



**Mekong River Commission**

# **Weekly Dry Season Situation Report in the Lower Mekong River Basin**

**02 – 08 April 2024**

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

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# Key Messages

**Key messages for this weekly report are presented below.**

## **Rainfall monitoring and forecast**

- In the period of 02 – 08 April 2024, the light to moderate rainfall has been only observed in the central part of the LMB including southern part of Lao PDR, eastern part of Thailand, northern part of Cambodia and 3S basins.
- From 09 – 15 April 2024, Light to moderate rainfall is forecasted to be sparsely distributed from central to upper parts of the basin. However, there will be no rainfall will occur at the lower part at Mekong Delta, central part of Cambodia and 3S basins.

## **Water level monitoring and forecast**

- At 22 key monitoring stations along the Mekong mainstream from 02 – 08 April 2024, water levels are below the long-term averages (LTAs) except for water level at Luang Prabang, Stung Treng, Kratie, Neak Luong, Tan Chau and Chau Doc 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 08 – 15 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 Kratie stations. Moving down to lower part, water level will be slightly rising except for Neak Luong stations. At Tan Chau and Chau Doc stations, the water levels are predicted to be also decreasing, 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, Stung Treng, Kratie and Neak Luong stations.

## **Drought condition and forecast**

- During 2-8 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 **02 – 08 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:

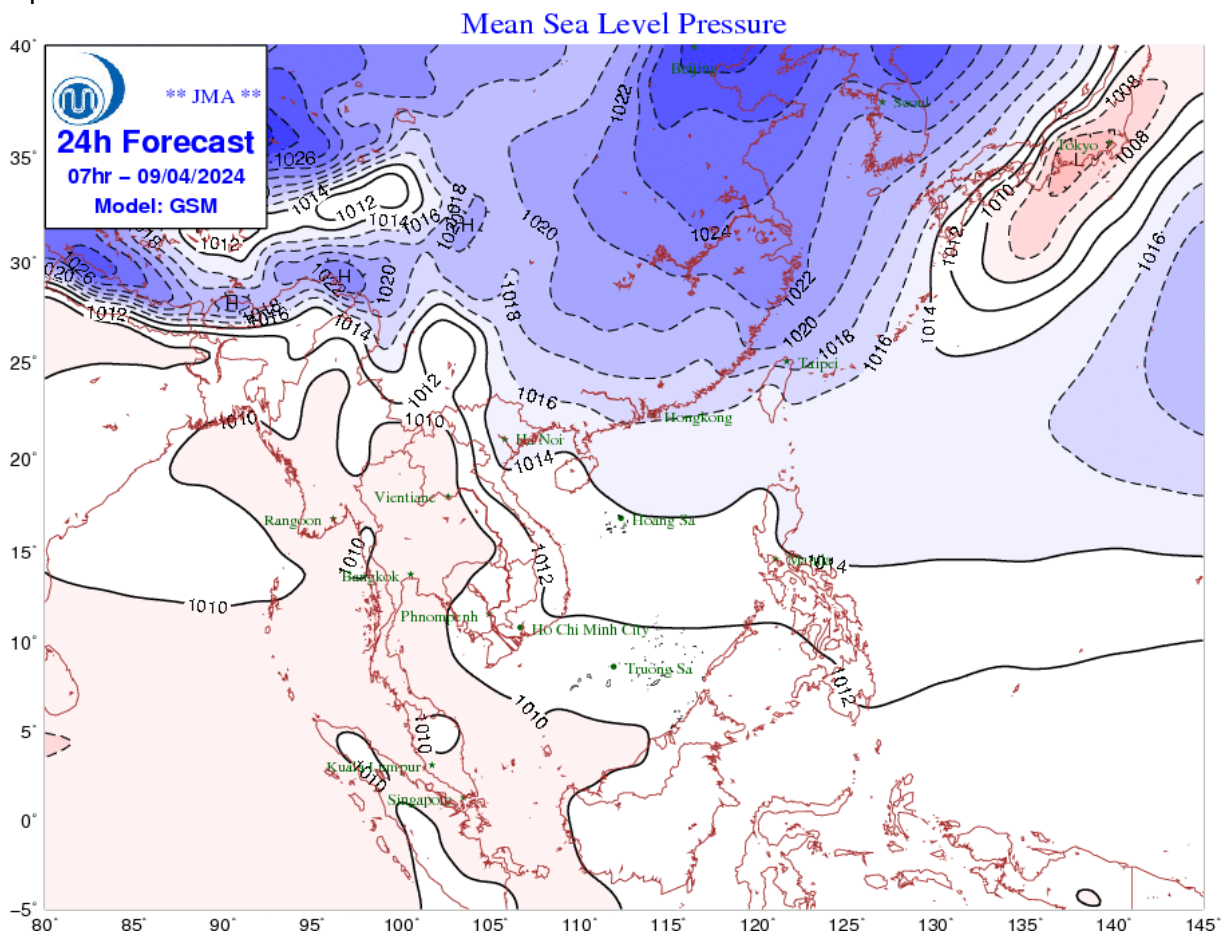
<http://droughtforecast.mrcmekong.org>

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 heat low-pressure system. There has been light rainfall in some areas in the Northwest of Cambodia, 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 high-pressure system from 09 – 11 April, then during from 12 – 15 April, the heat low-pressure will cover upper the LMB. It is likely to occur thunderstorms, local heavy rain, and gusty wind in the Northeastern part of Thailand and the Northern part of Laos during 09 – 11 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 (01 – 14 April 2024) indicates that the drier condition are predicted to occur in the lower part and central part (in Thailand) of LMB. Moreover, the warmer conditions are predicted to occur in the entire LMB. **Figure 2** shows the outlook of weather condition from 01 to 14 April 2024 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

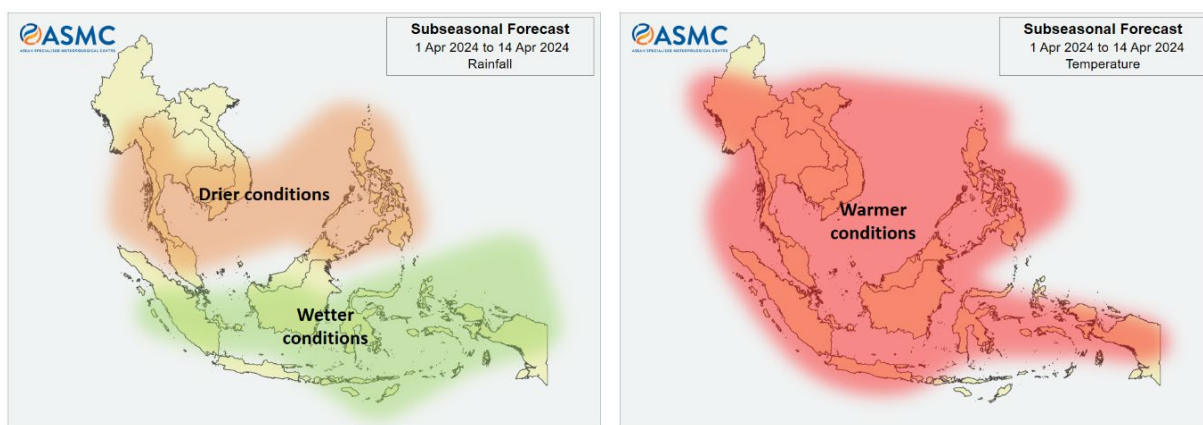


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

Based on the tropical storm risk (TS) (<https://www.tropicalstormrisk.com/>), there is no active NW pacific system as of 08 April 2024 as displayed in **Figure 3**.

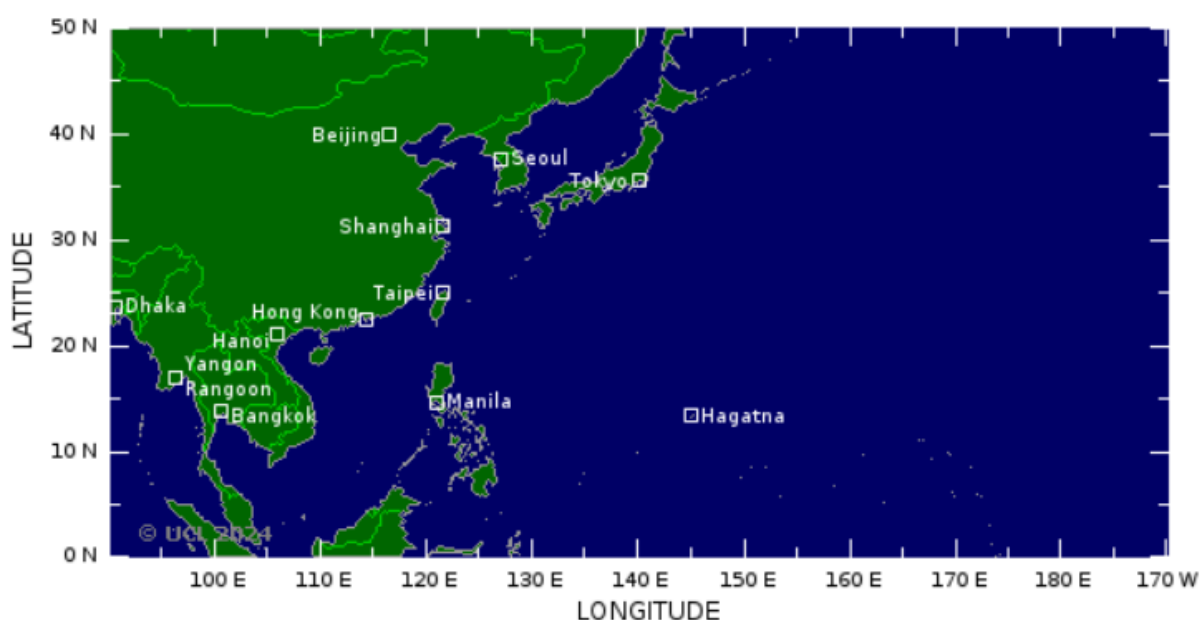
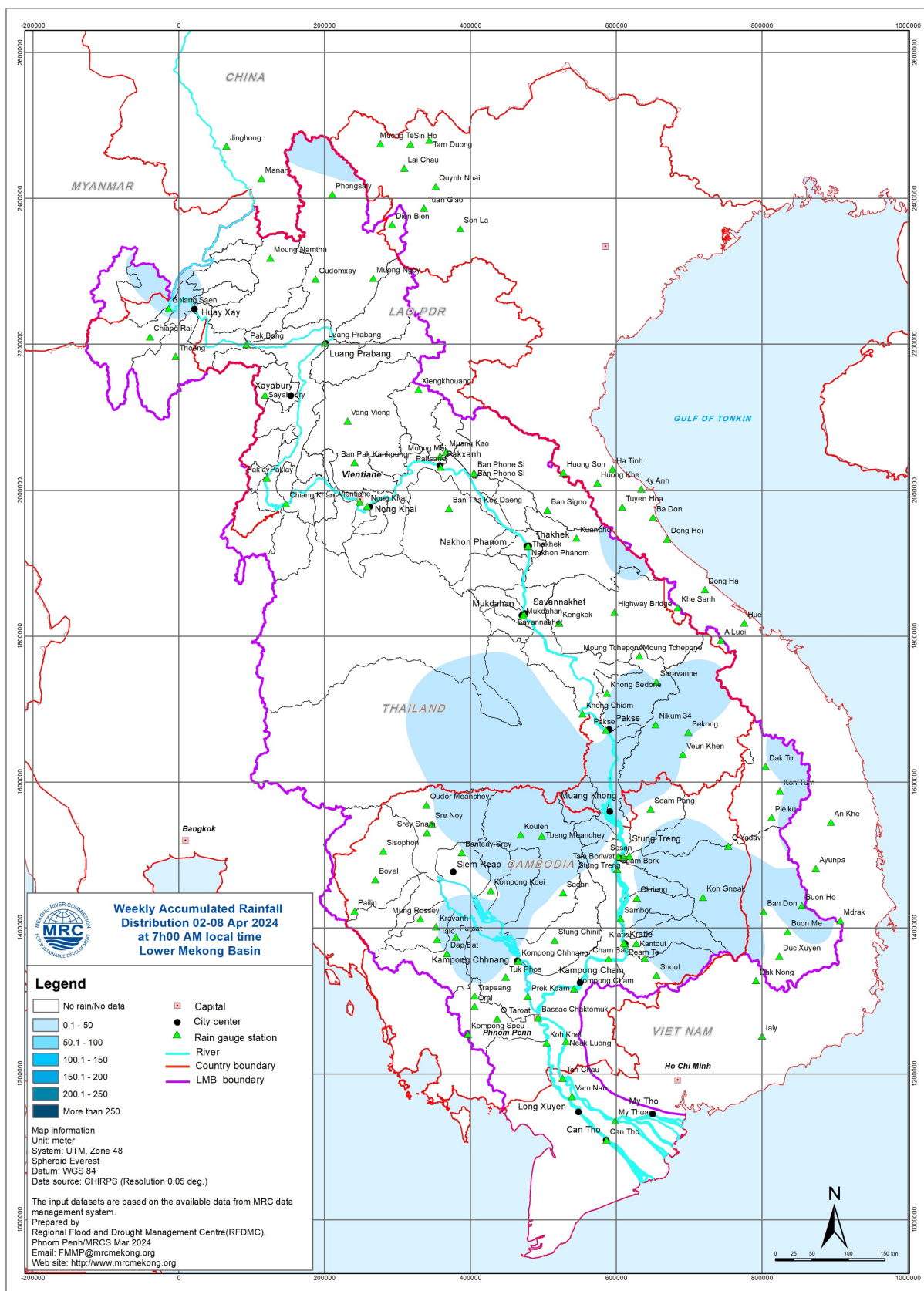


Figure 3: No tropical storm risk observed on 08 April 2024

### 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 02 to 08 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 02 – 08 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 02 – 08 April 2024, the observed water level (WL) at Jinghong hydrological station<sup>1</sup>, was almost constant and ranges between 536.03 m and 535.75 m, which are corresponding to the outflow between 1,390.00 m<sup>3</sup>/s to 1,180.00 m<sup>3</sup>/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 1.55 m with peak of 1.95 m. At the same period, the water level in Luang Prabang station also slightly decreased with an approximate value of 0.2 m from 8.80 m to 8.60 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. At Chiang Khan, Vientiane, Nong Khai, Paksane, Nakhon Phanom, Thakhek, Mudahan, Savannakhet, Khong Chiam, Pakse, Stung Treng and Kratie stations were slightly increasing with values ranging from 3.12 m to 3.26 m, 1.15 m to 1.17 m, 0.61 m to 0.76 m, 2.15 m to 2.33 m, 2.18 m to 2.60 m, 1.52 m to 1.68 m, 2.01 m to 2.14 m, 0.98 m to 1.02 m, 2.54 m to 2.58 m, and 6.98 m to 6.98 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 decreasing trend and with ranges of 2.50-2.40 m, 1.77-1.45 m, 1.78-0.63 m, 1.75-1.58 m, and 0.91-0.78 m, respectively. However, only water level at Neak Luong station slightly increased from 1.22 m to 1.55 m. Similar to the previous week, the water levels from 02 to 08 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 -0.41 m and 1.08 m, while at the Chau Doc station, they ranged from -0.32 m to 1.25 m.

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<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>.

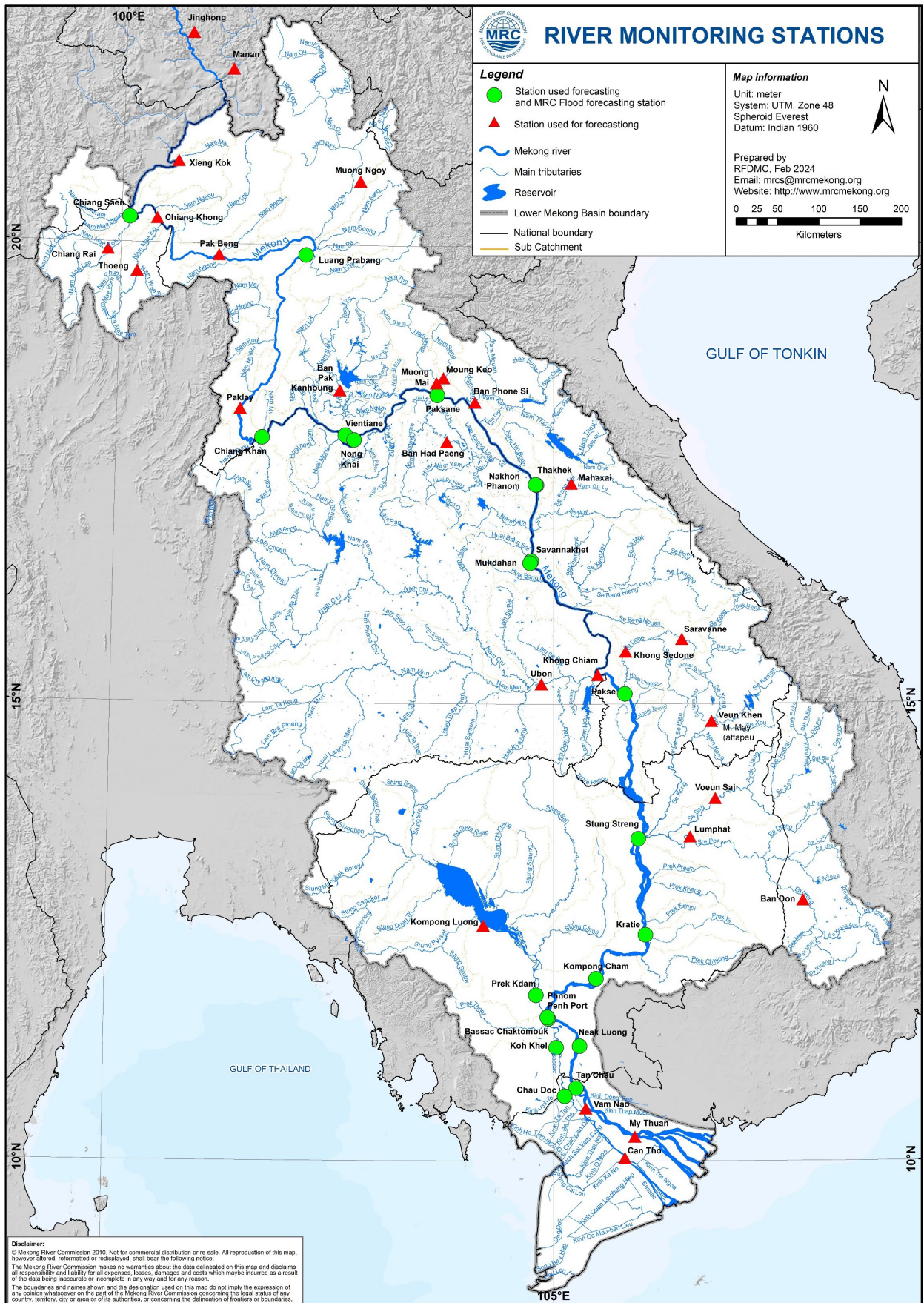
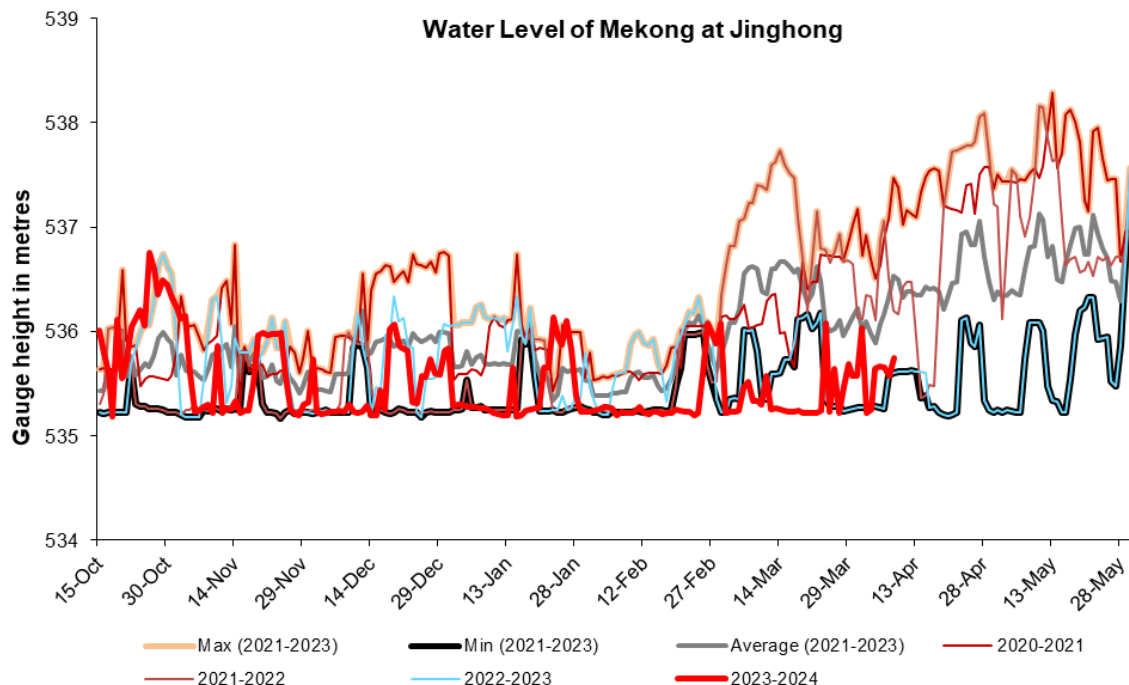


Figure 5: The key stations along LMB for river flood forecasting

The water levels in all key monitoring stations on 08 April 2024 are below their long-term averages (LTAs) except for the Luang Prabang, Stung Treng, Kratie, Neak Luong, Tan Chau and Chau Doc 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 08 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.

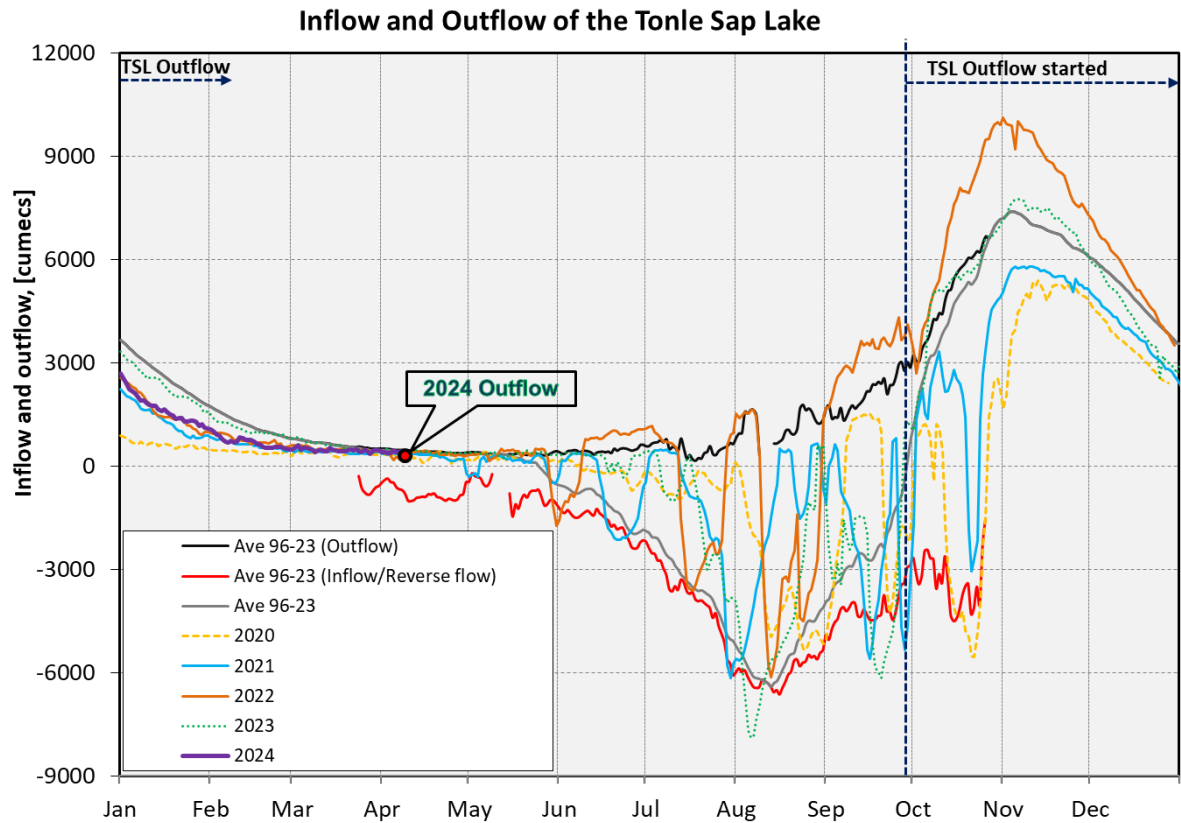
The outflow flow is calculated based on a formula of rating-curves using by difference of water levels at Kompong Luong and Phnom Penh Port stations for slop and Prek Kdam as cross-section of the Lake. The formula of flow is as follows:

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

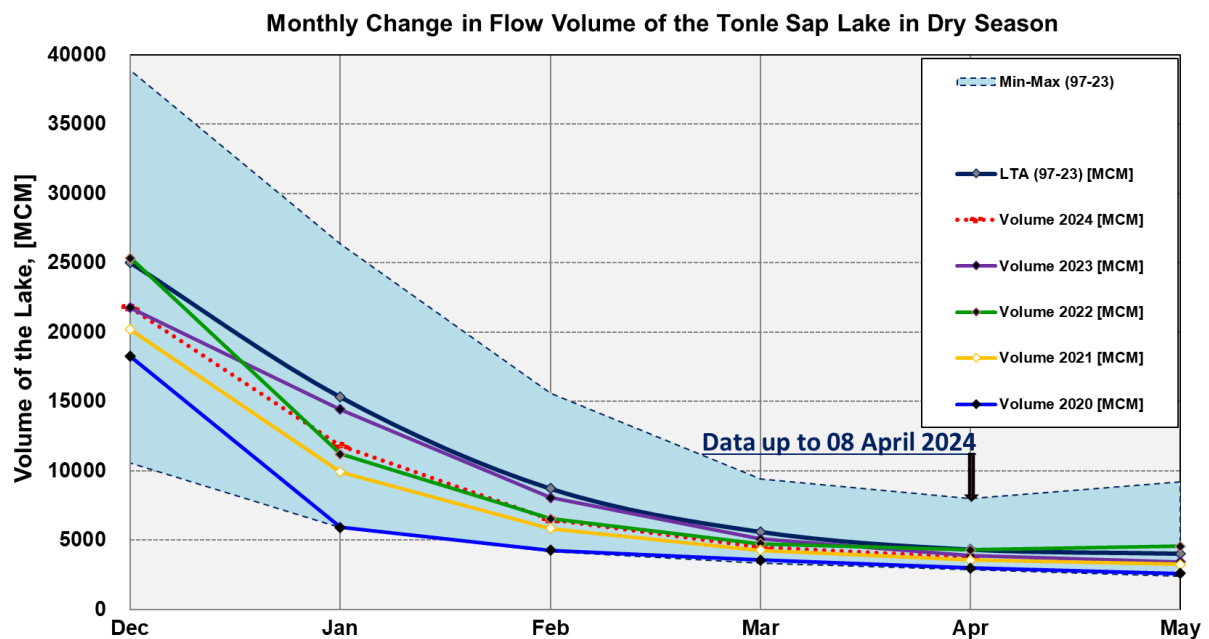
Where, WL is water level in m (msl).

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 08 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 08 April 2024, the water volume of TSL is approximately 86.76% 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<br>(97-22)<br>[MCM]  | Max<br>Volume<br>[MCM] | Min<br>Volume<br>[MCM] | Volume<br>2019<br>[MCM] | Volume<br>2020<br>[MCM] | Volume<br>2021<br>[MCM] | Volume<br>2022<br>[MCM] | Volume<br>2023<br>[MCM] | Volume<br>2024<br>[MCM] | Volume in<br>2024 [%],<br>compared<br>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                 | 3754.41                 | 86.76  |
| 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 km³) |  |                        |                        |                         |                         |                         |                         |                         |                         |  |

**Remarks:** the volume of Tonle Sap Lake in 2024 is updated until 08 April 2024.

## 4. Flash Flood in the Lower Mekong Basin

During the weekly monitoring period from 02 - 08 April, 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.

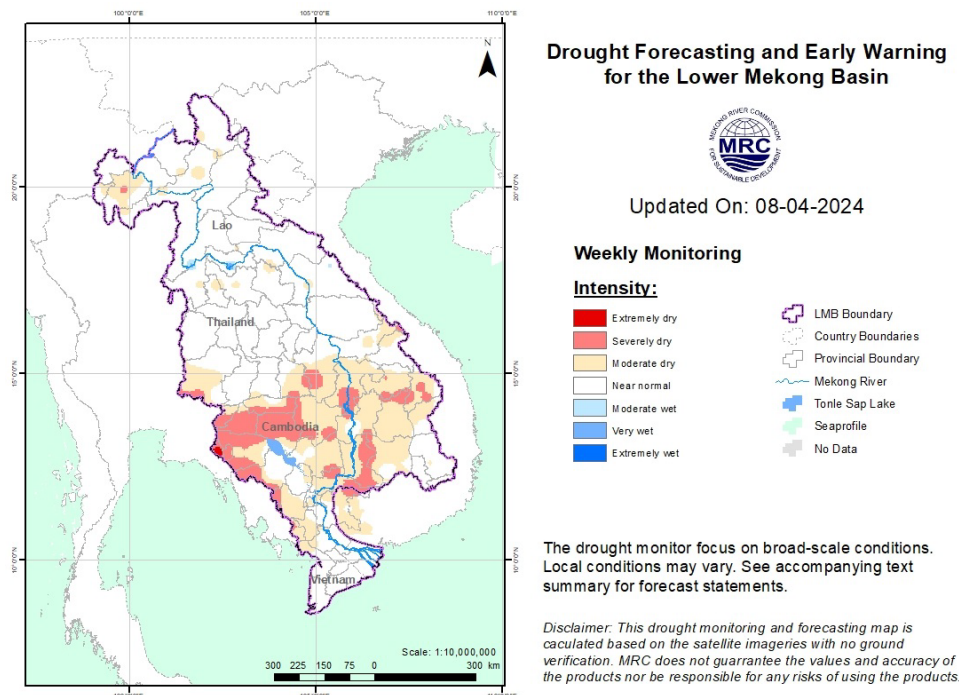
## 5. Drought Monitoring in the Lower Mekong Basin

### 5.2. Weekly drought monitoring from April 2 to 8

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 2 to 8 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.

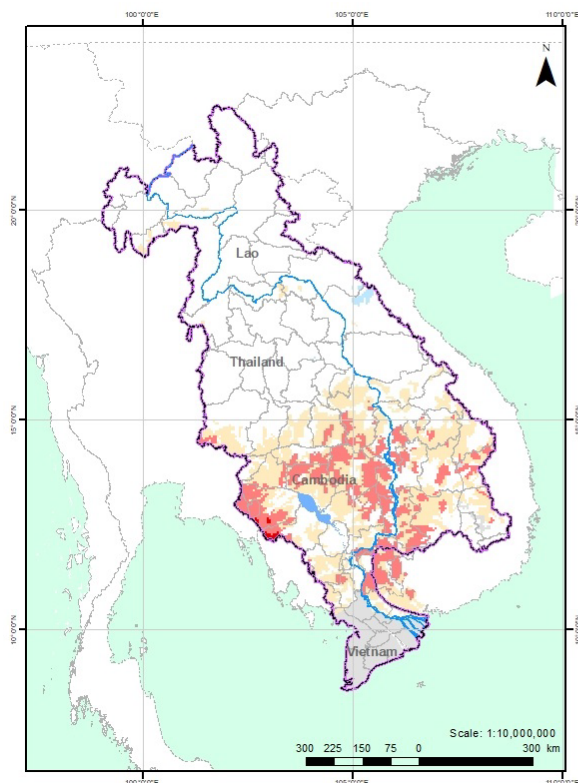


**Figure 9: Weekly standardised precipitation index from Apr 2 to 8.**

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

Soil moisture conditions from April 2 to 8, 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.



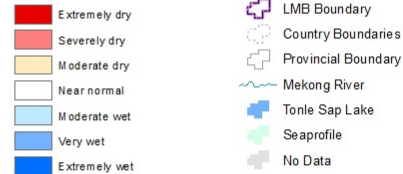
## Drought Forecasting and Early Warning for the Lower Mekong Basin



Updated On: 08-04-2024

### Weekly Monitoring

#### Intensity:



The drought monitor focus on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

*Disclaimer: This drought monitoring and forecasting map is calculated based on the satellite imagery with no ground verification. MRC does not guarantee the values and accuracy of the products nor be responsible for any risks of using the products.*

Figure 10: Weekly Index of Soil Water Fraction from April 2 to 8.

### Weekly Combined Drought Index (CDI)

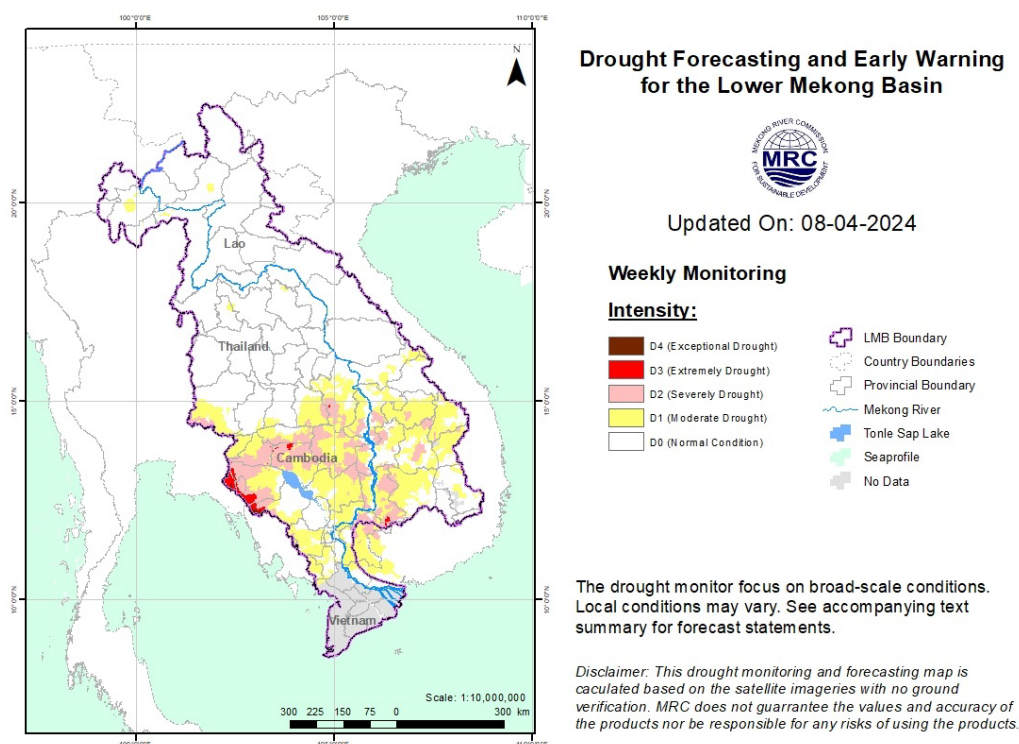
With the dry conditions of soil moisture, the combined drought indicator (displayed in **Figure 11**) reveals that during 2-8 April 2024, the LMB was facing from moderate to severe drought mainly over the south of the region. Specifically, the severe and extreme droughts covered some areas of most provinces 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         | Moderate | Severe | Extreme | Exceptional | Number | Country  | Province          | Moderate | Severe | Extreme | Exceptional | Number   | Country  | Province          | Moderate | Severe | Extreme | Exceptional |
|--------|----------|------------------|----------|--------|---------|-------------|--------|----------|-------------------|----------|--------|---------|-------------|--|----------|-------------------|----------|--------|---------|-------------|
| 1      | Cambodia | Battambang       |          | 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 | Buang Kan         |          |        |         |             |
| 4      | Cambodia | Pursat           |          | S      | S       |             | 27     | Lao PDR  | Xiangkhouang      |          |        |         |             | 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 | Monduliri        |          | S      |         |             | 33     | Lao PDR  | Savannakhet       |          |        |         |             | 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 | Svay 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  | Bokao            |          |        |         |             | 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 |         | Exceptional |
|        |          |                  |          |        |         |             |        |          |                   |          |        |         |             |  |          |                   |          |        |         |             |

Other provinces of the Mekong Delta of Viet Nam have no data

Moderate Severe

Severe Exceptional



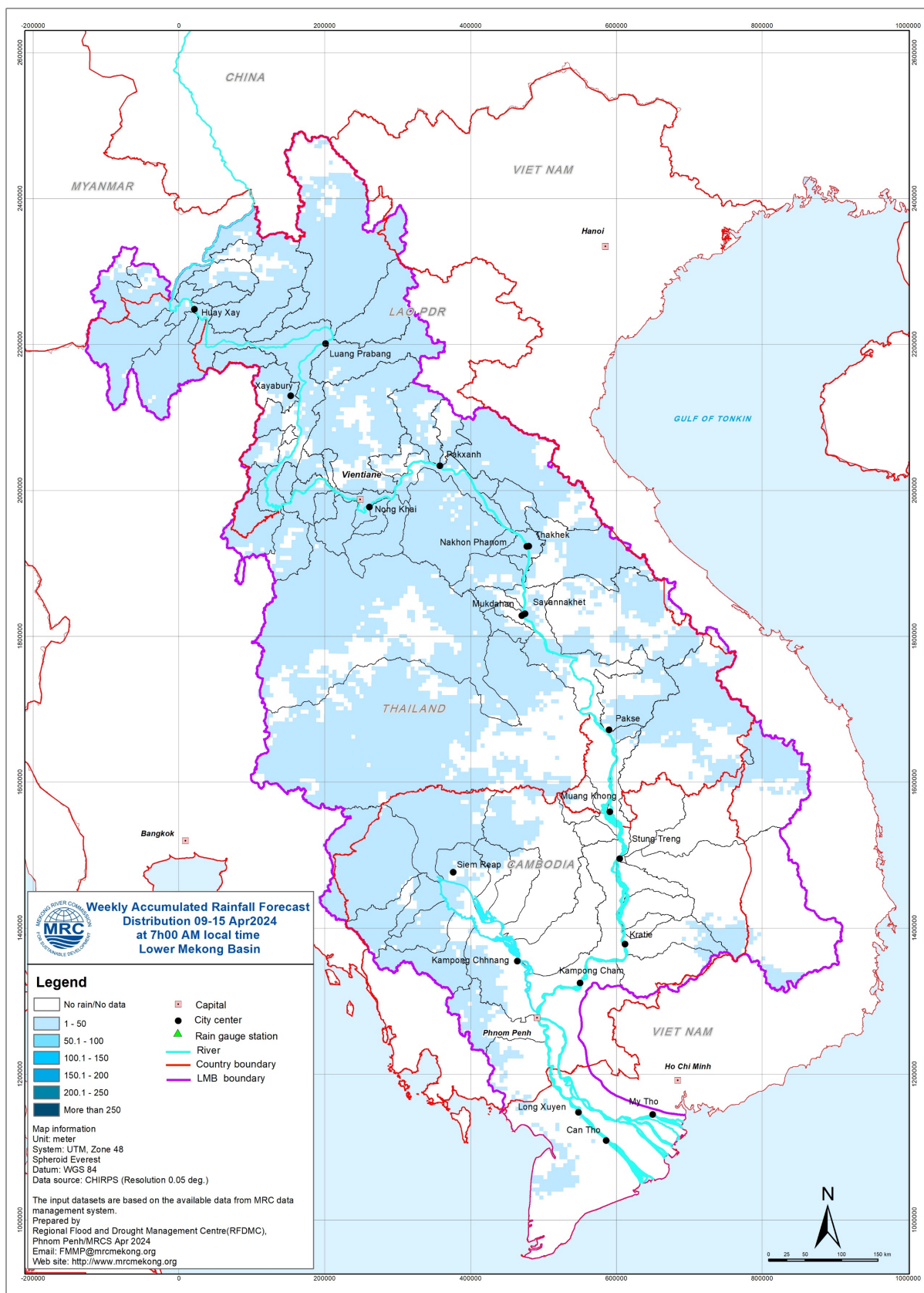
**Figure 11: Weekly Combined Drought Index from April 2-8.**

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 02 – 15 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 sparsely distributed from central to upper parts of the basin. However, there will be no rainfall will occur at the lower part at Mekong Delta, central part of Cambodia and 3S basins.



**Figure 12: Accumulated rainfall forecast from CHIRP-GFS (02 – 15 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 09 – 15 April 2024. However, it will slightly increase from 1.55 m to 1.60 m. The water level in Luang Prabang stations affected by backwater is likely slightly increasing from 8.60 m to 8.67 m.

It is observed that at the stations along the Mekong mainstream, the water levels at upper stretch at Chiang Khan, Vientiane and Nong Khai, will slightly rise of approximately 0.00 m, 0.09 m, and 0.02 m, respectively. However, moving down to paksane, Nakhong Phanom, Thakhek, Mukdahan, Savannakhet, Khong Chiam, Pakse, Stung Treng, and Kratie, water levels are expected to slightly increase with approximately values of 0.04 m, 0.03 m, 0.03, 0.03 m, 0.03 m, 0.01 m, 0.01 m, 0.08 m, and 0.02 m respectively. Further down to Kompong Cham, Phnom Penh (Bassac), Phnom Penh Port, and Prek Kdam stations, water levels will slightly rise of approximately 0.02 m, 0.02 m, 0.03 m, and 0.08 m, respectively. However, only at Neak Luong station, water level is predicted to be decreasing with value of 0.1 m.

For the Tan Chau station on the Mekong River and Chau Doc station on the Bassac River, water levels will decrease approximately 1.26 m and 1.37 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, Kratie, Tan Chau and Chau Doc stations from 09 to 15 April 2024.

The weekly River Monitoring Bulletin and forecasting issued on 08 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.**

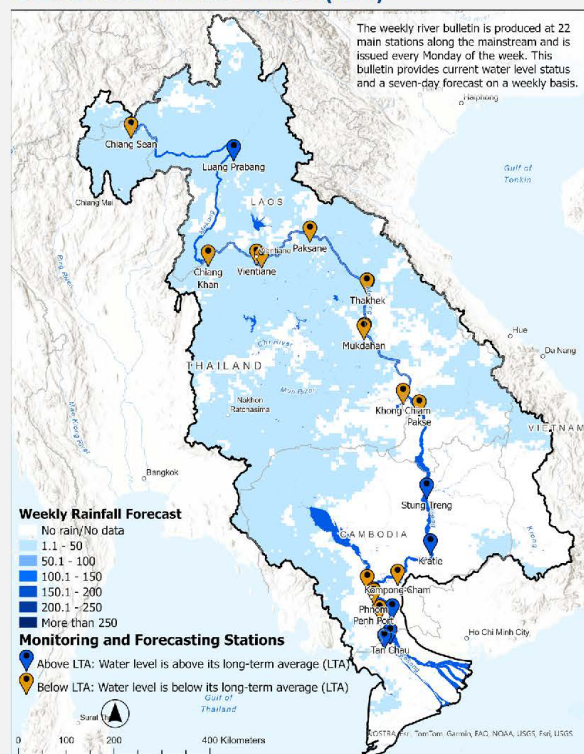


## MEKONG RIVER MONITORING AND FORECASTING BULLETIN

**Monitoring on 08 April 2024 and weekly forecasting from 09 April to 15 April 2024**

**Highlights:** Water levels at all stations are below their long-term average except for Luang Prabang, Stung Treng, Kratie, Tan Chau and Chau 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

- Light to moderate rainfall is forecasted to be sparsely distributed from central to upper parts of the basin. However, there will be no rainfall will occur at the lower part at Mekong Delta, central part of Cambodia and 3S basins.
- Water levels are forecasted to be increasing at stations from upper part at Chiang Saen to Nong Khai and decreasing from Paksane to Kratie stations. Moving down to lower part, water level will be slightly rising except for Neak Luong, Tan Chau and Chau Doc stations from 09 April to 15 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, Kratie and Neak Luong stations from 09 April to 15 April 2024.

### CURRENT WATER LEVEL STATUS

| Monitoring Station  | Rainfall (mm) | Zero gauge amsl (m) | Water level against zero gauge (m) | Current Status | Flow Threshold (PMFM 6A) |
|---------------------|---------------|---------------------|------------------------------------|----------------|--------------------------|
| Jinghong            | 0.0           | -                   | 535.75                             |                |                          |
| Chiang Saen         | 1.3           | 357.110             | 1.55                               | Below LTA      | Normal                   |
| Luang Prabang**     | 0.0           | 267.195             | 8.60                               | Above LTA      | -                        |
| Chiang Khan         | 0.0           | 194.118             | 3.26                               | Below LTA      | -                        |
| Vientiane           | 0.0           | 158.040             | 1.17                               | Below LTA      | Normal                   |
| Nongkhai            | 0.0           | 153.648             | 0.76                               | Below LTA      | -                        |
| Paksane             | 0.0           | 142.125             | 2.33                               | Below LTA      | -                        |
| Nakhon Phanom       | 0.0           | 130.961             | 1.19                               | Below LTA      | -                        |
| Thakhek             | 0.0           | 129.629             | 2.60                               | Below LTA      | -                        |
| Mukdahan            | 0.0           | 124.219             | 1.68                               | Below LTA      | -                        |
| Savannakhet         | 0.0           | 125.410             | 0.84                               | Below LTA      | -                        |
| Khong Chiam         | 0.0           | 89.030              | 2.14                               | Below LTA      | Normal                   |
| Pakse               | 0.0           | 86.490              | 1.02                               | Below LTA      | Normal                   |
| Stung Treng         | 0.0           | 36.790              | 2.58                               | Above LTA      | Normal                   |
| Kratie              | 0.0           | -1.080              | 6.98                               | Above LTA      | Normal                   |
| Kompong Cham        | 0.0           | -0.930              | 2.40                               | Below LTA      | -                        |
| Phnom Penh (Bassac) | 0.0           | -1.020              | 1.45                               | Below LTA      | -                        |
| Phnom Penh Port     | nr            | 0.000               | 0.63                               | Below LTA      | -                        |
| Koh Khel            | 0.0           | -1.000              | 1.58                               | Below LTA      | -                        |
| Neak Luong          | 0.0           | -0.330              | 1.55                               | Above LTA      | -                        |
| Prek Kdam           | 0.0           | 0.080               | 0.78                               | Below LTA      | -                        |
| Tan Chau            | 0.0           | 0.000               | 1.08                               | Above LTA      | -                        |
| Chau Doc            | 0.0           | 0.000               | 1.25                               | Above LTA      | -                        |

\* Procedures for Maintenance of Flows in 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      |
|---------------------|-----------------------------|--------|--------|--------|--------|--------|--------|-----------|------------|
|                     | 09-Apr                      | 10-Apr | 11-Apr | 12-Apr | 13-Apr | 14-Apr | 15-Apr |           |            |
| Jinghong            | -                           | -      | -      | -      | -      | -      | -      | -         | -          |
| Chiang Saen         | 1.60                        | 1.63   | 1.60   | 1.58   | 1.55   | 1.58   | 1.60   | Below LTA | Increasing |
| Luang Prabang       | 8.62                        | 8.65   | 8.63   | 8.60   | 8.62   | 8.65   | 8.67   | Above LTA | Increasing |
| Chiang Khan         | 3.20                        | 3.22   | 3.26   | 3.28   | 3.26   | 3.24   | 3.26   | Below LTA | Increasing |
| Vientiane           | 1.20                        | 1.22   | 1.20   | 1.24   | 1.26   | 1.27   | 1.26   | Below LTA | Increasing |
| Nongkhai            | 0.80                        | 0.82   | 0.84   | 0.83   | 0.81   | 0.79   | 0.78   | Below LTA | Increasing |
| Paksane             | 2.30                        | 2.27   | 2.25   | 2.22   | 2.25   | 2.27   | 2.29   | Below LTA | Decreasing |
| Nakhon Phanom       | 1.17                        | 1.15   | 1.13   | 1.10   | 1.13   | 1.15   | 1.16   | Below LTA | Decreasing |
| Thakhek             | 2.63                        | 2.56   | 2.58   | 2.55   | 2.53   | 2.55   | 2.57   | Below LTA | Decreasing |
| Mukdahan            | 1.66                        | 1.64   | 1.61   | 1.58   | 1.61   | 1.63   | 1.65   | Below LTA | Decreasing |
| Savannakhet         | 0.82                        | 0.84   | 0.85   | 0.83   | 0.80   | 0.78   | 0.81   | Below LTA | Decreasing |
| Khong Chiam         | 2.17                        | 2.13   | 2.14   | 2.16   | 2.18   | 2.16   | 2.13   | Below LTA | Decreasing |
| Pakse               | 1.01                        | 1.03   | 1.05   | 1.03   | 1.01   | 1.03   | 1.01   | Below LTA | Decreasing |
| Stung Treng         | 2.59                        | 2.59   | 2.56   | 2.47   | 2.46   | 2.48   | 2.50   | Above LTA | Decreasing |
| Kratie              | 7.01                        | 7.02   | 7.02   | 6.99   | 6.92   | 6.95   | 6.96   | Above LTA | Decreasing |
| Kompong Cham        | 2.42                        | 2.44   | 2.45   | 2.45   | 2.42   | 2.40   | 2.42   | Below LTA | Increasing |
| Phnom Penh (Bassac) | 1.47                        | 1.49   | 1.50   | 1.50   | 1.50   | 1.48   | 1.47   | Below LTA | Increasing |
| Phnom Penh Port     | 0.66                        | 0.68   | 0.69   | 0.69   | 0.69   | 0.67   | 0.66   | Below LTA | Increasing |
| Koh Khel            | 1.62                        | 1.64   | 1.66   | 1.67   | 1.67   | 1.67   | 1.66   | Below LTA | Increasing |
| Neak Luong          | 1.50                        | 1.48   | 1.47   | 1.46   | 1.50   | 1.48   | 1.45   | Above LTA | Decreasing |
| Prek Kdam           | 0.81                        | 0.82   | 0.83   | 0.83   | 0.83   | 0.81   | 0.80   | Below LTA | Increasing |
| Tan Chau            | 1.07                        | 1.03   | 0.72   | 0.56   | 0.21   | 0.02   | -0.18  | Below LTA | Decreasing |
| Chau Doc            | 1.20                        | 1.14   | 0.96   | 0.51   | 0.23   | 0.05   | -0.12  | Below LTA | Decreasing |

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#### DISCLAIMER

This information is supplied as a service to the governments of the MRC Member Countries so that it may be used as a tool within existing national disaster forecast and warning systems.

### 6.3 Flash Flood Information

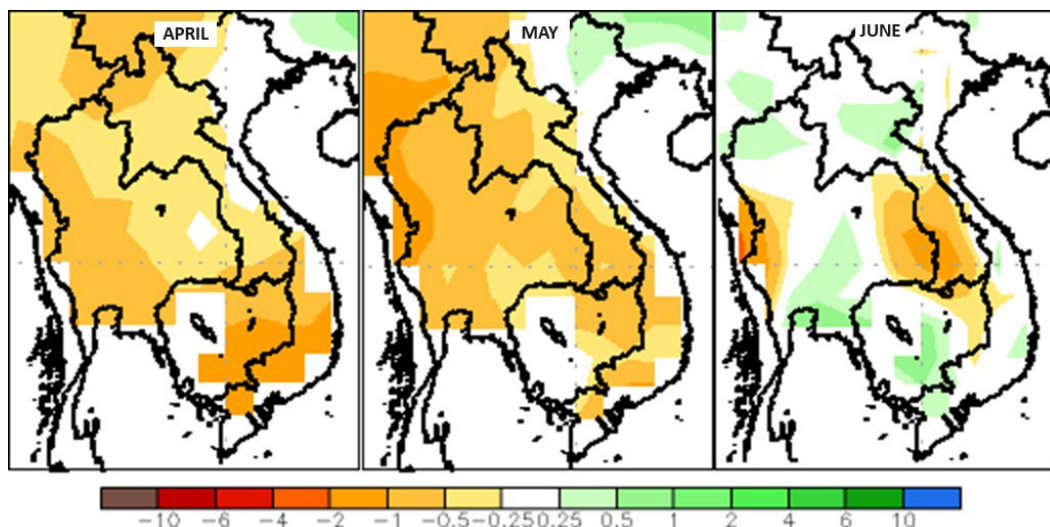
Flash flood events are not likely to happen in the LMB next week. However, local heavy rain in a short period of time might still be possible with unexpected short flash floods. During the dry season if extreme weather occurs, the information on flash flood guidance for the next one, three, and six hours 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 02 – 08 April 2024, the light to moderate rainfall has been only observed in the central part of the LMB including southern part of Lao PDR, eastern part of Thailand, northern part of Cambodia and 3S basins.

From 09 – 15 April 2024, Light to moderate rainfall is forecasted to be sparsely distributed from central to upper parts of the basin. However, there will be no rainfall will occur at the lower part at Mekong Delta, central part of Cambodia and 3S basins.

### **7.2 Water level and its forecast**

At 22 key monitoring stations along the Mekong mainstream from 02 – 08 April 2024, water levels are below the long-term averages (LTAs) except for water level at Luang Prabang, Stung Treng, Kratie, Neak Luong, Tan Chau and Chau Doc 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 08 – 15 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 Kratie stations. Moving down to lower part, water level will be slightly rising except for Neak Luong stations. At Tan Chau and Chau Doc stations, the water levels are predicted to be also decreasing, 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, Stung Treng, Kratie and Neak Luong 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.

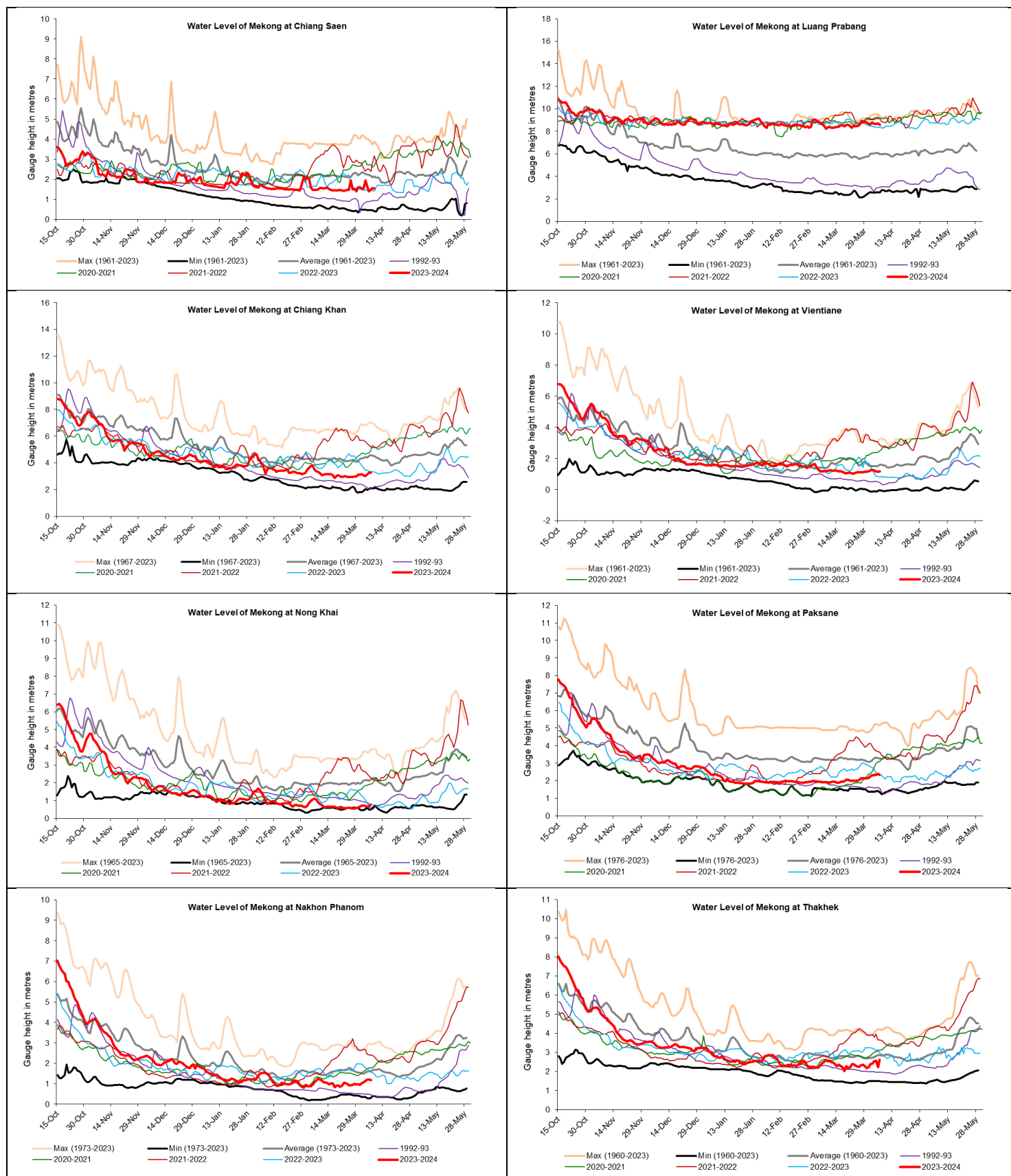
### **7.4 Drought condition and its forecast**

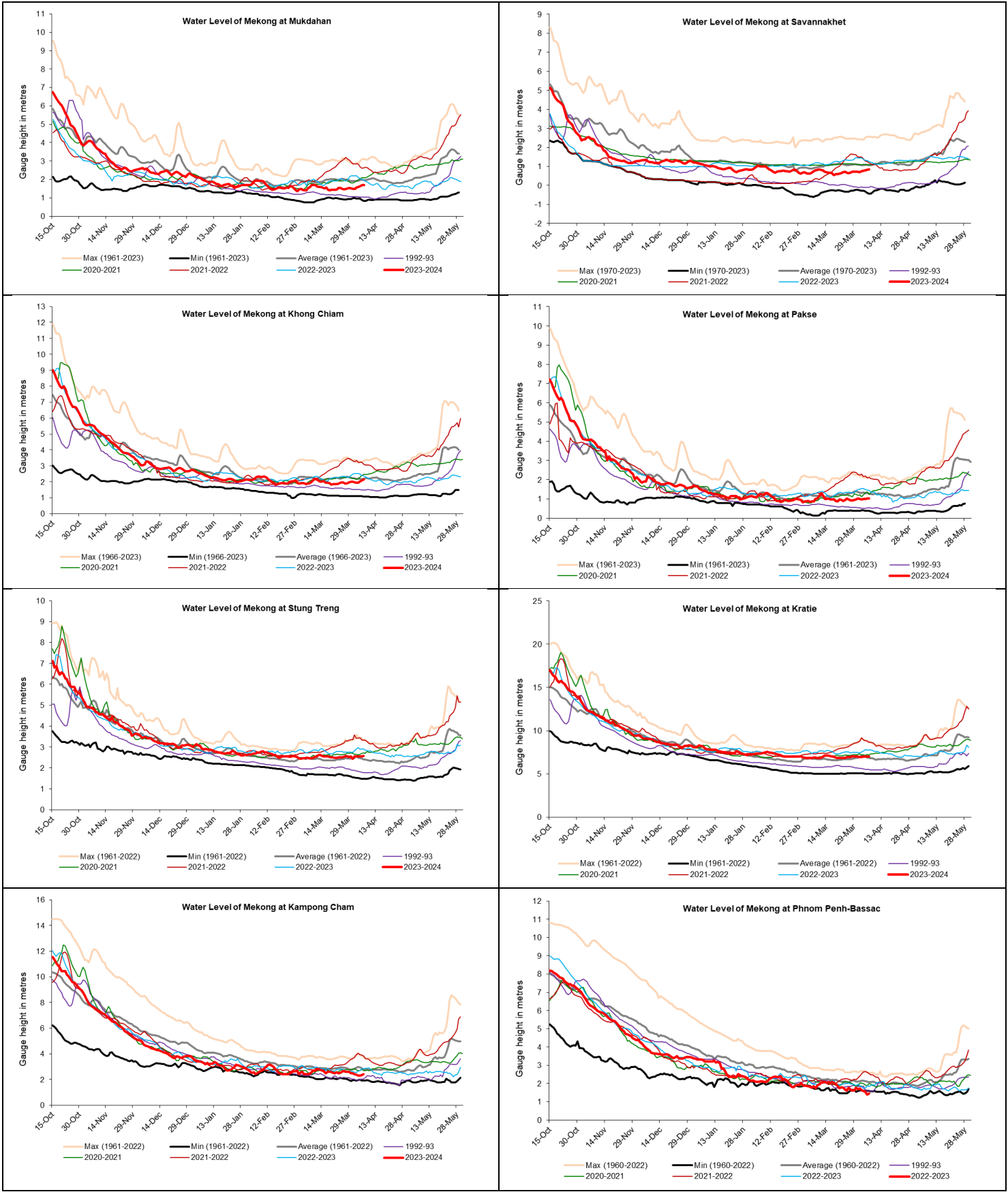
During 2-8 April 2024, the LMB was facing from moderate to severe drought mainly in the southern part. Specifically, the severe and extreme droughts covered some areas of most provinces of Cambodia, Attapu, Champasack, Ubon Ratchathani, Si Sa Ket, Nakhon Ratchasima, Kon Tum and Gia Lai.

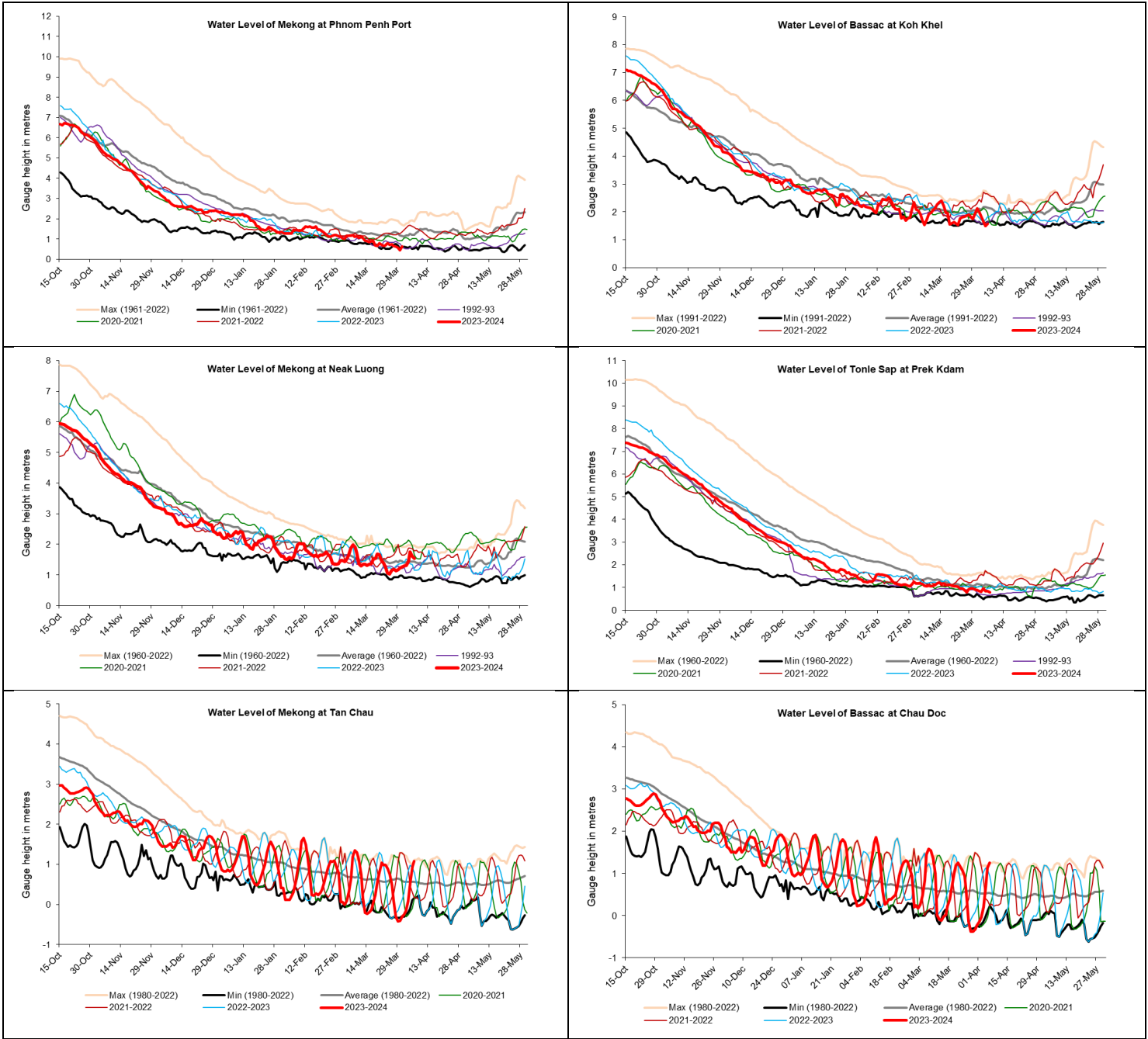
The next three-month forecast of rainfall indicates that much below average rainfall is predicted for the whole LMB area during the upcoming April and May. While June is forecasted to be relatively wet over the northern and southern parts. Moderate and severe

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







## 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 |
|------------|----------|-------------|---------------|-------------|-----------|----------|---------|---------------|---------|----------|-------------|-------------|-------|-------------|--------|--------------|---------------------|-----------------|----------|------------|-----------|----------|----------|
| 02-04-2024 | 535.22   | 1.53        | 8.66          | 3.12        | 1.17      | 0.65     | 2.16    | 0.95          | 2.24    | 1.49     | 0.71        | 2.02        | 1.02  | 2.44        | 6.97   | 2.48         | 1.70                | 0.72            | 1.93     | 1.26       | 0.89      | -0.30    | -0.23    |
| 03-04-2024 | 535.25   | 1.95        | 8.64          | 3.14        | 1.24      | 0.72     | 2.25    | 1.04          | 2.38    | 1.48     | 0.69        | 1.99        | 1.00  | 2.55        | 6.96   | 2.40         | 1.73                | 0.75            | 2.12     | 1.30       | 0.85      | -0.26    | -0.15    |
| 04-04-2024 | 535.64   | 1.70        | 8.80          | 3.08        | 1.26      | 0.74     | 2.32    | 1.07          | 2.40    | 1.57     | 0.74        | 1.96        | 0.98  | 2.55        | 6.96   | 2.38         | 1.63                | 0.66            | 1.98     | 1.32       | 0.82      | -0.15    | -0.04    |
| 05-04-2024 | 535.67   | 1.40        | 8.68          | 3.02        | 1.22      | 0.72     | 2.33    | 1.14          | 2.54    | 1.59     | 0.77        | 1.95        | 1.00  | 2.55        | 6.98   | 2.30         | 1.59                | 0.62            | 1.85     | 1.44       | 0.95      | 0.09     | 0.20     |
| 06-04-2024 | 535.65   | 1.47        | 8.68          | 3.12        | 1.18      | 0.65     | 2.33    | 1.21          | 2.56    | 1.64     | 0.81        | 2.04        | 1.00  | 2.54        | 6.99   | 2.32         | 1.56                | 0.59            | 1.67     | 1.76       | 0.83      | 0.56     | 0.69     |
| 07-04-2024 | 535.58   | 1.57        | 8.70          | 3.25        | 1.15      | 0.66     | 2.38    | 1.21          | 2.22    | 1.68     | 0.83        | 2.09        | 1.02  | 2.55        | 6.97   | 2.35         | 1.39                | 0.45            | 1.50     | 1.62       | 0.84      | 0.94     | 1.13     |
| 08-04-2024 | 535.75   | 1.55        | 8.60          | 3.26        | 1.17      | 0.76     | 2.33    | 1.19          | 2.60    | 1.68     | 0.84        | 2.14        | 1.02  | 2.58        | 6.98   | 2.40         | 1.45                | 0.63            | 1.58     | 1.55       | 0.78      | 1.08     | 1.25     |

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 |
|------------|----------|-------------|---------------|-------------|-----------|----------|---------|---------------|---------|----------|-------------|-------------|-------|-------------|--------|--------------|---------------------|-----------------|----------|------------|-----------|----------|----------|
| 02-04-2024 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0       | 0        | 0           | 0           | 0     | 0           | 0      | 0            | 0                   | 0               | 0        | 0          | 0         | 0        | 0        |
| 03-04-2024 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0       | 0        | 0           | 0           | 0     | 0           | 0      | 0            | 0                   | 0               | 0        | 0          | 0         | 0        | 0        |
| 04-04-2024 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0       | 0        | 0           | 0           | 0     | 0           | 0      | 0            | 0                   | 0               | 0        | 0          | 0         | 0        | 0        |
| 05-04-2024 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0       | 0        | 0           | 0           | 0     | 0           | 0      | 0            | 0                   | 0               | 0        | 0          | 0         | 0        | 0        |
| 06-04-2024 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0       | 0        | 0           | 0           | 0     | 0           | 0      | 0            | 0                   | 0               | 0        | 0          | 0         | 0        | 0        |
| 07-04-2024 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0       | 0        | 0           | 0           | 0     | 0           | 0      | 0            | 0                   | 0               | 0        | 0          | 0         | 0        | 0        |
| 08-04-2024 | 0        | 1.3         | 0             | 0           | 0         | 0        | 0       | 0             | 0       | 0        | 0           | 0           | 0     | 0           | 0      | 0            | 0                   | 0               | 0        | 0          | 0         | 0        | 0        |
| Sum        | 0.0      | 1.3         | 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                 | 0.0             | 0.0      | 0.0        | 0.0       | 0.0      | 0.0      |



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