



**Mekong River Commission**

# **Weekly Dry Season Situation Report in the Lower Mekong River Basin 25 April-01 May 2023**

Prepared by  
The Regional Flood and Drought Management Centre  
02 May 2023

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## Key Messages

Key messages for this weekly report are presented below.

### Rainfall and its forecast

- During April 25-May 01, rainfall was observed from Chiang Saen to Khong Chiam stations and from Kompong Cham to Neak Luong station along the Mekong River, while no rainfall at other stations.
- There will be warm temperatures and below average rainfall for the next 7 days over the Mekong region from 02 to 14 May 2023.

### Water level and its forecast

- The MRC's observed water level (WL) at Jinghong showed a decreased level between 536.13 m and 535.23 during 25 Apr-01 May 2023. The outflow varied from 1,410.00 m<sup>3</sup>/s to 810.00 m<sup>3</sup>/s between 25 Apr and 01 May 2023.
- Regardless the decreased outflow at Jinghong upstream, water level of monitoring station at Chiang Saen in Thailand went up about 0.29 m during the reporting period and stayed 0.62 m below its LTA, considered low level. WLs at the monitoring stations at Chiang Khan in Thailand increased about 0.24 m, staying 1.28 m below its LTA value, while at Vientiane in Lao PDR it decreased about 0.11 m and stayed about 1.27 m below its LTA value. The current WL at Nong Khai in Thailand was about 1.63 m lower than its LTA value, while at Paksane in Lao PDR it was about 1.42 m lower than its LTA level, which considered low water level. WLs from Thailand's Nakhon Phanom to Pakse fluctuated between 0.02 m and 0.05 m. WLs at these stations are slightly staying lower than their LTA value, except water level at Savannakhet which is about 0.24 m higher than its LTA value. Water levels from the stretches of the river from Stung Treng to Kratie in Cambodia, moreover, were remaining higher than their LTA value due to contributed inflows and some rainfall from the upstream part (at Pakse and 3S area in Viet Nam). WL at Kompong Cham is about 0.36 m lower than its LTA value.
- The water volume of the Tonle Sap Lake was slightly lower than its LTA during the same period from 25 Apr to 01 May 2023, considered normal.
- The current water levels for most of the stations are below their LTA value, except at Luang Prabang, Savannakhet, Stung Treng, Kratie and Neak Luong. WLs at the 2 tidal stations at Tan Chau and Chau Doc fluctuated between their LTA and minimum values, during this monitoring period.
- Over the next seven days, the water levels across most monitoring stations are expected to go up and down and will remain lower than their long-term average value in most stations.

### Drought condition and its forecast

- During Apr 24-30, the LMB was much better than the previous weeks. However, moderately dry condition remained in some areas in the middle part covering Udon

Thani, Khammuane, Chaiyaphum, Khon Kaen, Nakhon Ratchasima, Burirum, Maha Sarakham, Surin, Sakeo, Ordar Meanchey, Banteay Meanchey, Siem Reap, Pailin, and Battambang.

- In **May** the middle and lower parts of the LMB will likely receive below average rainfall with moderate drought condition. **June** is forecasted to be normal where the region receives average rainfall, in general. And lastly, the LMB is mostly like really wet in **July** forecast except slightly below average rainfall in southern Cambodia in the lower part.



# 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 **25 April-01 May 2023**. 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. 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
- 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](http://ffw.mrcmekong.org/bulletin_wet.php).

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

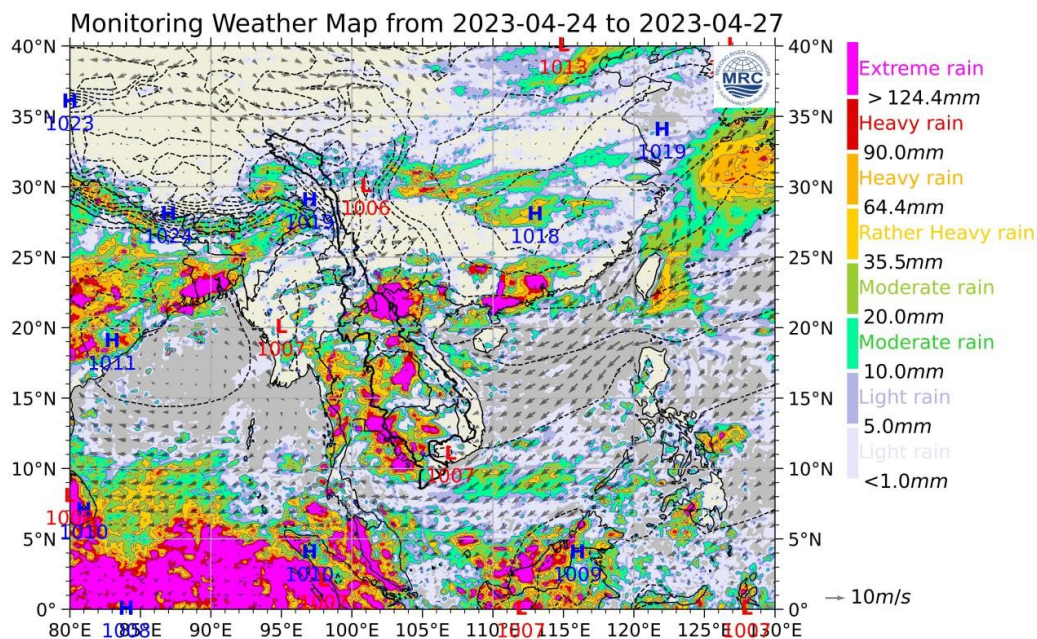
Flash flood information is accessible at: <http://ffw.mrcmekong.org/ffg.php>

## 2 General Weather Patterns

The weather outlook bulletins for three months (May, June and July) and the weather maps issued by the Thai Meteorological Department (TMD) were used to verify weather conditions in the LMB.

Since the end of April 2022, the warm and hot weather has appeared because the influentially high-pressure air mass areas prevail over the LMB, with gradually decreasing water levels in both mainstream and tributaries. The data from the TMD predict that low pressure of air-mass will continue with warm weather condition in the upper part of Thailand, Lao PDR and Viet Nam. As a result, the temperature in the upper part of Thailand will rise sharply as commonly warm and hot weather, specifically at the upper portion of the northern and north-eastern parts together with very hot weather in mountainous areas (within the Mekong region).

[Figure 1](#) presents the weather map during 24-27 April 2023, indicating that no low-pressure cell was active in the South-Sea of Viet Nam, having no impact in the LMB. Generally, the Mekong region was influenced by easterly wind from western north Pacific Ocean with two weak low-pressure cells over Myanmar and Delta area of LMB, and the divergence area (high-pressure cell) in the Bay of Bengal. Under this weather condition, there was moderate to extreme rainfall occurring from the northern to central Lao PDR and northern Viet Nam, most parts of Thailand, as well as from the central to western Cambodia.



**Figure 1: Summary of weather conditions over the LMB.**

According to the ASEAN Specialised Meteorological Centre (ASMC), a highest probability of drier condition is predicted over the lower part of the Mekong region covering Lao PDR and Thailand from 01 to 14 May 2023. **Figure 2** shows the outlook of weather condition from 01 to 14 May 2023 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

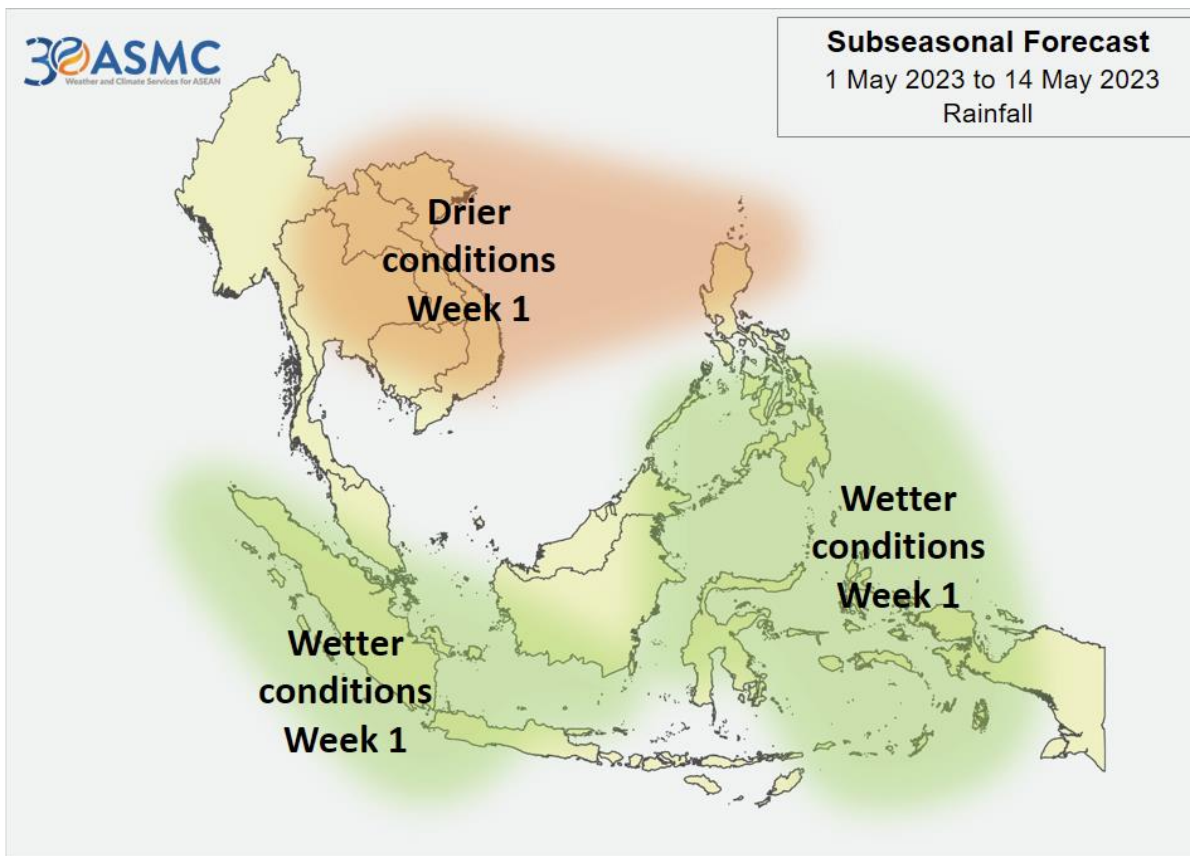


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

**Tropical depressions (TD), tropical storms (TS) and typhoons (TY)**

There was a tracking storm covering the LMB during 25 April-01 May 2023, showing no low-pressure line over the LMB. No movement of storm was detected over Viet Nam, as displayed in [Figure 3](#).

**Active system as of 01 May 2023, 1:58 GMT**

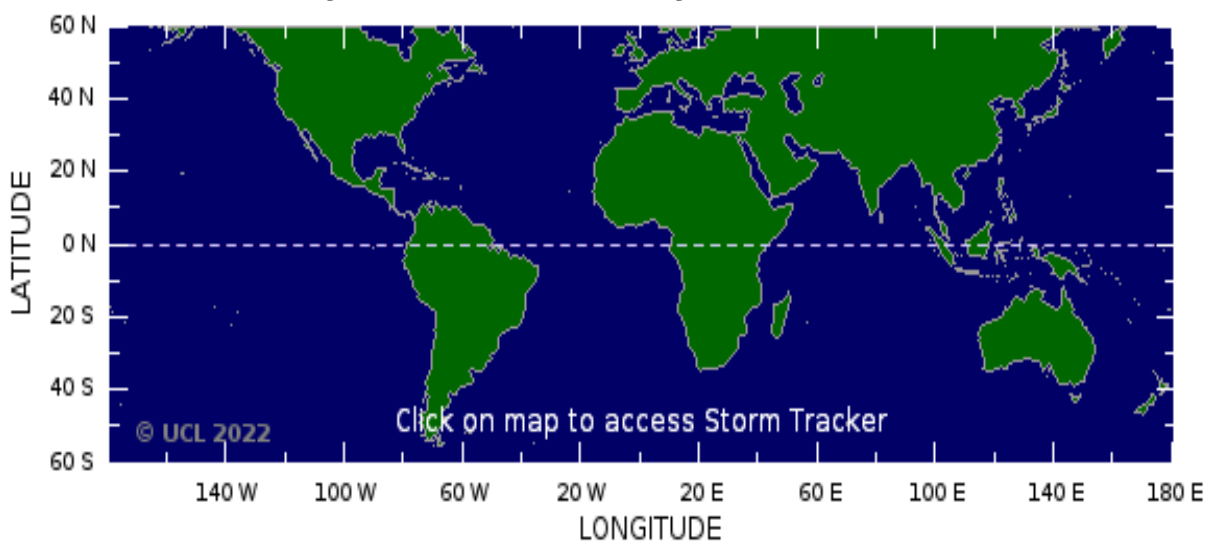
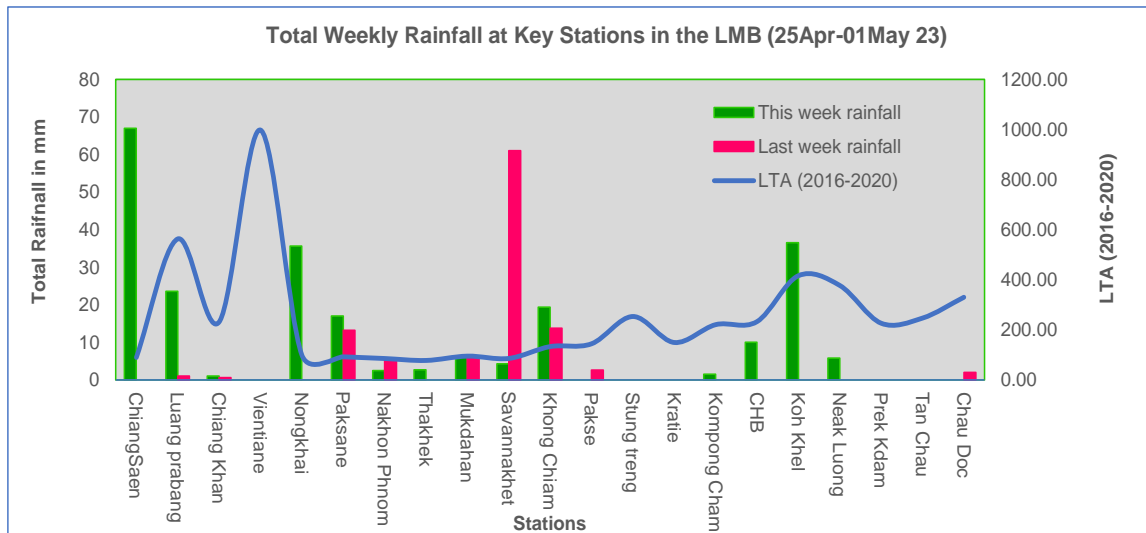


Figure 3: No tropical storm risk observed on 01 May 2023.

## Rainfall patterns over the LMB

This week from 25 April to 01 May 2023, rainfall was observed from Chiang Saen to Paksane, from Nakhon Phanom to Khong Chiam and from Kompong Cham to Neak Luong along the Mekong River of the Lower Mekong Basin (LMB). The highest rainfall was about 67.00 mm at Chiang Saen in Thailand. The total rainfall of this week report in the Mekong region compared with last week and its long-term-average (LTA) is showed in [Figure 4](#).



**Figure 4: Weekly total rainfall at key stations in the LMB.**

To verify area rainfall distribution, [Figure 5](#) shows a map of the weekly accumulated rainfall based on the observed data provided by the MRC Member Countries – Cambodia, Lao PDR, Thailand, and Viet Nam – from 25 Apr to 01 May 2023.

Absence of rain this week is an indication of the end of the rainy season in the LMB.

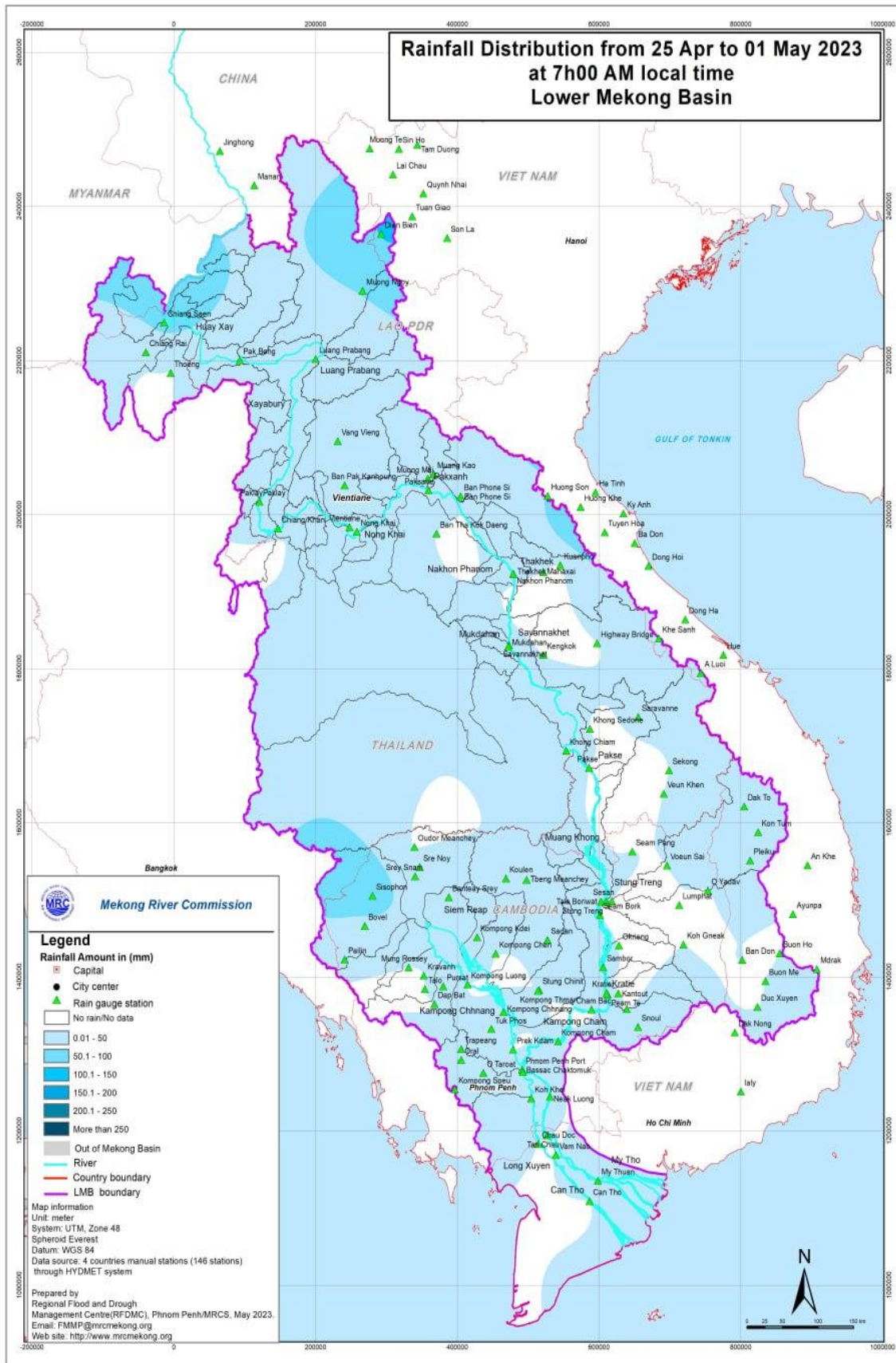


Figure 5: Weekly rainfall distribution over the LMB.

### 3 Water Levels in the Lower Mekong River

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 6](#). The hydrograph for each key station is available from the MRC’s River Flood Forecasting: <http://ffw.mrcmekong.org/overview.php>. The weekly water levels and rainfall at each key station are summarised in **Annex A**.

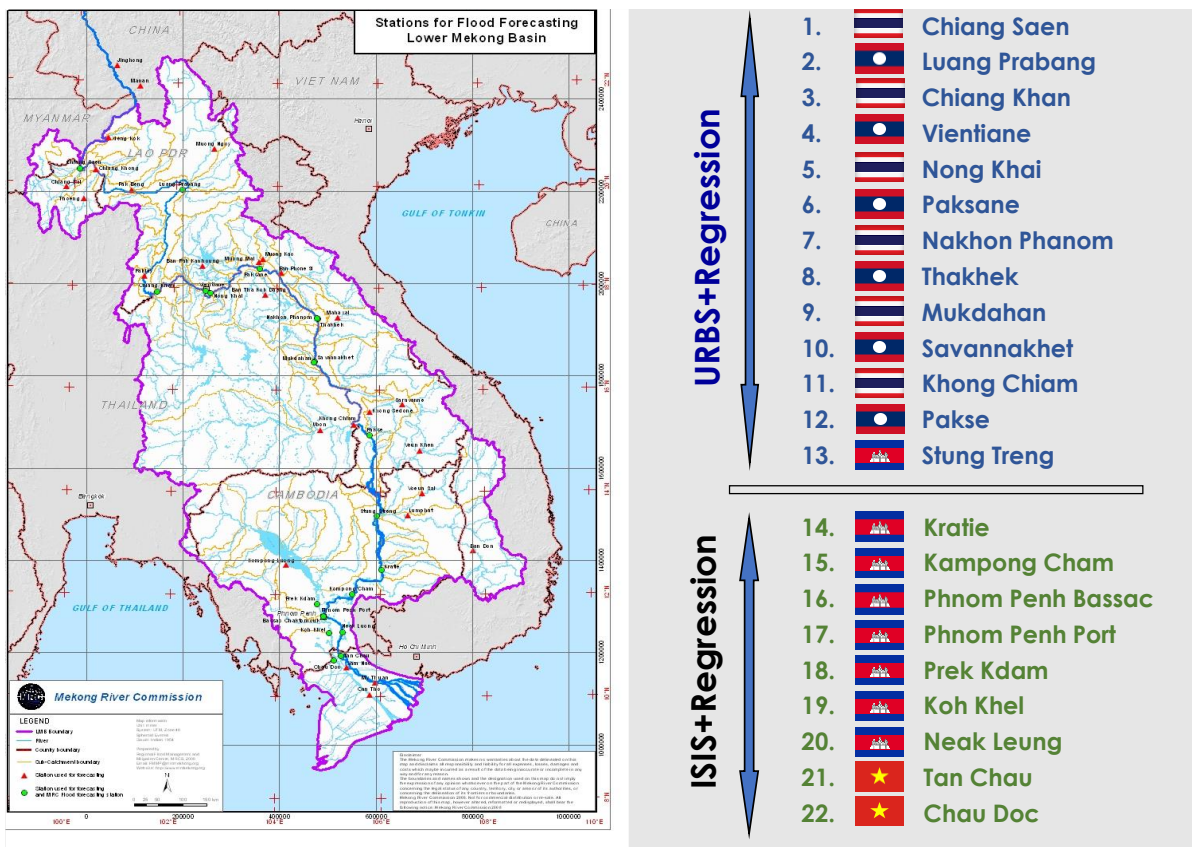


Figure 6: Key stations and model application for River Monitoring and Flood Forecasting.

The MRC’s observed water level (WL) at Jinghong showed decreased values between 536.13 m and 535.23 m from 25 Apr to 01 May 2023 (recorded on 7:00 am). The outflow varied from 1,4100.00 m<sup>3</sup>/s to 821.00 m<sup>3</sup>/s between 25 Apr and 01 May 2023.

Figure 7 below presents water level that decreased at the Jinghong hydrological station<sup>1</sup>, indicating the trend of fluctuating water level up to 01 May 2023.

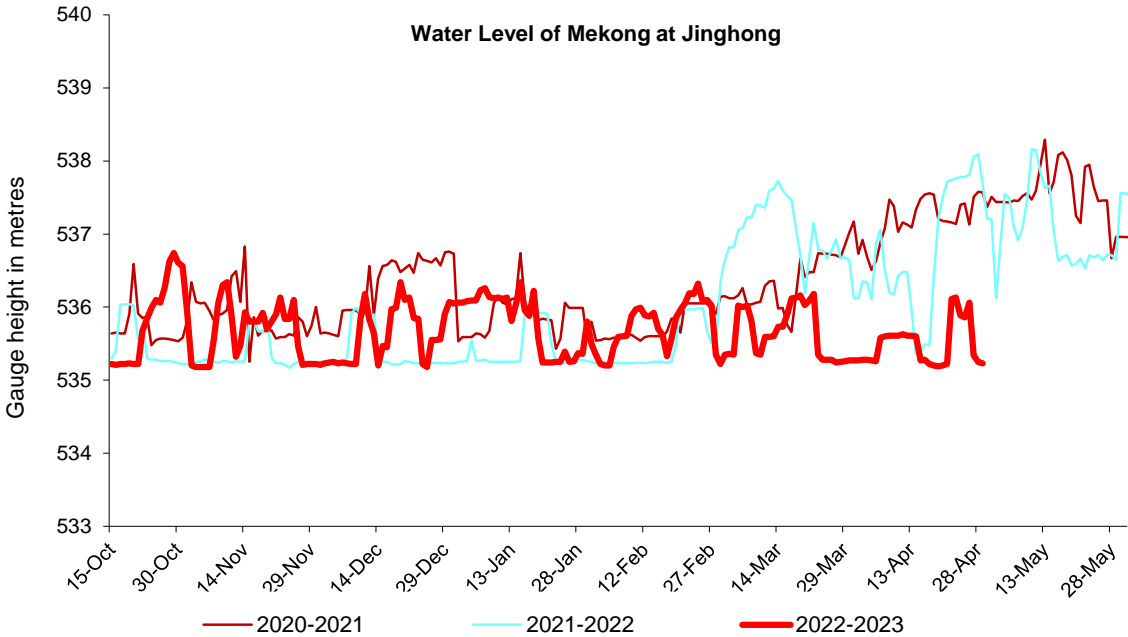


Figure 7. Water level at the Jinghong hydrological station during 25 April-01 May 2023.

Regardless the decreased outflow from Jinghong upstream, water level of monitoring station at Chiang Saen in Thailand increased 0.29 m from 25 Apr to 012 May 2023 and stayed about 0.62 m lower than its long-term average (LTA), which considered low level. WLs at the monitoring station at Chiang Khan in Thailand increased about 0.24 m and stayed 1.28 m lower than its LTA, while at Vientiane in Lao PDR it decreased about 0.11 m and stayed about 1.27 m below its LTA value, considered low water levels. The current WLs at Nong Khai in Thailand, moreover, decreased 0.14 m but still stayed 1.63 m lower than its LTA, while at Paksane in Lao PDR it decreased about 0.24 m and stayed 1.42 m lower than its LTA value. WLs at these stations were considered low. Water levels from Nakhon Phanom in Thailand to Pakse fluctuated between 0.02 m and 0.05 m. WLs at these stations are staying slightly below their LTA value, considered low levels, except at Savannakhet the WL is about 0.20 m higher than its LTA value. Water levels from the stretches of the river from Stung Treng to Kratie in Cambodia were slightly decreasing and increasing by 0.06 m and 0.11 m respectively. The water levels at Kompong Cham decreased about 0.10 m due to low inflow and less rainfall from the upstream part. WLs at Stung Treng and Kratie were staying about 0.28 m and 0.40 m higher than their LTA value, respectively. WL at Kompong Cham was about 0.36 m lower than its LTA value.

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

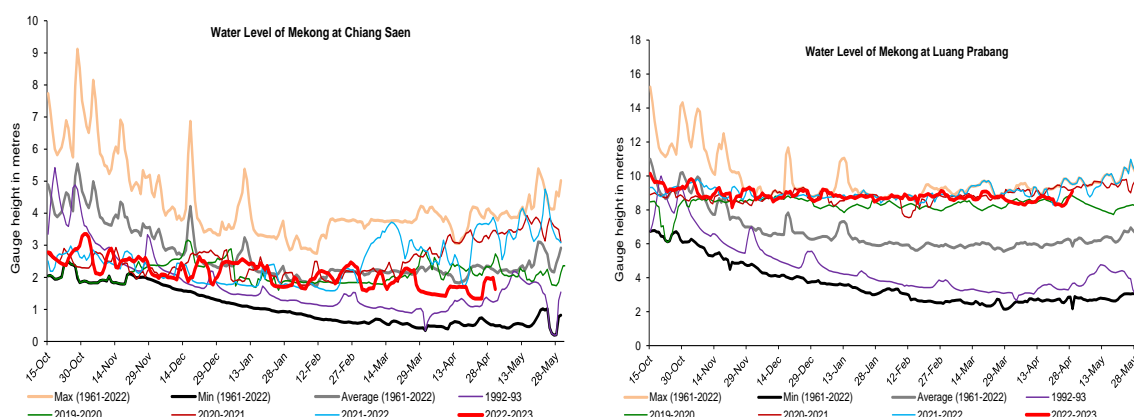
Based on hydrological phenomenon, the contribution of inflow water from the upstream of Lancang-Mekong in China to the Mekong mainstream is about 16% in total during the wet season from June to October and about 25% in total during the dry season from November to May. The whole inflow of water into the LMB is influenced by rainfall at the Mekong mainstream and its tributaries during the wet season.

### Chiang Saen and Luang Prabang

Water level during 25 Apr-01 May 2023 at Thailand’s Chiang Saen increased from 1.34 m to 1.63 m, staying about 0.62 m lower than its Long-Term-Average (LTA), which is considered low level. When compared to last week, this week’s water level is relatively higher.

Water level at the Luang Prabang station in Lao PDR increased from 8.32 m to 9.10 m, during the reporting period. Compared to last week, the figure shows it is up about 0.78 m. The water level at this station was 2.89 m higher than its LTA value and staying about 0.43 m below its historical maximum value. The water levels at Chiang Saen and Luang Prabang are shown in [Figure 8](#) below.

Being situated between the upstream (Nam Beng, Nam Ou, Nam Suong, and Nam Khan) and downstream (Xayaburi) hydropower dams, the Luang Prabang station has a unique characteristic as it is influenced by the operations of all its surrounding dams. **Thus, the water level at this station can possibly change very rapidly during the early dry season.**



**Figure 8. Water levels at Chiang Saen in Thailand and Luang Prabang in Lao PDR.**

### Chiang Khan, Vientiane-Nong Khai and Paksane

The water level at Chiang Khan in Thailand (downstream of the Xayaburi dam) increased about 0.24 m, during the reporting week. It showed 1.28 m below its LTA. The water level downstream at Vientiane in Lao PDR decreased from 0.96 m to 0.85 m and stayed about 1.27 m lower than its LTA during 25 Apr-01 May 2023. At Nong Khai station in Thailand, the water level decreased about 0.14 m during the reporting period. It showed 1.63 m lower than its LTA value, which still considered low water level. At Paksane in Lao PDR, water level decreased about 0.24 m staying about 1.42 m lower than its LTA value. The recently decreased and increased water levels were obviously due to low inflow from upstream and water operation from upstream in the sub-catchment area. The water levels at Vientiane and Paksane are shown in [Figure 9](#) below.



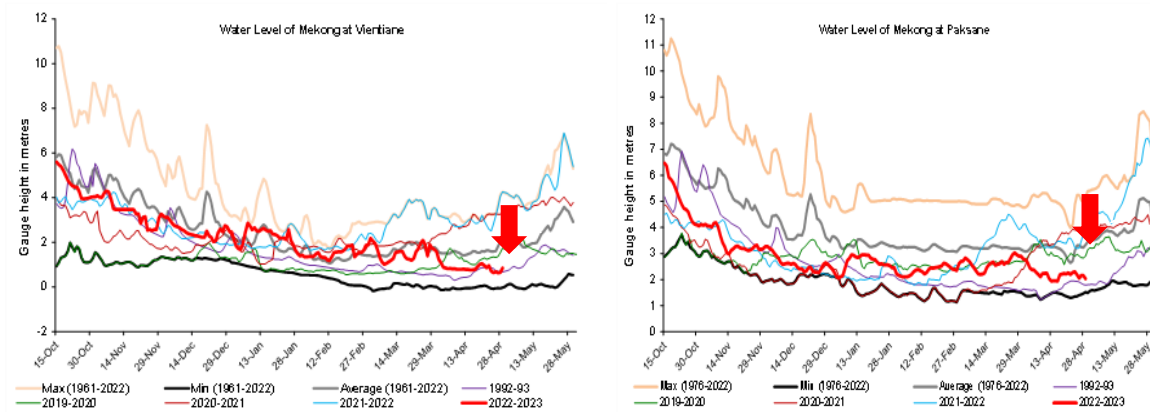


Figure 9. Water levels Vientiane and Paksane in Thailand and Lao PDR.

### Nakhon Phanom to Pakse

Moreover, water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR fluctuated between 0.02 and 0.55 m, which water levels for most of the stations are staying lower to their LTA levels except at Savannakhet which water level is still above its LTA value. [Figure 10](#) shows the water levels at Nakhon Phanom and Pakse stations.

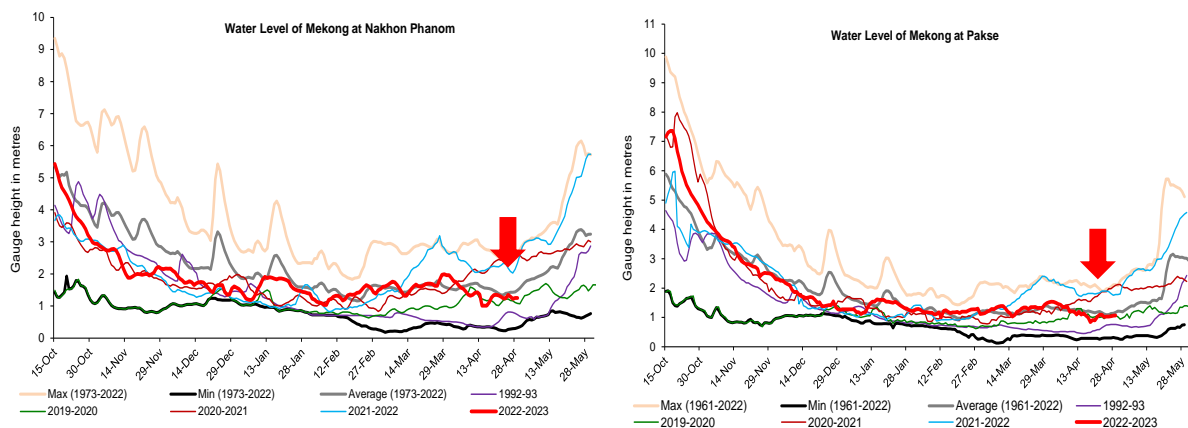
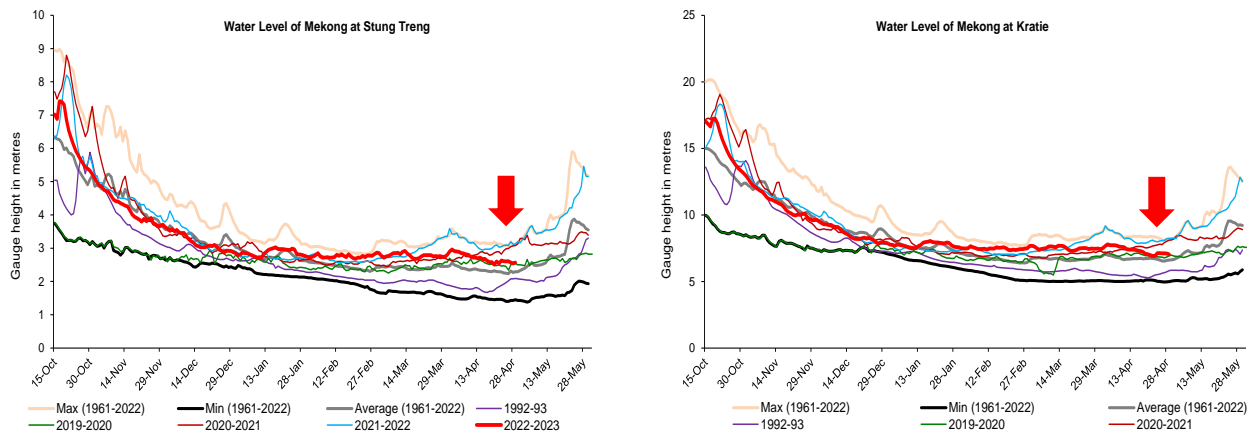


Figure 10: Water levels at Nakhon Phanom and Savannakhet of Thailand and Lao PDR.

### Stung Treng to Kompong Cham/Phnom Penh to Koh Khel/Neak Luong

Due to the fact that there was no rainfall from the upstream part of the Mekong River and the 3S river (Sekong, Se San, and Sre Pok), the water levels from Stung Treng to Kratie in Cambodia kept slightly decreasing and increasing during 25 Apr-01 May 2023, respectively. The water level at Stung Treng decreased about 0.06 m, while at Kratie it increased about 0.11 m. Water levels at Stung Treng and Kratie are staying about 0.28 m and 0.40 m higher than their LTA value, respectively. Water levels at these two stations were considered normal during the dry season (as showed in [Figure 11](#)).

This week, the water levels at Kompong Cham were down about 0.10 m and stayed 0.36 m below its LTA value, which considered low.



**Figure 11: Water levels at Stung Treng and Kratie on the Mekong River.**

At Chaktomuk on the Bassac River, the water level was up by about 0.05 m and stayed 0.14 m lower than its LTA value; while at Koh Khel, water level decreased about 0.03 m, staying 0.30 m lower than its LTA value. It was observed that the WLs at Koh Khel and Neak Luong were affected by tidal from downstream stations of Tan Chau and Chau Doc in Viet Nam, during the dry season period. However, water level at Prek Kdam on the Tonle Sap Lake decreased about 0.10 m and stayed close with its LTA value. The water level at the Tonle Sap Lake (observed at Kompong Luong) was similar to Prek Kdam station's water level. The recently decreased water level was due to some rain and inflow contributed from upstream of the Tonle Sap Lake area during the reporting period. The water level at the Tonle Sap Lake (observed at Kompong Luong) followed the same trend of Prek Kdam station's water level. **Water levels at these stations were mostly staying lower than their LTA level, which still considered low water level.**

### Tidal stations at Tan Chau and Chau Doc

Like last week, the water levels from 25 Apr to 01 May 2023 at Viet Nam's Tan Chau and Chau Doc were fluctuating between their LTA and maximum values due to daily tidal effects from the sea. The fluctuated levels were between -0.48 m and 0.46 m, which lower than their LTA levels. In Tan Chau and Chau Doc, the fluctuation of water levels at these stations were lower than their minimum levels, which **considered critical**.

### The Tonle Sap Flow

At the end of the wet season, when water levels along the Mekong River subside, the outflows of the Tonle Sap Lake return 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, the outflow of the Tonle Sap Lake took place since 29 October 2022.

The flows of the Tonle Sap Lake were calculated based on a formula of rating-curves using by different water levels at Kompong Luong and Phnom Penh Port for slop and Prek Kdam as cross-section of the Lake. The formula of flows at the Tonle Sap Lake is as follows:

$$\text{Flows} = (\text{WL at Prek Kdam})^{1.2} * \text{SQRT} (\text{WL difference between PP port and Kampong Luong})$$

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

Figure 12 shows the seasonal changes of the inflow/reverse flow and the outflow of the TSL at Prek Kdam in comparison with the flows of 2019-2021 and 2022, and their LTA level (1997-2022). Up to May 01 of this reporting period, it was observed that the main outflow to Tonle Sap Lake decreased due to less rainfall and inflows from upstream. This decreased outflow of Tonle Sap Lake was most likely caused by less inflows and rainfall from the catchment area. Up to this date, the outflow from the Tonle Sap Lake condition in 2022 is higher than 2020, 2021 and 2022 outflow conditions. It is noted that the outflow in early 2023 is still slightly lower than its LTA. For next week, less rainfall is forecasted for the Tonle Sap area; thus, the outflow into the Tonle Sap Lake is likely continuing to decrease from the current level.

Figure 13 shows seasonal changes in monthly flow volumes up to 01 May 2023 for the Lake compared with the volumes in 2020, 2021, 2022 and their LTA, and the fluctuation levels (1997–2021). It shows that up to 01 May 2023, the water volume of the Tonle Sap Lake was staying slightly lower than its LTA (about 90 %) and higher than 2020, 2021, 2022 during the same period. The figure is displayed in Table 1, which indicates that the Tonle Sap Lake has been affected by water levels from the Mekong River, the tributaries, and rainfall in the surrounding sub-catchments and considered normal.

This demonstrates the influence of the relationships between the reverse flows, water levels of the Mekong River, inflows from tributaries, and the flow direction in the complex hydraulic environment of the Tonle Sap Lake during the wet and dry seasons. The data show that about half of the annual inflow volume into the Tonle Sap Lake has originated from the Mekong mainstream. Thus, flow alterations in the mainstream could have direct impact on the Tonle Sap Lake water levels and on its hydrology.

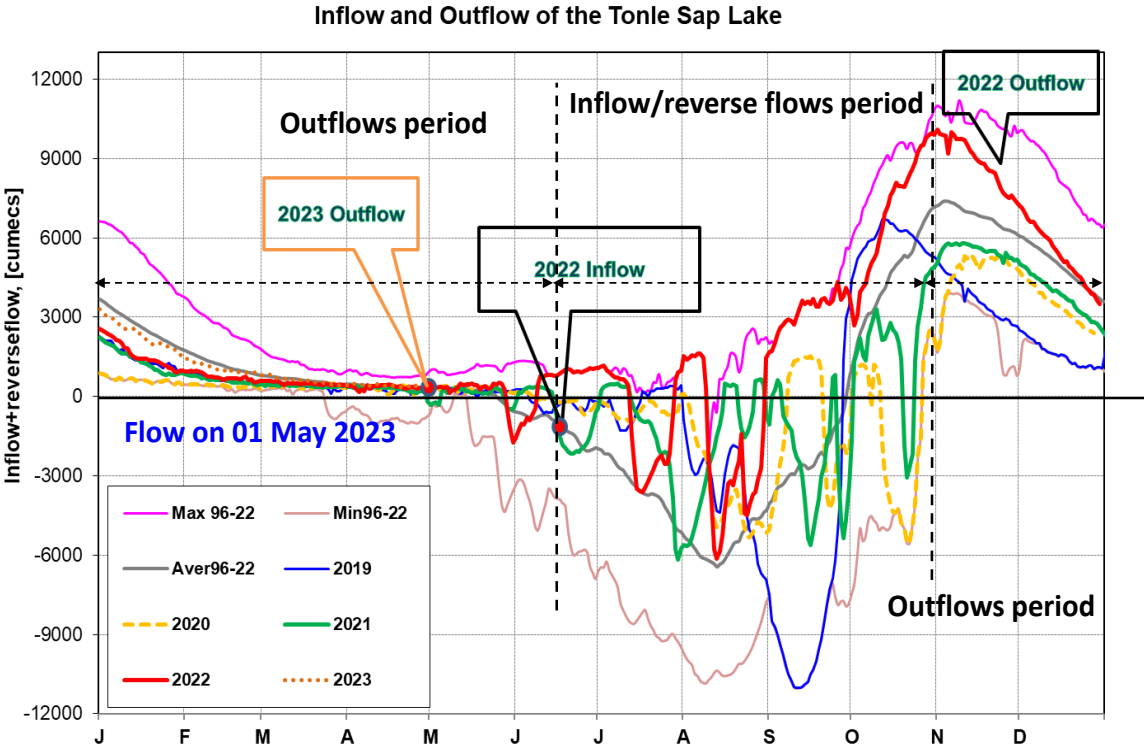


Figure 12: Seasonal change of inflows and outflows of Tonle Sap Lake.

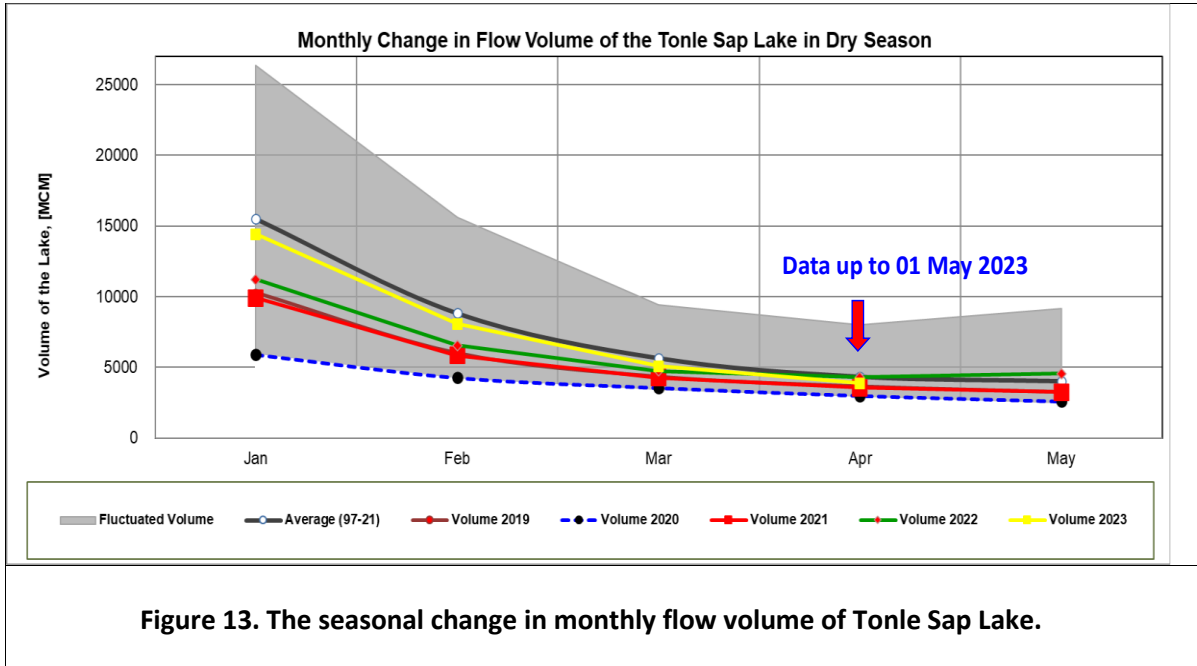


Table 1. The monthly change in the flow volume of Tonle Sap Lake.

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 in 2023 [%], compared with its LTA
Jan	15523.23	26357.53	5906.80	10285.31	5906.80	9923.80	11214.32	14422.11	92.91
Feb	8837.89	15596.22	4198.60	6019.30	4264.19	5832.97	6558.79	8069.29	91.30
Mar	5654.18	9438.24	3347.07	4354.62	3553.99	4264.88	4736.52	5080.64	89.86
Apr	4346.65	8009.14	2866.91	3667.47	2992.61	3556.68	4288.31	3884.16	89.36
May	4030.23	9176.93	2417.81	3266.43	2594.92	3240.78	4556.83		
Jun	5708.30	13635.01	2468.70	3517.06	2641.88	3798.29	7489.04		
Jul	11493.25	28599.56	2925.86	4001.99	2925.86	5346.73	9703.79		
Aug	24666.69	39015.12	4433.46	7622.71	5941.07	10547.80	19554.70		
Sep	39634.03	65632.35	12105.31	24194.19	12105.31	16382.34	32860.34		
Oct	46873.44	73757.23	19705.50	30358.38	20799.13	27318.21	48199.12		
Nov	37823.16	60367.33	18534.61	19112.65	27546.80	28982.93	39452.53		
Dec	25126.11	38888.95	10563.49	10577.29	18251.65	20170.76	25346.65		
	Critical situation, compared with historical Min values								
	Normal condition, compared with LTA (Long term average)								
	Low volume situation, compared with LTA values								
Unit: Million Cubic Meter (1 MCM= 0.001 Km <sup>3</sup> )				LTA: Long-Term-Average					

## **4 Flash Flood in the Lower Mekong Basin**

During the weekly monitoring period from Apr 25 to May 01, the LMB was affected by two main weather factors being (1) the heat low-pressure system which prevailed over the LMB from Apr 27 to 28 and (2) the moderate high-pressure system from the North which affected the LMB from Apr 25 to 26 and from Apr 29 to May 01. These conditions caused light to moderate rain and isolated thundershowers in some areas of the LMB.

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

### Weekly drought monitoring from 24 to 30 April 2023

Drought monitoring data for 2023 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 condition of the LMB from Apr 24 to 30, as shown in [Figure 11](#), was relatively similar to the condition of the previous week (Apr 17-23). In overall, severe meteorological drought mainly hit the northern, middle, and some southern parts of the region. They specifically covered Chiang Mai, Chiang Ria, Bokeo, Luangnamtha, Oudomxay, Phayao, Loei, Xayaburi, Luang Prabang, Xieng Khuang, Xaysomboun, Udon Thani, Nong Bua Lamphu, Nong Khai, and Vientiane in the north, Chaiyaphum, Khon Kaen, Maha Sarakham, Roi Et, Nakhon Phanom, Sakon Nakhon, Kalasin, Nakhon Ratchasima, Surin, Buriram, and Khammuane in the middle, and Battambang, Pursat, Kampong Speu, Pailin, Siem Reap, Otdar Meanchey, Preah Vihea, Kampong Chhnang, Kampong Thom, Kratie, Mondul Kiri, and Gia Lai in the south.

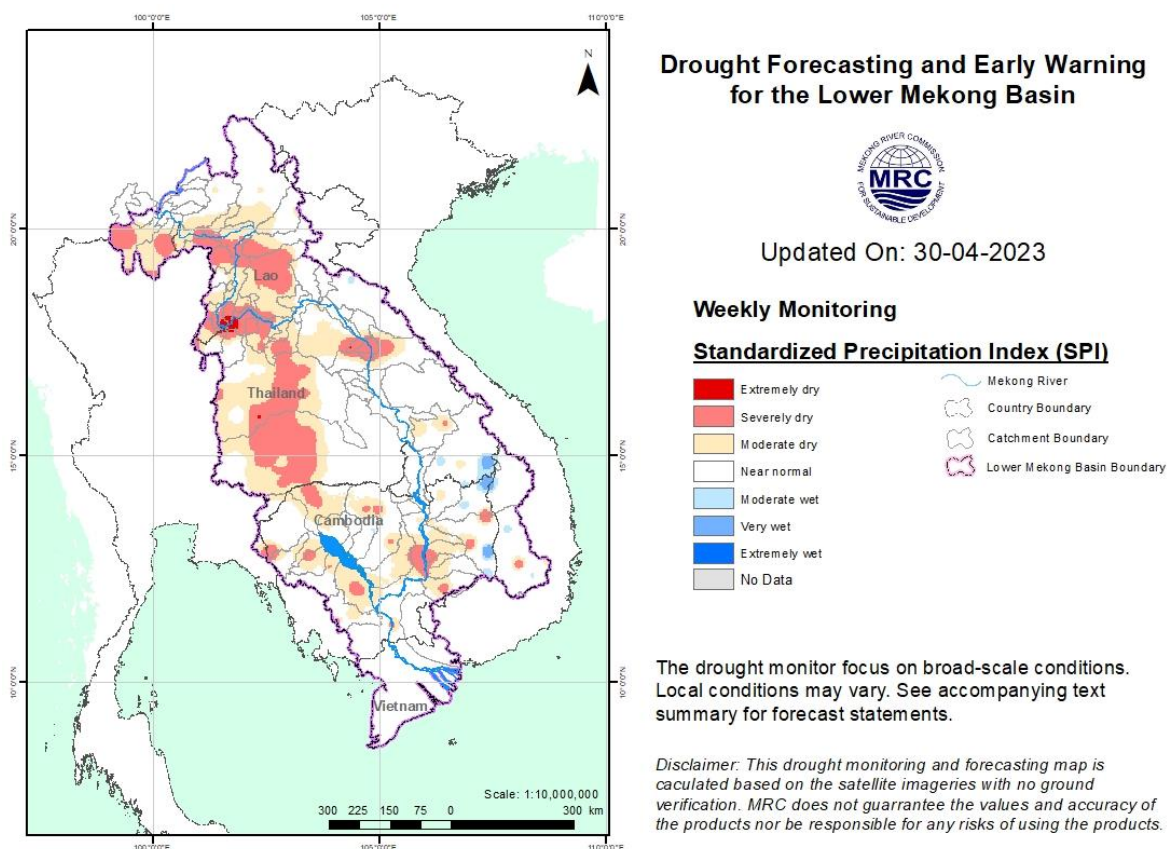
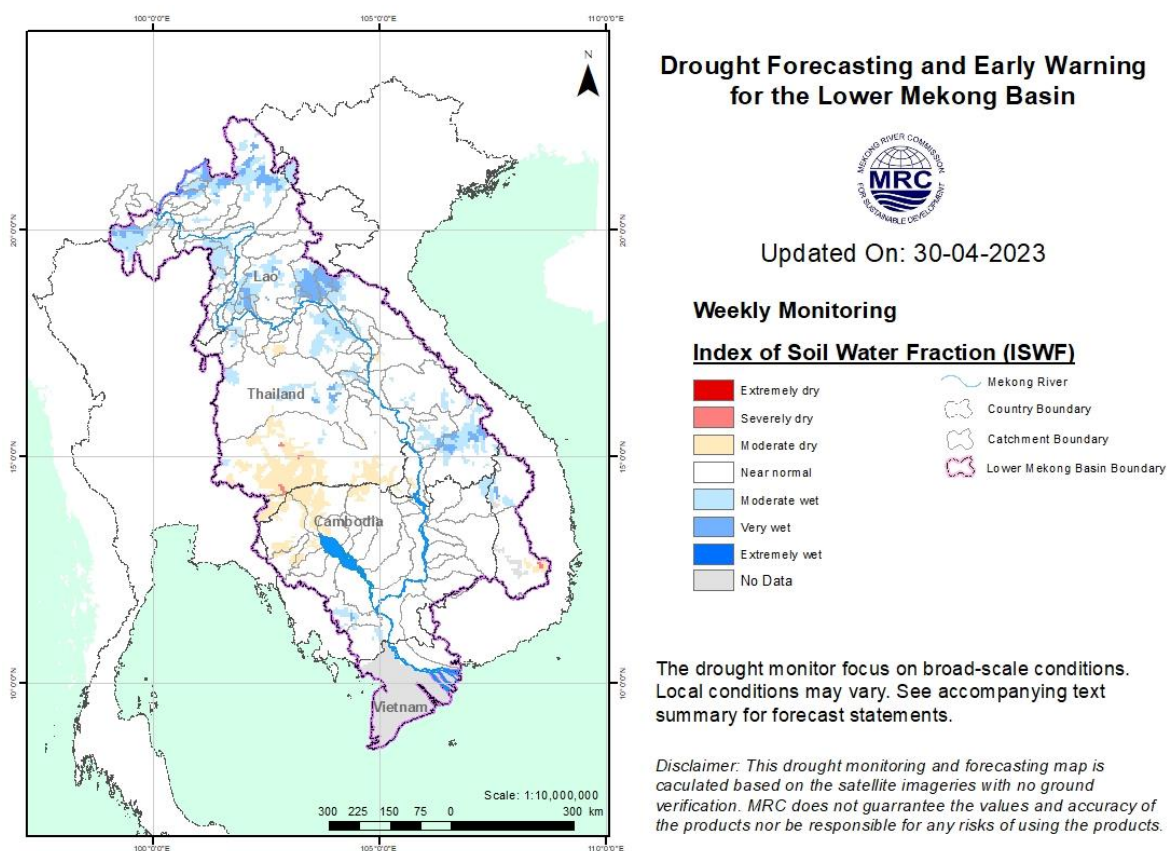


Figure 14: Weekly standardised precipitation index from Apr 24 to 30.

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

Soil moisture condition from Apr 24 to 30, as displayed in [Figure 12](#), were mainly wet in the north, some moderately dry in the middle and normal in the south. The situation was much better than the previous weeks.

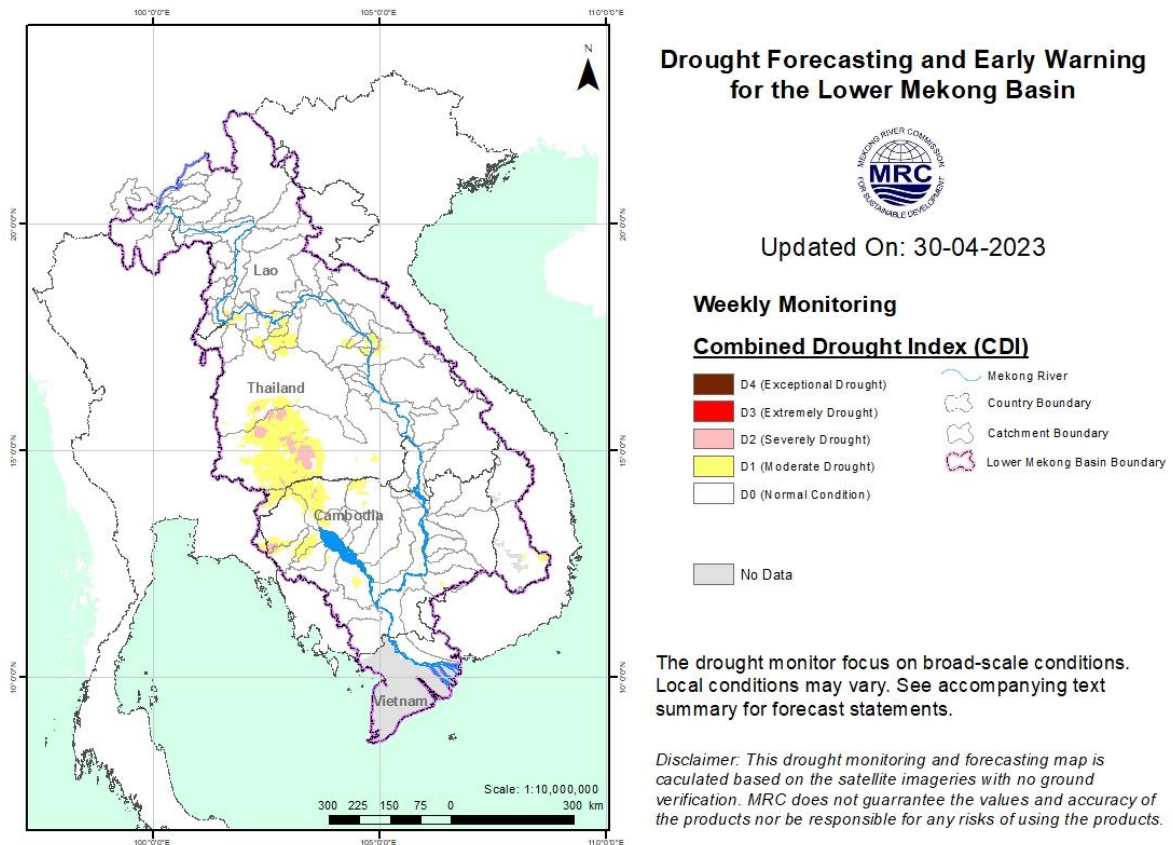
**Note:** The index of soil water fraction presents the current soil water fraction conditions compared with normal month; therefore, it normally shows extremely dry during dry season which is completely different from SPI that is standardized to its specific month of the years. However, this does not 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 15: Weekly Index of Soil Water Fraction from Apr 24 to 30.**

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

The combined drought indicator, as displayed in [Figure 13](#), reveals that during Apr 24-30, the LMB was much better than the previous weeks. However, moderately dry condition remained in some areas in the middle part covering Udon Thani, Khammuane, Chaiphum, Khon Kaen, Nakhon Ratchasima, Buriram, Maha Sarakham, Surin, Sakeo, Ordar Meanchey, Banteay Meanchey, Siem Reap, Pailin, and Battambang.



**Figure 16: Weekly Combined Drought Index during Apr 24-30.**

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.



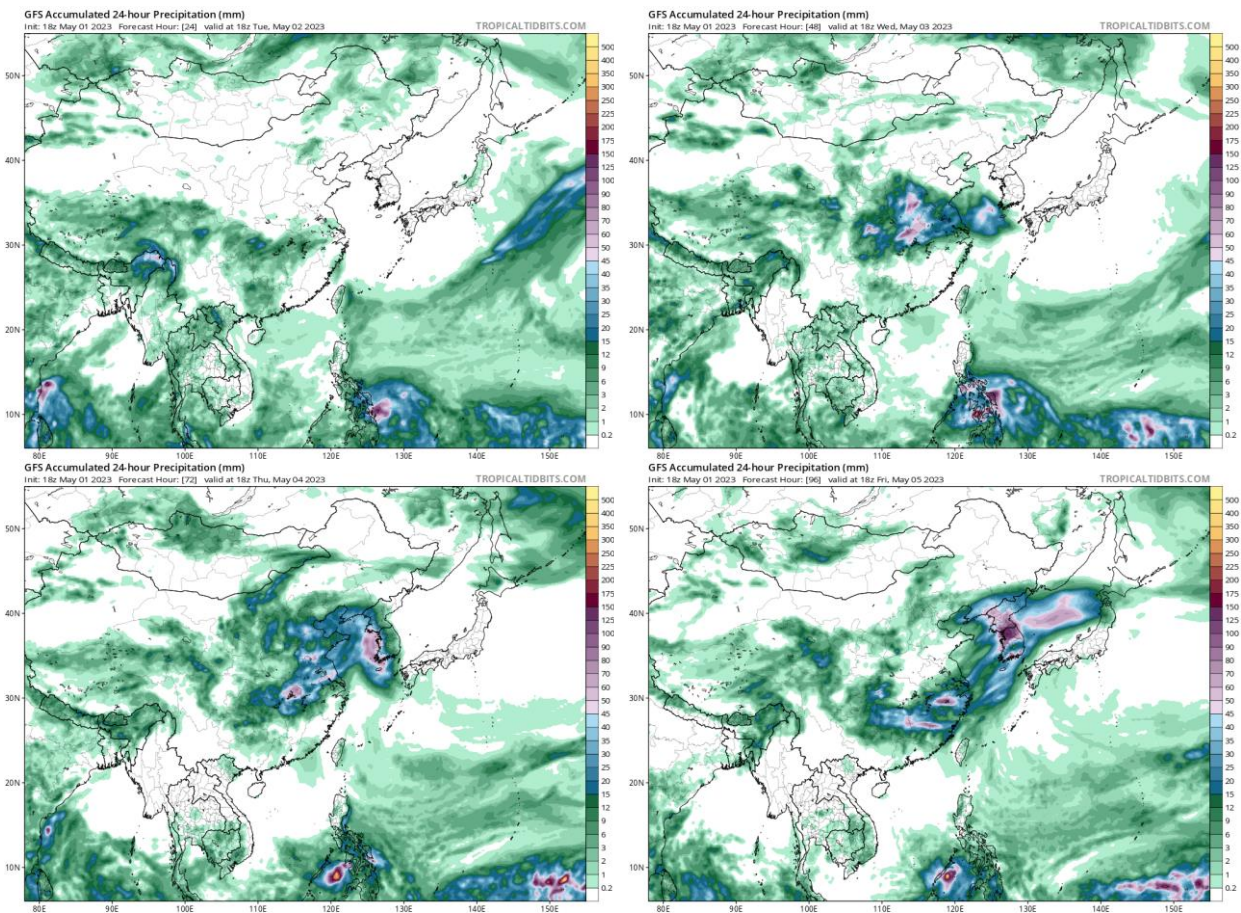
## 6 Weather and Water Level Forecast and Flash Flood Information

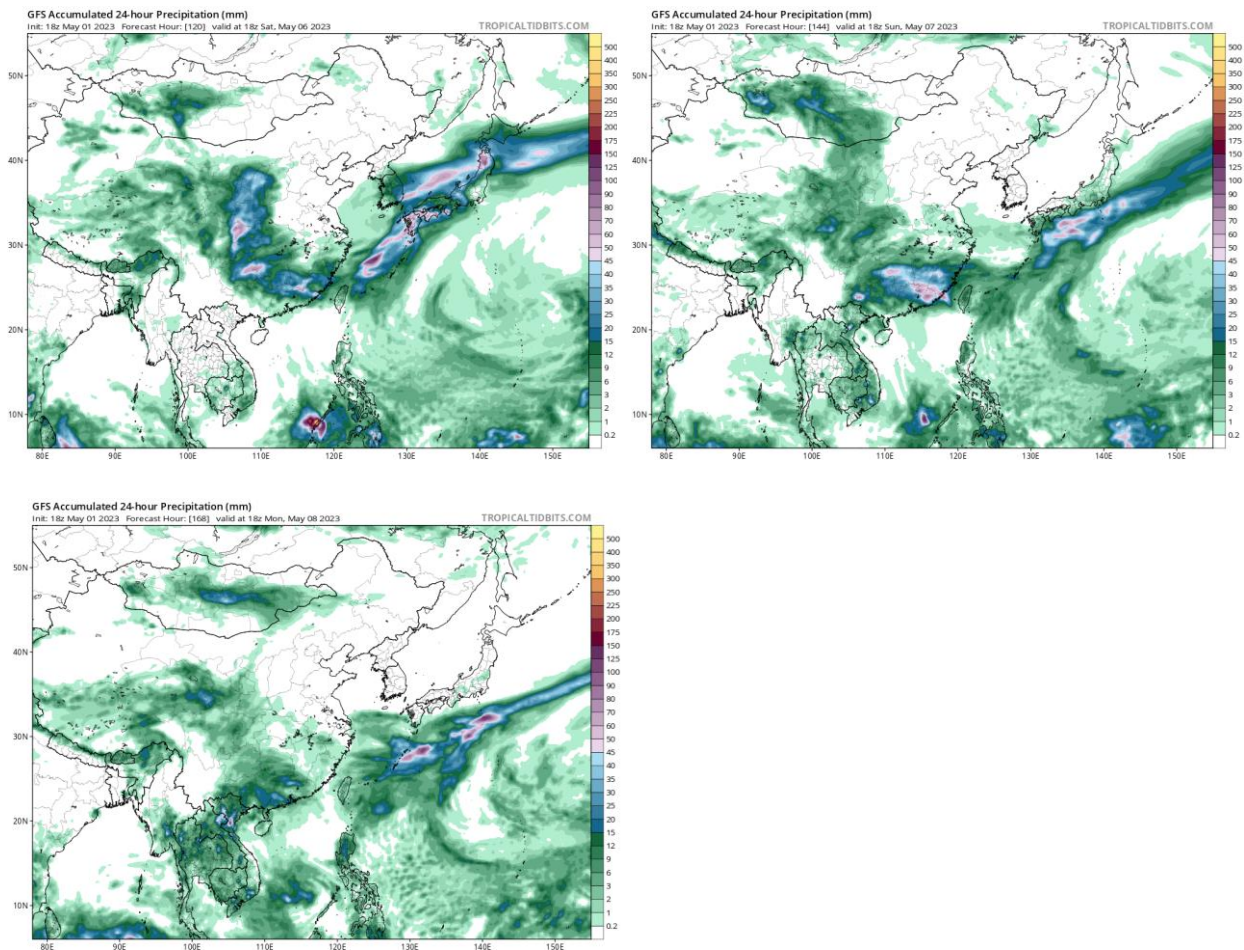
### 6.1 Weather and rainfall forecast

Based on the result of the Global Forecast System (GFS) model, the moderate high-pressure system still covers almost the entire LMB on May 02. Then the heat low-pressure system might affect the LMB from May 03 to 08.

Under the weather forecast patterns for the next coming week, light to moderate rain (5-35 mm/24h) and isolated thundershowers are likely taking place in some areas of the LMB.

[Figure 17](#) shows accumulated rainfall forecast (24hrs) of the GFS model during May 02–08, 2023.





**Figure 17: Accumulated rainfall forecast (24 hrs) of model GFS.**

## 6.2 Water level forecast

### Chiang Saen and Luang Prabang

Based on May 01's weekly river monitoring bulletin, the weekly forecast water level at Chiang Saen in Thailand is expected to increase from 1.63 m to 2.06 m in the next seven days. The trend of water levels at these stations will continue staying below its LTA.

For Luang Prabang in Lao PDR, the water level is likely decreasing about 0.20 m during the same period. The current water level is about 2.89 m higher than its LTA and staying about 0.43 m lower than its historical maximum value.

### Chiang Khan, Vientiane-Nong Khai and Paksane

Water level at Chiang Khan station in Thailand is forecasted to be up about 0.05 m for the next seven days. At Vientiane in Lao PDR and Nong Khai in Thailand WLS will be up by about 0.20 m in the next seven days. At Paksane in Lao PDR, water level will increase about 0.11 m due to some effect of inflows from the upper catchments. Some rainfalls are forecasted in the area due to air pressure dominating in the upper sub-catchments. The water levels here will remain lower than their LTA.

## **Nakhon Phanom to Pakse**

Water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR will fluctuate from 0.03 to 0.20 m. Water levels at these stations will stay close with their LTA level. Next week some precipitations are forecasted in the area.

## **Stung Treng to Kompong Cham/Phnom Penh to Koh Khel/Neak Luong**

From Stung Treng on the Mekong River in Cambodia, the water level will likely go up about 0.15 m, while at Kratie it will be up about 0.14 m over the next seven days. For Kompong Cham, the WL will be slightly down about 0.05 m and stay below than its LTA. Some rainfalls are forecasted for the area between Stung Treng and Kompong Cham during next week.

The water levels of the Tonle Sap Lake at Prek Kdam and Phnom Penh Port as well as at Phnom Penh's Chaktomuk on the Bassac River will fluctuate between 0.03 m and 0.15 m over the next seven days.

Water levels at more than half of the stations will continue to stay lower than their LTA values, particularly in the lower part of the region from the Bassac in Phnom Penh to Koh Khel as well as from Tonle Sap in Prek Kdam to Phnom Penh Port, including the Tonle Sap Lake. Rainfall is forecasted for the low-lying area of Cambodia next week.

## **Tidal stations at Tan Chau and Chau Doc**

For Viet Nam's Tan Chau on the Mekong River and Chau Doc on the Bassac River, water levels will be moving up between their LTA and maximum values following daily tidal effects from the sea.

[Table 3](#) shows the weekly River Monitoring Bulletin issued on May 01. Results of the started weekly river monitoring bulletin are also available at [http://ffw.mrcmekong.org/bulletin\\_wet.php](http://ffw.mrcmekong.org/bulletin_wet.php). Tables for weekly updated water levels and rainfall at the Key Stations are presented in **Annex A**.

## **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 an ensemble model called the North America Multi-Model Ensemble (NMME).

[Figure 18](#) below shows the global NMME forecast of rainfall for May, June and July 2023 over the LMB area.

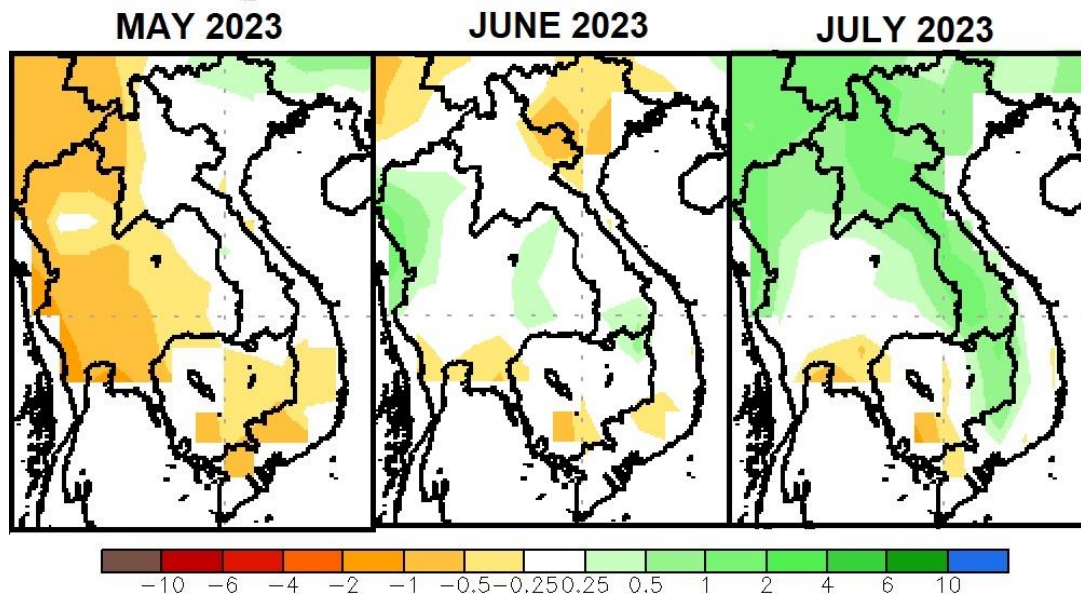


Figure 18. Monthly forecast of SPI for Mar, Apr, and May 2023.

Figure 18 above shows that in **May** the middle and lower parts of the LMB will receive below average rainfall with moderate drought condition. **June** is forecasted to be normal where the region receives average rainfall, in general. And lastly, the LMB is mostly like really wet in **July** forecast except slightly below average rainfall in southern Cambodia in the lower part.

Table 2. Weekly River Monitoring Bulletin.



## Mekong Bulletin

Mekong River Commission Secretariat (MRCS)

Regional Flood and Drought Management Centre (RFDMC)

P.O. Box 623 #576, National Road #2, Chak Angre Krom, Meanchey, Phnom Penh, Cambodia

Tel: (855-23) 425353, Fax: (855-23) 425363, Email: floodforecast@mrcmekong.org

Forecast period from: 02 May to 08 May 2023

Date: 01 May 2023

LOCATION	Country	Observed Rainfall (mm)	Zero gauge above M.S.L (m)	Min water level against zero gauge (m)	Observed W. level against zero gauge (m)		Forecasted Water Levels (m)							
					30-Apr	01-May	02-May	03-May	04-May	05-May	06-May	07-May	08-May	
Jinhong		7.0	-	-	535.25	535.23								
Chiang Saen		56.4	357.110	0.00	1.99	1.63	1.78	1.80	1.85	1.91	1.96	2.01	2.06	
Luang Prabang		0.0	267.195	2.53	8.86	9.10	9.12	8.77	8.77	8.79	8.83	8.88	8.92	
Chiang Khan		1.0	194.118	1.91	3.21	3.31	3.46	3.48	3.23	3.24	3.27	3.30	3.35	
Vientiane		0.0	158.040	-0.28	0.65	0.85	0.96	1.13	1.17	0.96	0.97	1.00	1.04	
Nongkhai		0.0	153.648	0.33	0.54	0.68	0.78	0.93	0.96	0.78	0.79	0.83	0.87	
Paksane		0.0	142.125	0.10	2.15	2.03	2.10	2.15	2.23	2.26	2.10	2.11	2.14	
Nakhon Phanom		0.0	130.961	0.18	1.25	1.25	1.15	1.20	1.25	1.33	1.36	1.23	1.23	
Thakhek		0.0	129.629	1.38	2.64	2.63	2.51	2.57	2.63	2.72	2.75	2.60	2.62	
Mukdahan		0.0	124.219	0.72	1.61	1.62	1.58	1.50	1.55	1.60	1.69	1.72	1.60	
Savannakhet		0.0	125.410	-0.65	1.32	1.33	1.35	1.38	1.40	1.44	1.50	1.52	1.45	
Khong Chiam		0.0	89.030	1.02	2.01	1.99	2.01	1.98	1.89	1.97	2.05	2.17	2.22	
Pakse		0.0	86.490	0.03	1.06	1.07	1.09	1.07	1.00	1.05	1.11	1.20	1.23	
Stung Treng		nr	36.790	0.32	2.54	2.57	2.58	2.60	2.58	2.52	2.56	2.62	2.72	
Kratie		nr	-1.080	3.06	7.10	7.03	7.08	7.11	7.15	7.12	7.05	7.10	7.17	
Kompong Cham		nr	-0.930	0.65	2.50	2.38	2.30	2.33	2.35	2.37	2.36	2.32	2.33	
Phnom Penh (Bassac)		nr	-1.020	1.58	1.84	1.79	1.76	1.77	1.78	1.80	1.79	1.77	1.77	
Phnom Penh Port		-	0.000	0.14	0.77	0.75	0.73	0.74	0.76	0.78	0.77	0.75	0.76	
Koh Khel		nr	-1.000	1.52	1.80	1.70	1.66	1.63	1.61	1.59	1.62	1.66	1.71	
Neak Luong		nr	-0.330	0.81	1.34	1.45	1.50	1.55	1.57	1.60	1.55	1.47	1.40	
Prek Kdam		nr	0.080	0.58	0.92	0.94	0.90	0.88	0.86	0.85	0.88	0.93	0.98	
Tan Chau		0.0	0.000	-0.37	-0.02	0.29	0.52	0.63	0.73	0.79	0.87	0.95	1.00	
Chau Doc		nr	0.000	-0.60	0.09	0.46	0.73	0.90	1.05	1.15	1.25	1.33	1.38	

**REMARKS:**

-: not available.  
 \*: reference stations without forecast.  
 nr: no rain.

River Flood Forecaster

KHEM Sothea

**NOTE:** Discharge at Luang Prabang may be influenced by hydropower operations (at both upstream and downstream).  
 For more info, please refer to this link:  
<http://www.mrcmekong.org/>; [http://ffw.mrcmekong.org/bulletin\\_wet.php](http://ffw.mrcmekong.org/bulletin_wet.php); <http://ffw.mrcmekong.org/reportflood.php>

## 7 Summary and Possible Implications

### 7.1 Rainfall and its forecast

This week, rainfall was observed from Chiang Saen to Khong Chiam station along the Mekong River while other stations down to the lower part from Kompong Cham to Neak Luong in Cambodia some rain was also detected. Compared with last week's amount, the rainfall this week was considered low in the Mekong region.

Based on the forecasted rainfall from satellite using GFS data, some amount of rainfall is forecasted to cover the areas of the lower part from Cambodia to the 3S area and Mekong Delta in Viet Nam from 02 to 14 May 2023. There will be from moderate to extreme rainfall occurring from the central to the southern part of LMB (especially, over Cambodia), central and southern Lao PDR, and Central Viet Nam.

### 7.2 Water level and its forecast

The MRC's observed water level (WL) at Jinghong showed a decreased level from 536.13 m to 535.23 m between 25 Apr and 01 May 2023 (recorded on 7:00 am) while the outflow varied from 810.00 m<sup>3</sup>/s to 1,410.00 m<sup>3</sup>/s between 25 Apr and 01 May 2023.

Mekong water levels this week remain as normal condition—with 5 out of 22 stations have water levels below their long-term average. In general, this hydrological condition is influenced by the inflows from the upper Mekong River in China and dam operations in the tributaries of the Lower Mekong River Basin.

Stay updated with our river monitoring and forecasting to better prepare for flood and drought events. Find more details at <https://www.mrcmekong.org/>.

The flow volume of the Tonle Sap Lake is lower than its LTA (about 89%). From next week, the flow is expected to be decreasing due to no rainfall is forecasted in the inflow catchments of the Tonle Sap Lake.

From Stung Treng to Kratie, the water levels will most likely go up, while at Kompong Cham they will go down. The water levels – at Neak Luong on the Mekong River, from Prek Kdam to Phnom Penh Port on the Tonle Sap, and from Chaktomuk to Koh Khel on the Bassac – are forecasted to stay below their LTA.

The situation in Tan Chau on the Mekong River and Chau Doc on the Bassac River is expected to remain fluctuating. In Tan Chau and Chau Doc, the fluctuation of water levels will move higher than their LTA value during the monitoring period, which will **considered critical**.

Since the third week of September 2022, water levels across most monitoring stations in the LMB have increased due to the above-average rainfall but still staying lower than their LTA value (from middle to lower stretches within the LMB). The preliminary analysis of the hydrological conditions in the LMB over July–December 2020 and from November 2020 to May 2021 was done as [Situation Report](#), which can be used as reference for the trend of water level and flows of the Mekong River Basin.

The contribution to the Mekong River’s flow from the UMB in China (Yunnan component) is about 16% by the time the river discharges through the Mekong Delta into the Sea. By far the major contribution comes from the two major ‘left-bank’ (Eastern) tributaries between Vientiane – Nakhon Phanom and Pakse – Stung Treng, which together contribute more than 40% of the flows.

### 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 Apr 24-30, the LMB was much better than the previous weeks. However, moderately dry condition remained in some areas in the middle part covering Udon Thani, Khammuane, Chaiyaphum, Khon Kaen, Nakhon Ratchasima, Burirum, Maha Sarakham, Surin, Sakeo, Ordar Meanchey, Banteay Meanchey, Siem Reap, Pailin, and Battambang.

In **May** the middle and lower parts of the LMB will likely receive below average rainfall with moderate drought conditions. **June** is forecasted to be normal where the region receives average rainfall, in general. And lastly, the LMB is mostly like really wet in **July** forecast except slightly below average rainfall in southern Cambodia in the lower part.

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

Table A1: Weekly observed water levels

2023	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
25/04/2023	536.13	1.34	8.32	3.07	0.96	0.82	2.27	1.24	2.60	1.64	1.32	2.02	1.09	2.63	6.92	2.48	1.74	0.76	1.73	1.11	1.04	-0.48	-0.42
26/04/2023	535.89	1.83	8.22	3.00	0.71	0.72	2.30	1.24	2.60	1.60	1.29	1.98	1.02	2.61	7.13	2.56	1.95	0.91	1.80	1.20	1.03	-0.31	-0.23
27/04/2023	535.86	1.98	8.26	3.04	0.64	0.64	2.18	1.35	2.71	1.61	1.31	1.95	1.03	2.60	7.13	2.54	1.94	0.92	1.92	1.25	1.02	-0.23	-0.11
28/04/2023	536.06	1.97	8.38	2.99	0.68	0.60	2.05	1.29	2.61	1.66	1.30	1.93	1.03	2.61	7.11	2.56	1.97	0.93	1.98	1.38	1.04	-0.14	-0.01
29/04/2023	535.34	1.95	8.68	3.01	0.63	0.58	2.16	1.22	2.57	1.62	1.32	2.00	1.04	2.57	7.11	2.48	1.94	0.86	1.90	1.38	1.03	-0.12	-0.02
30/04/2023	535.25	1.99	8.86	3.21	0.65	0.54	2.15	1.25	2.64	1.61	1.32	2.01	1.06	2.54	7.10	2.50	1.84	0.77	1.80	1.34	0.92	-0.02	0.09
01/05/2023	535.23	1.63	9.10	3.31	0.85	0.68	2.03	1.25	2.63	1.62	1.33	1.99	1.07	2.57	7.03	2.38	1.79	0.75	1.70	1.45	0.94	0.29	0.46

Table A2: Weekly observed rainfall

2023	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
25/04/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26/04/2023	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	36.5	0	0	0	0
27/04/2023	0.5	6.8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28/04/2023	11.5	3.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29/04/2023	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	0	0	0	0
30/04/2023	6	0.3	23.6	0	0	35.6	17	2.5	2.7	6.1	4.3	19.4	0	0	0	1.5	0	0	0	5.8	0	0	0
01/05/2023	7	56.4	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Sum</b>	31.0	67.0	23.6	1.0	0.0	35.6	17.0	2.5	2.7	6.1	4.3	19.4	0.0	0.0	0.0	1.5	10.0		36.5	5.8	0.0	0.0	0.0





## Mekong River Commission Secretariat

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