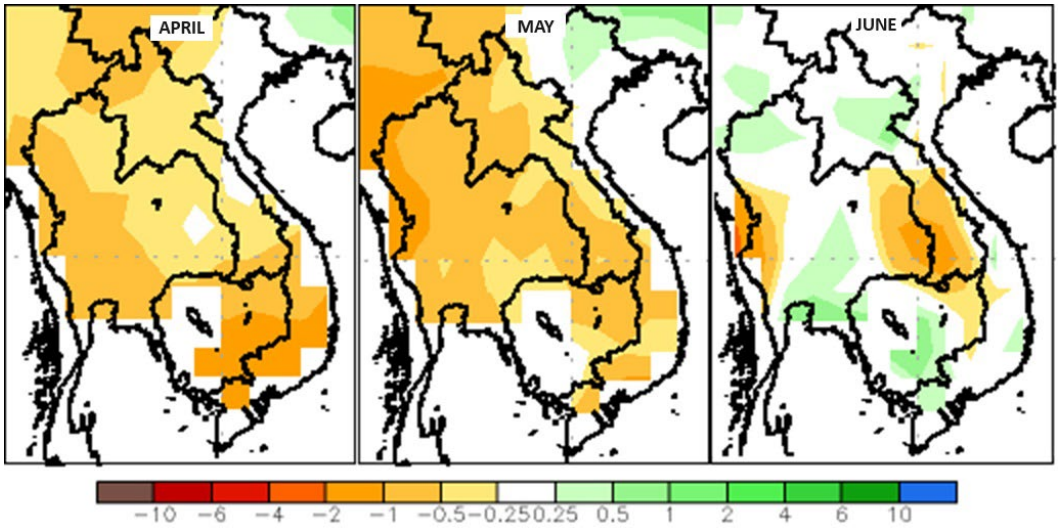


Figure 13. Monthly forecast of rainfall from NMME for April, May and June 2024.

Figure 13 indicates that much below average rainfall is predicted for the whole LMB area during the upcoming April and May. While June is forecasted to be relatively wet over the northern and southern parts. Moderate and severe meteorological drought is likely taking place in the eastern region covering mainly some area of Thailand and southern Lao PDR.

7 Summary and Possible Implications

7.1.1 Rainfall and its forecast

In the period of 09 – 15 April 2024, there has been light to moderate rainfall in some areas in the Northern part of Lao PDR, Northwestern part of Thailand, and the 3S area; the remaining areas in the Lower Mekong Basin have not received any rainfall.

From 16 – 22 April 2024, Light rainfall is forecasted to be sparely distributed in some areas in the Northeastern part of Thailand and the Northern part of Laos. The remaining areas in the Lower Mekong Basin have not received any rainfall

7.2 Water level and its forecast

At 22 key monitoring stations along the Mekong mainstream from 09 – 15 April 2024, water levels are below the long-term averages (LTAs) except for water level at Luang Prabang, Stung Treng, Kratie, Neak Luong, Koh Khel, Neak Luong and Prek Kdam monitoring stations. However, the 6 monitoring stations remain in normal condition with respect to the flow threshold (PMFM Thresholds). 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 16 – 22 April 2024, Water levels are forecasted to be increasing at stations from upper part at Chiang Saen to Nong Khai and decreasing from Paksane to Thakhek stations. Moving down to lower part from Mukdahan to Prek Kdam, water level will be slightly rising except for Koh Khel station. At Tan Chau and Chau Doc stations, the water levels are predicted to be also increasing, resulting from the influence of sea tidal patterns. Water levels at most of the stations are expected to be below their long-term averages (LTAs) except for Luang Prabang, Thakhek, Mukdahan, Khong Chiam, Pakse, Stung Treng, Kratie, Neak Luong, Prek Kdam, Tan Chau and Chau Doc stations.

7.3 Flash flood and its trends

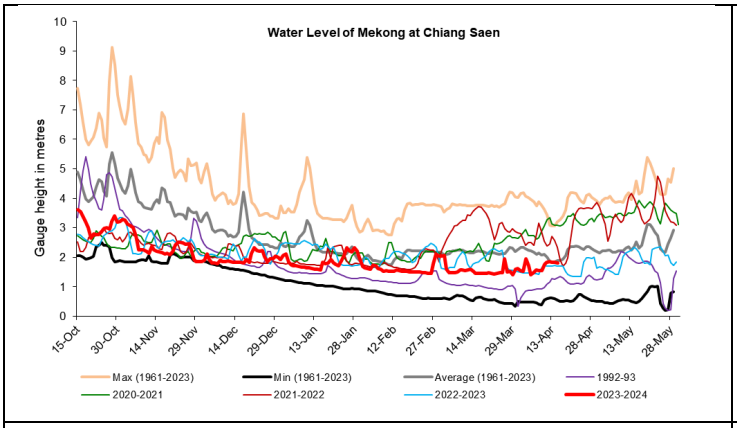
With the predicted of rainfall for the coming week as mentioned earlier in section 6.1, major flash floods are not likely to happen in the LMB.

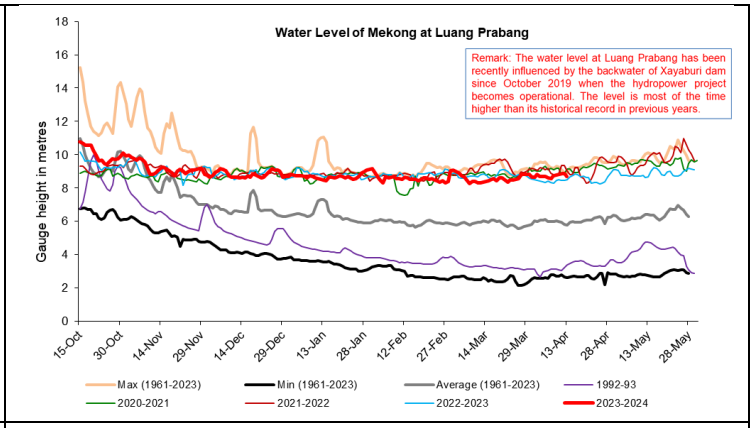
7.4 Drought condition and its forecast

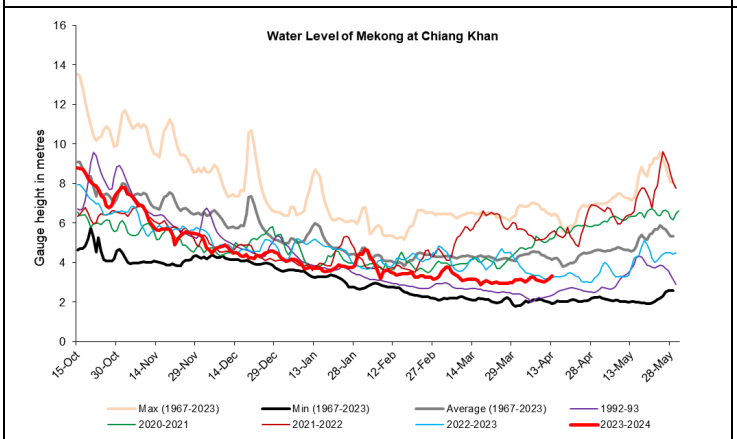
During 9-15 April 2024, the LMB was facing from moderate to severe drought mainly in the southern part. Specifically, the severe and extreme droughts covered some areas of most provinces of Cambodia, Attapu, Champasack, Ubon Ratchathani, Si Sa Ket, Nakhon Ratchasima, Kon Tum and Gia Lai.

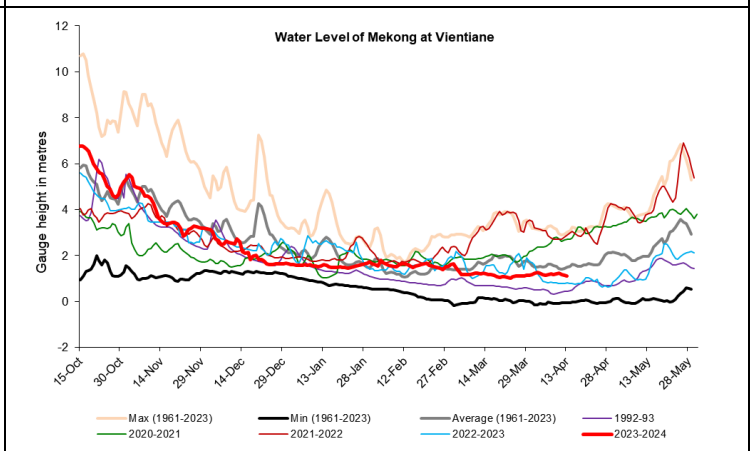
The next three-month forecast of rainfall indicates that much below average rainfall is predicted for the whole LMB area during the upcoming April and May. While June is forecasted to be relatively wet over the northern and southern parts. Moderate and severe meteorological drought is likely taking place in the eastern region covering mainly some area of Thailand and southern Lao PDR.

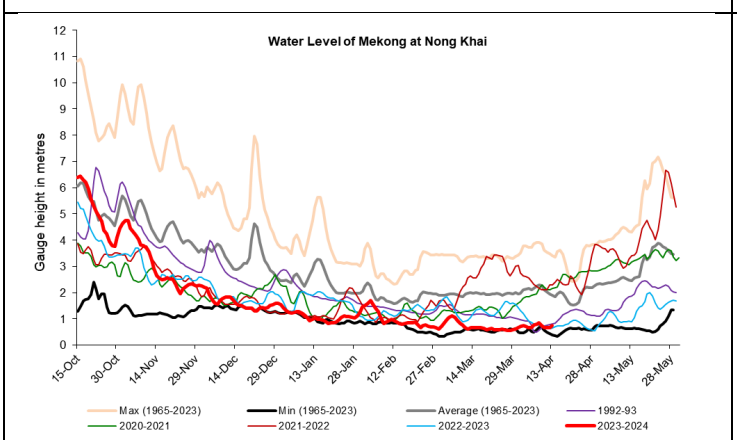
Annex A: Weekly water level monitoring at the 22 key stations

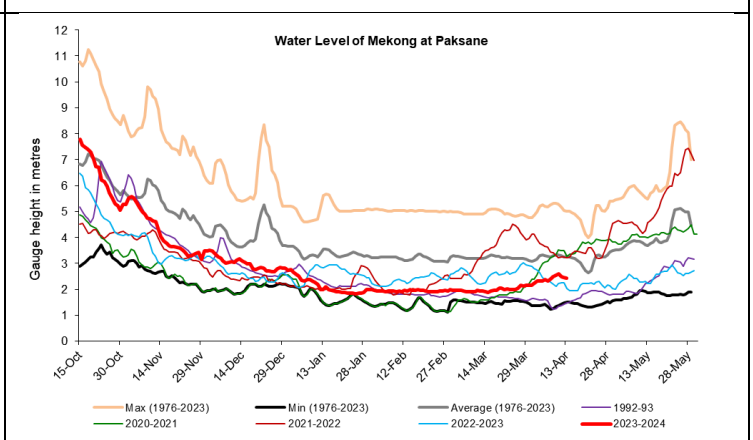


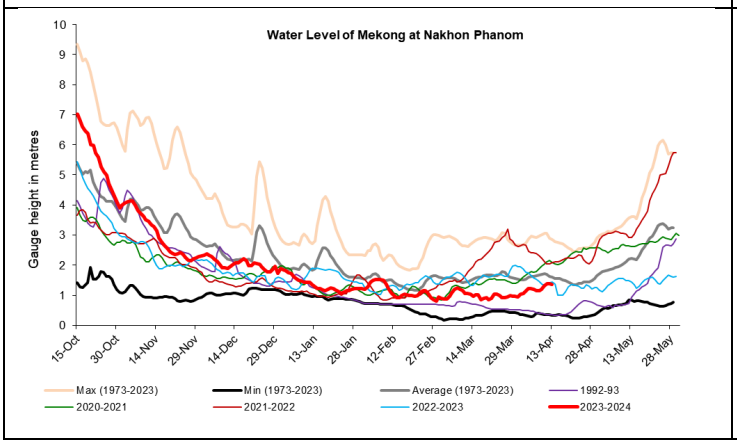


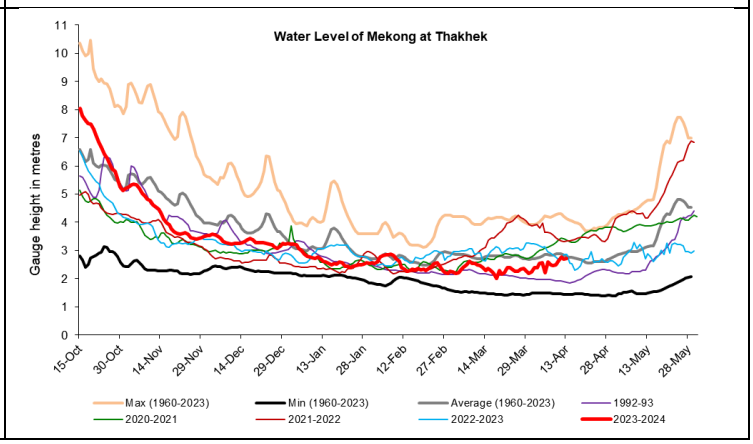


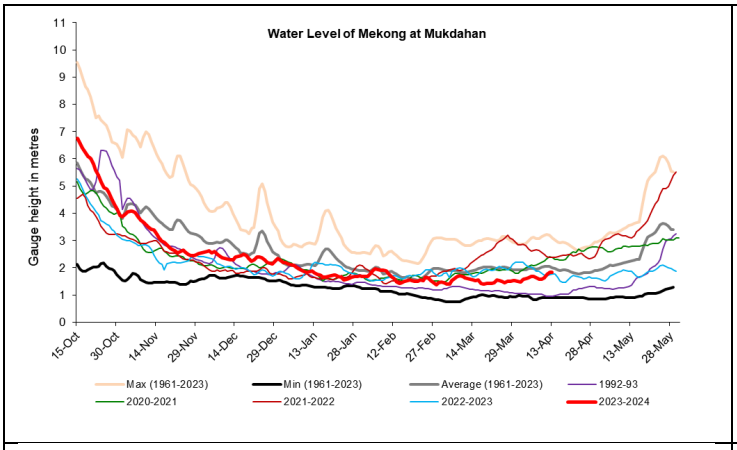


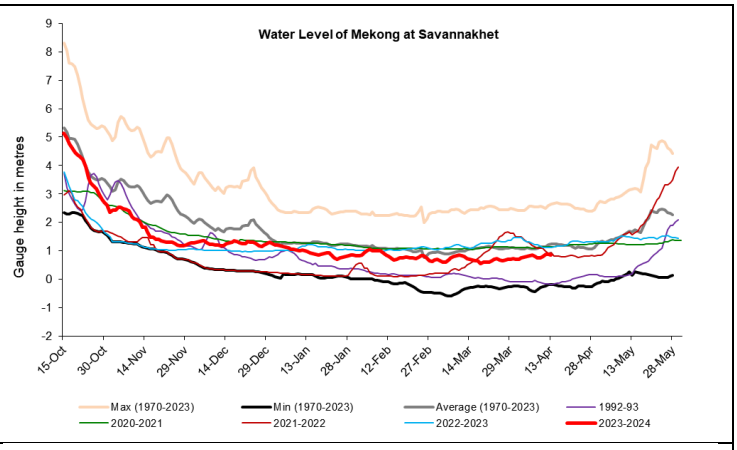


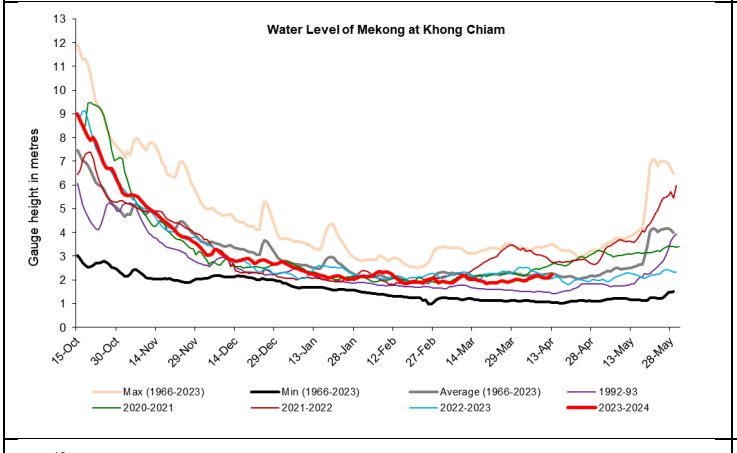


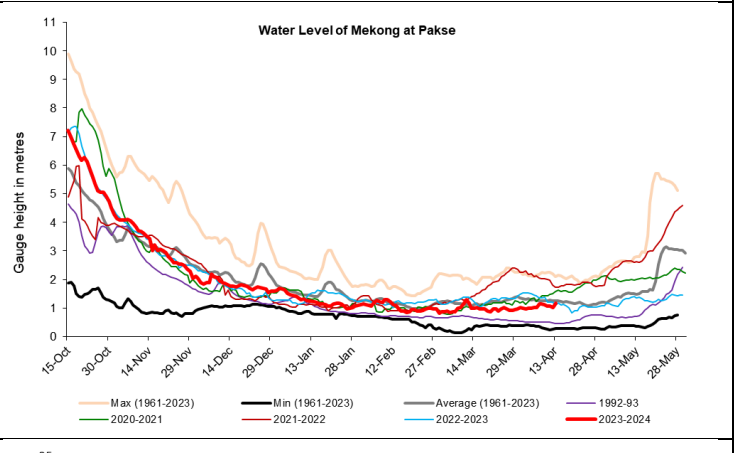


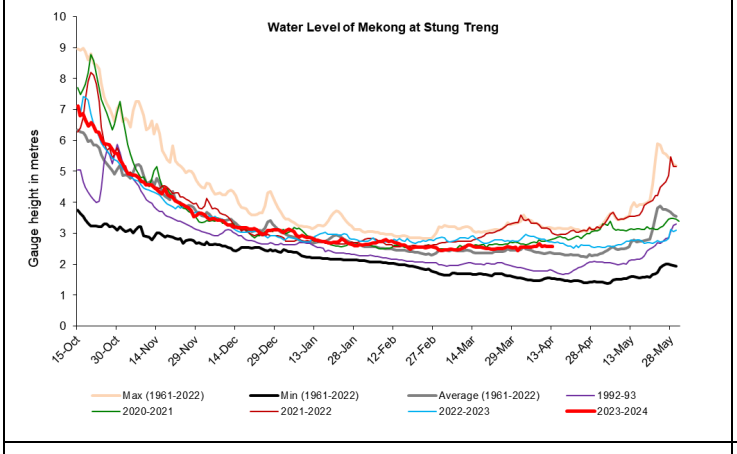



Water Level of Mekong at Mukdahan
Gauge height in metres
Max (1961-2023)
Min (1961-2023)
Average (1961-2023)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024


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
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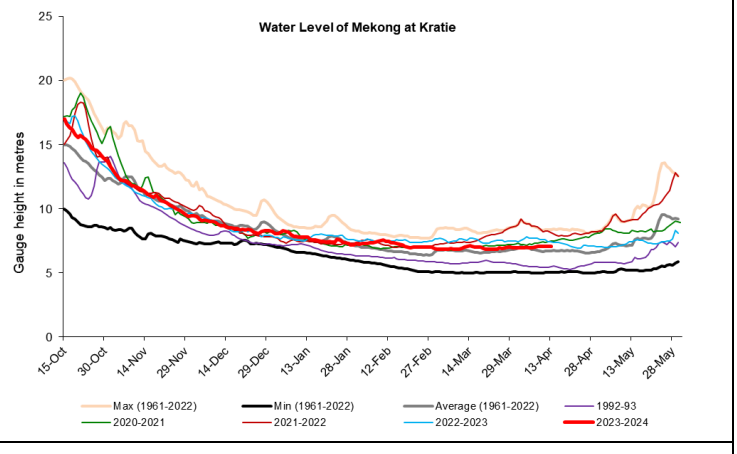
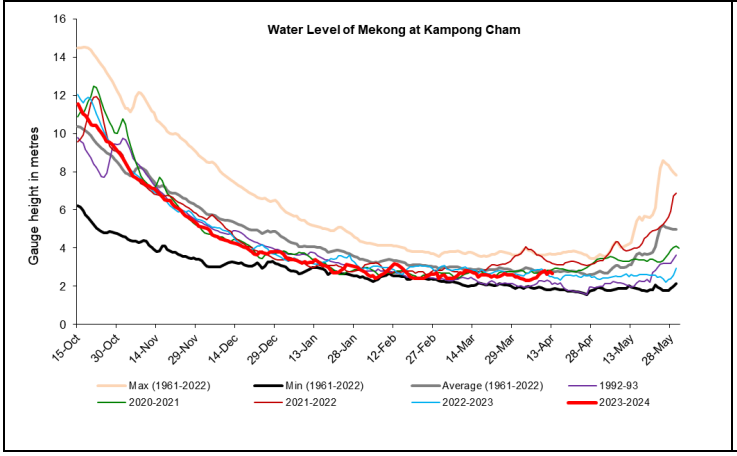
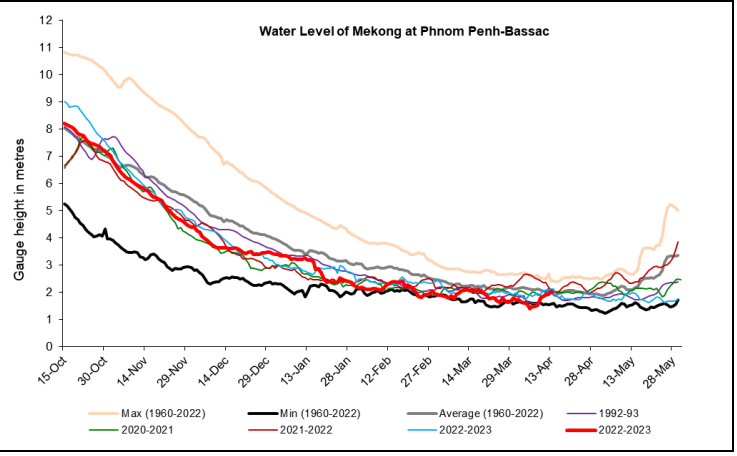
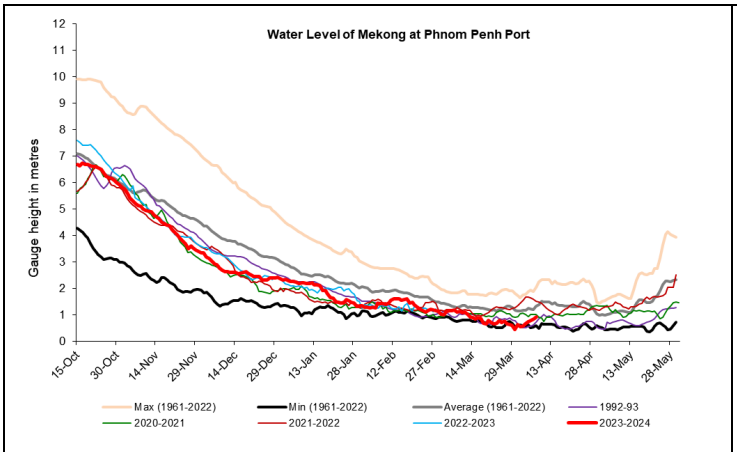
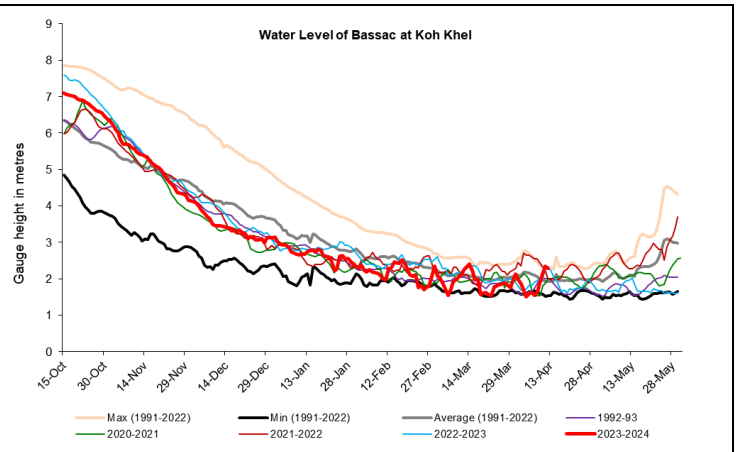
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

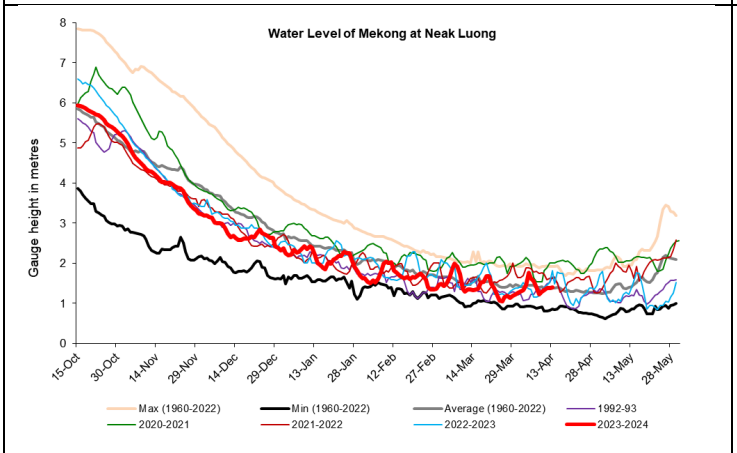

Water Level of Mekong at Kratie
Gauge height in metres
Max (1961-2022)
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

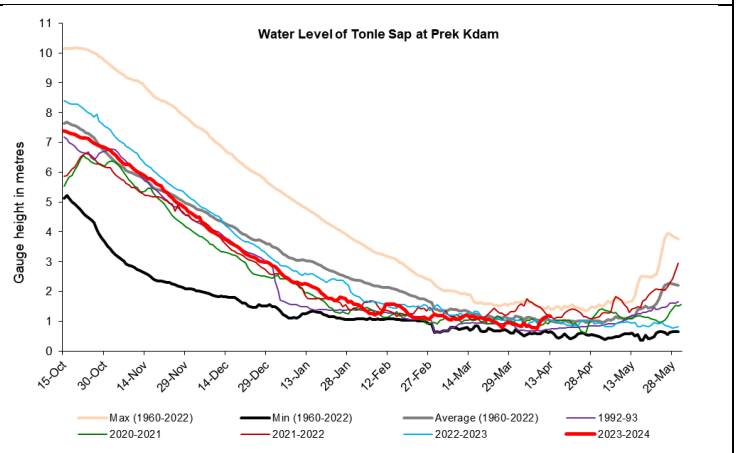

Water Level of Mekong at Kampong Cham
Gauge height in metres
Max (1961-2022)
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024

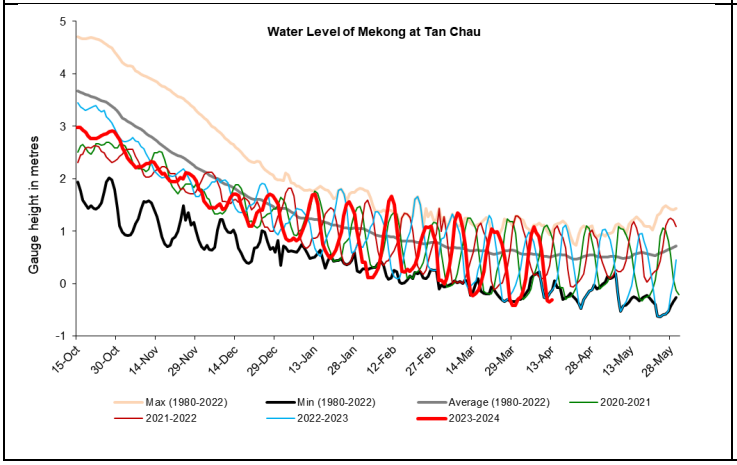

Water Level of Mekong at Phnom Penh-Bassac
Gauge height in metres
Max (1960-2022)
Min (1960-2022)
Average (1960-2022)
1992-93
2020-2021
2021-2022
2022-2023

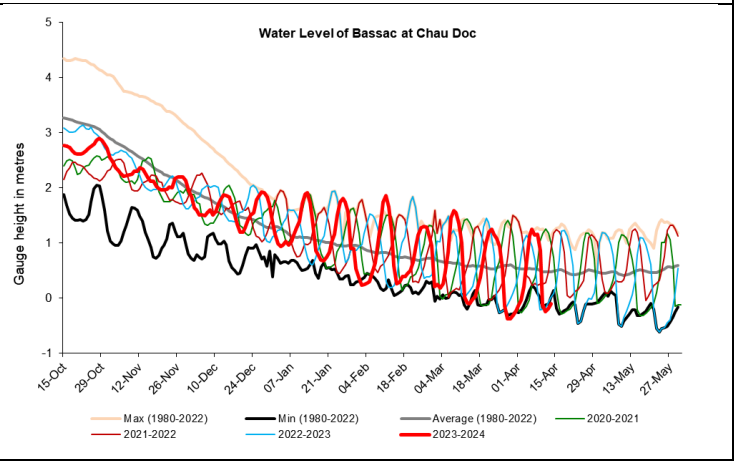

Water Level of Mekong at Phnom Penh Port
Gauge height in metres
Max (1961-2022)
Min (1961-2022)
Average (1961-2022)
1992-93
2020-2021
2021-2022
2022-2023
2023-2024


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
09-04-2024	535.78	1.54	8.56	3.12	1.19	0.80	2.39	1.14	2.50	1.64	0.80	2.17	1.14	2.58	7.02	2.46	1.47	0.54	1.62	1.40	0.78	0.98	1.14
10-04-2024	535.76	1.76	8.72	3.10	1.17	0.84	2.49	1.15	2.47	1.58	0.75	2.16	1.14	2.67	7.04	2.62	1.51	0.58	1.54	1.22	0.75	0.90	1.15
11-04-2024	535.76	1.82	8.78	3.05	1.19	0.75	2.54	1.19	2.50	1.58	0.75	2.12	1.13	2.58	7.04	2.74	1.78	0.66	1.65	1.30	0.98	0.62	0.86
12-04-2024	535.82	1.84	8.80	3.02	1.22	0.67	2.60	1.32	2.63	1.63	0.79	2.08	1.08	2.60	7.04	2.80	1.84	0.73	1.87	1.32	1.09	0.10	-0.12
13-04-2024	535.73	1.82	8.86	3.10	1.17	0.65	2.49	1.38	2.76	1.76	0.87	2.08	1.06	2.58	7.07	2.64	1.87	0.80	2.13	1.37	1.13	-0.33	-0.25
14-04-2024	535.72	1.82	8.84	3.20	1.14	0.67	2.46	1.38	2.70	1.83	0.87	2.15	1.02	2.58	7.06	2.78	1.93	0.85	2.35	1.37	1.18	-0.35	-0.20
15-04-2024	535.76	1.80	8.70	3.32	1.12	0.75	2.43	1.36	2.72	1.83	0.86	2.22	1.16	2.58	7.04	2.68	1.98	0.91	2.29	1.39	1.17	-0.31	-0.11

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
09-04-2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
10-04-2024	0	0.5	15	0.5	28.2	55.2	11.8	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
11-04-2024	0	2.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
12-04-2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
13-04-2024	0	0.6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
14-04-2024	0	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
15-04-2024	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0
Sum	0.0	4.1	15.0	0.5	28.2	55.2	11.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0

Mekong River Commission Secretariat

P. O. Box 6101, 184 Fa Ngoum Road, Unit 18 Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR
Tel: +856 21 263 263. Fax: +856 21 263 264 ww.mrcmekong.org