



Mekong River Commission

Weekly Wet Season Situation Report in the Lower Mekong River Basin 24 – 30 September 2024

Prepared by
The Regional Flood and Drought Management Centre
01 October 2024

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Key Messages

Key messages for this weekly report are presented below.

Rainfall monitoring and forecast

- In the period of 24 – 30 September 2024, light to heavy rainfall has been observed over the LMB. Especially, heavy to very heavy rain occurred in some areas in Vang Vieng, Sayaboury, Vientiane, Savannakhet, Paklay, Mahaxai, Kratie, Koh Khel, Neak Luong, Sesan.
- From 01 – 07 October 2024, Light to moderate rain is expected over the Lower Mekong Basin. However, isolated heavy rain may occur in some areas in the upper and central part of the Lower Mekong Basin (include some provinces in the upper and central part of Lao PDR and Thailand) from 01 - 02 October; and the lower part include the Cambodia on 03 October.

Water level monitoring and forecast

- At 22 key monitoring stations along the Mekong mainstream from 24 – 30 September 2024, water levels have decreased from Chiang Saen to Kompong Cham stations, while it has been increasing from Phnom Penh Port station downward. The total accumulated volume of the reverse flow to Tonle Sap Lake remains 25.31 Km³.
- In the period of 01 – 05 October 2024, water levels at upstream stations along Mekong mainstream from are likely expected to drop and return to normal conditions. There are not any stations that are expected to reach alarm levels.

Drought condition and forecast

- From 24 - 30 September 2024, the LMB is experiencing normal to wet conditions. The observed drought was caused primarily by meteorological indicator.
- From 01 – 07 October, the LMB is likely at normal conditions. No drought is forecasted for the whole region.

1 Introduction

This Weekly Wet Season Situation Report presents a preliminary analysis of the weekly hydrological situation in the Lower Mekong River Basin (LMB) for **24 – 30 September 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 last week, light to heavy rainfall has been observed over the LMB. Especially, heavy to very heavy rain occurred in some areas in Vang Vieng, Sayaboury, Vientiane, Savannakhet, Paklay, Mahaxai, Kuanpho, Kratie, Koh Khel, Neak Luong, Sesan.

Next week from 01 – 07 October 2024, the moderate high-pressure system will impact on the upper part of the LMB while the moderate southwest monsoon prevails over the lower part of the LMB. Light to moderate rain is expected over the Lower Mekong Basin. However, isolated heavy rain may occur in some areas in the upper and central part of the Lower Mekong Basin (include some provinces in the upper and central part of Lao PDR and Thailand) from 01 - 02 October; and the lower part include the Cambodia on 03 October.

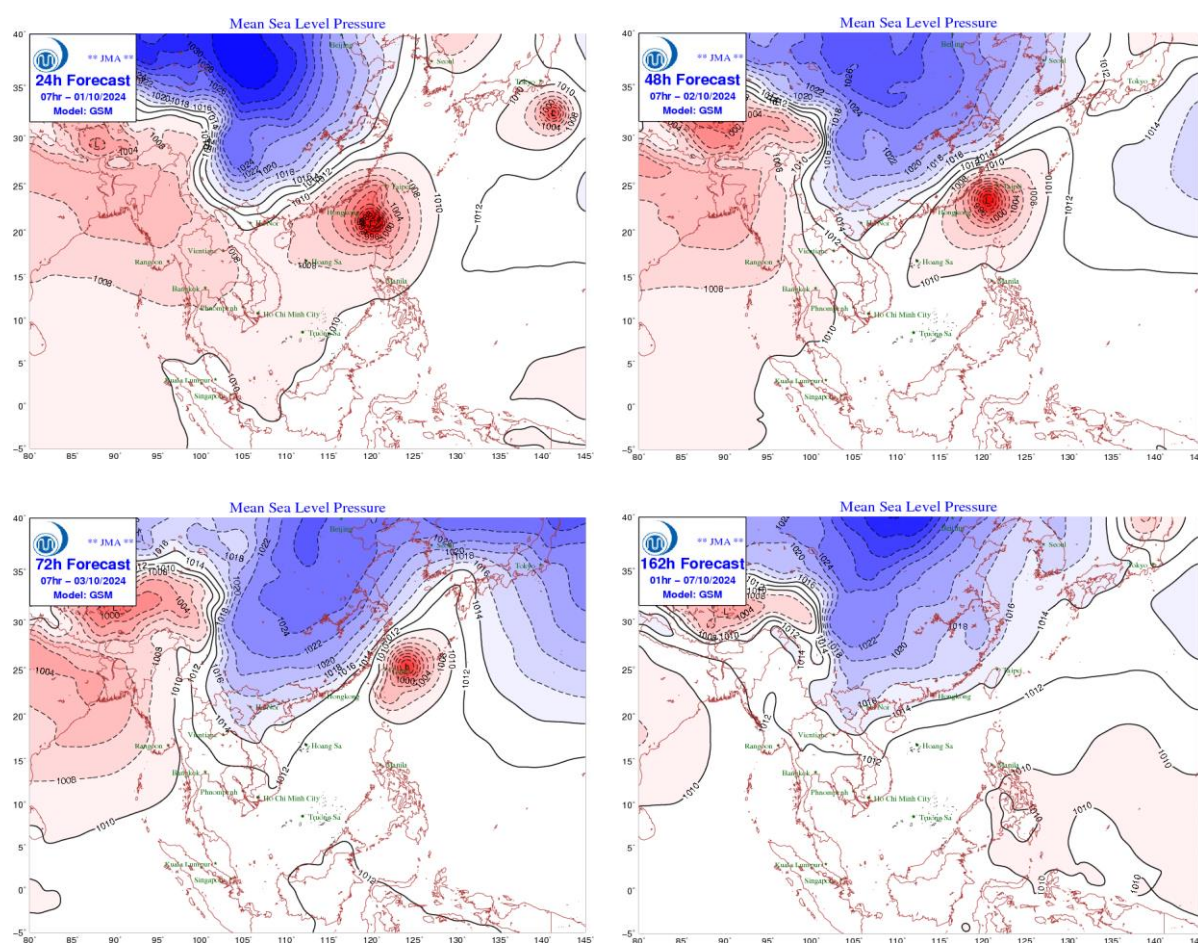


Figure 1: Weather conditions over the LMB from 01 – 07 October

According to the ASEAN Specialised Meteorological Centre (ASMC, <http://asmc.asean.org/home/>), the subseasonal weather outlook (16 – 29 September 2024) indicates that wetter conditions is expected for the entire LMB, while warmer conditions are predicted at the lower to central parts of the LMB. **Figure 2** shows the outlook of weather condition from

– 29 September 2024 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

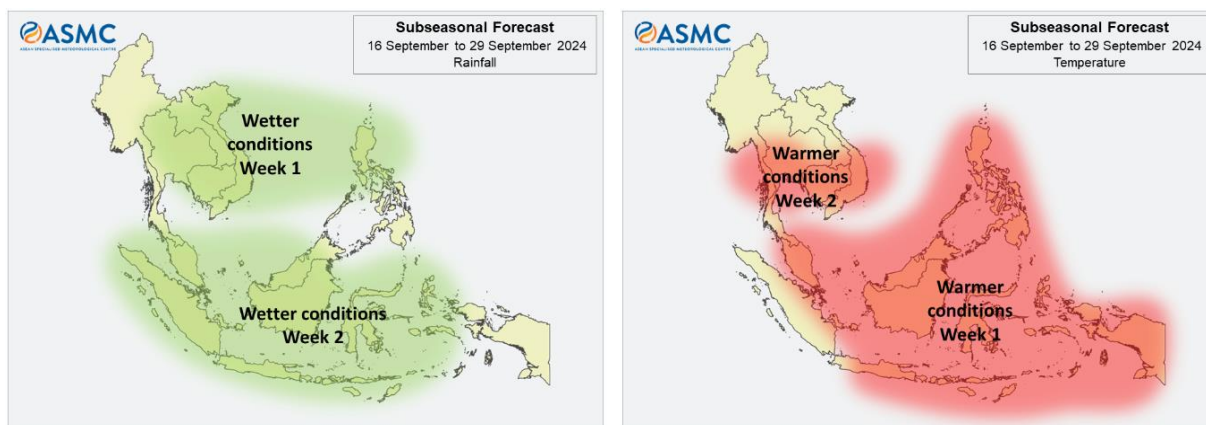


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

Based on the tropical storm risk (TS) (https://www.jma.go.jp/jma/jma-eng/jma-center/rsmc-hp-pub-eg/RSMC_HP.htm), there two active storms at NW pacific system as of 30 September 2024 as displayed in **Figure 3**. These tropical storms may not affect central LMB.

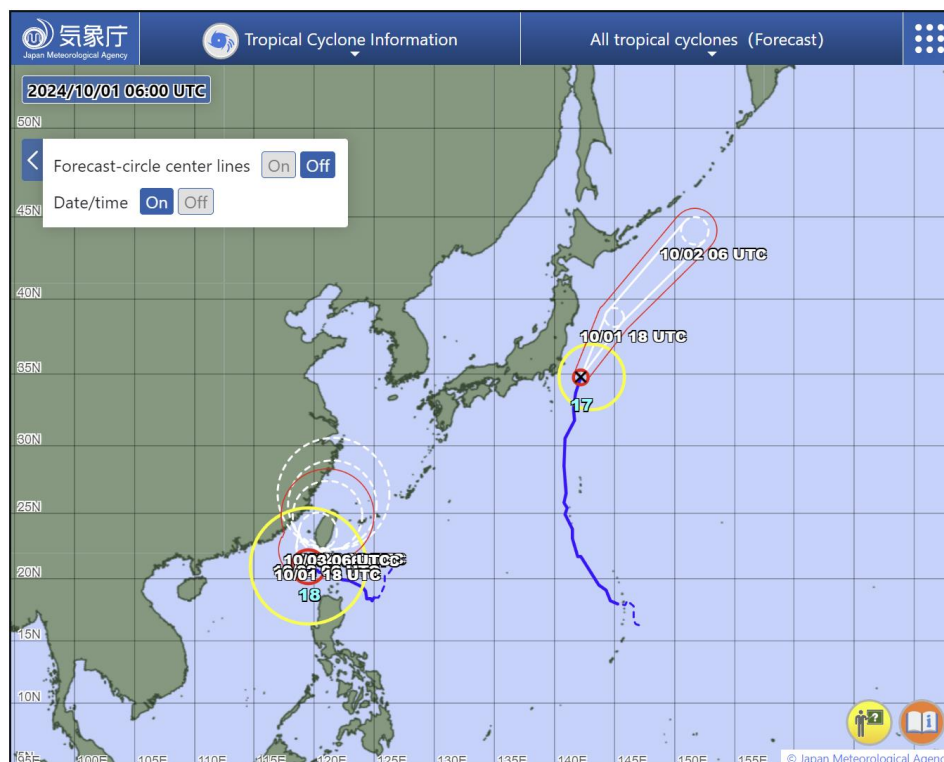


Figure 3: One tropical storm risk observed on 30 September 2024

3. Rainfall and Water Level Monitoring

3.1. Rainfall monitoring

The weekly accumulated rainfall is based on the observed data provided by the MRC Member Countries – Cambodia, Lao PDR, Thailand, and Viet Nam – from 24 to 30 September 2024 (**Figure 4**). Light to heavy rainfall has been observed over the LMB, especially, heavy to very heavy rain occurred in some areas in Vang Vieng, Sayaboury, Vientiane, Savannakhet, Paklay, Mahaxai, Kuanpho, Kratie, Koh Khel, Neak Luong, Sesan.

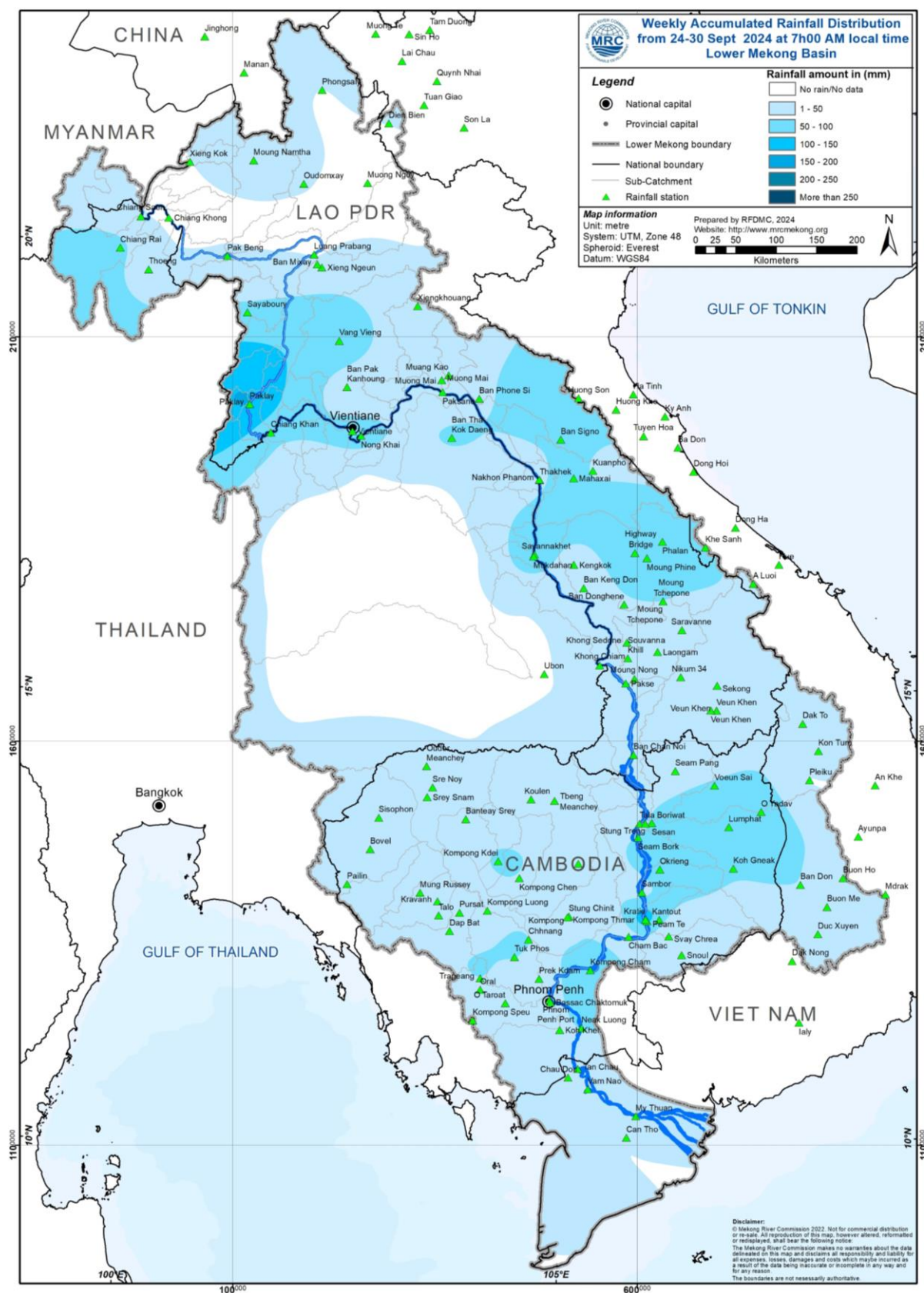


Figure 4: Weekly rainfall distribution over the LMB during 24 – 30 September 2024

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 24 – 30 September 2024, the observed water level (WL) at Jinghong hydrological station¹, was almost constant and ranges between 535.97 m and 535.24 m, which are corresponding to the outflow between 2,130.00 m³/s to 835.00 m³/s (recorded on 7:00 am), respectively (**Figure 6**). The water level in Chiang Saen station significantly decreased approximately from 4.11 m to 3.60 m. At the same period, the water level in Luang Prabang station also decreased with an approximate value of -0.90 m from 12.66 m to 11.76 m as compared to the previous week. Water levels at Chiang Khan, Vientiane and Nongkhai have decreased from 10.86 m to 9.76 m, 8.66 m to 7.73 m, and 9.55 m to 8.20 m, respectively. Moving downward at Paksane, Nakhon Phanom, Thakhek, Mukdahan, Savannakhet, Khong Chiam and Pakse stations, water levels have also been decreasing from 11.19 m to 10.09 m, 11.0 m to 10.09 m, 11.97 m to 11.05 m, 11.20 m to 9.99 m, 9.49 m to 8.37 m, 13.95 m to 12.13 m, and 11.63 m to 10.02 m, respectively.

At Stung Treng, Kratie, and Kampong Cham, water levels have also decreased from 10.00 m to 8.70 m, 21.18 m to 20.00 m, 13.76 m to 13.70 m, respectively. The stations located in the floodplain at Phnom Penh Bassac, Phnom Penh Port, Koh Khel Neak Luong and Preaek Kdam stations, water levels have also increased from 8.71 m to 8.84 m, 7.32 m to 7.48 m, 7.47 m to 7.56 m, and 6.20 m to 6.39 m, respectively.

From to the previous week, the water levels from 24 to 30 September 2024 at Viet Nam's Tan Chau and Chau Doc, water levels have increase from 2.90 m to 3.27 m and from 2.52 m to 2.94 m, respectively.

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

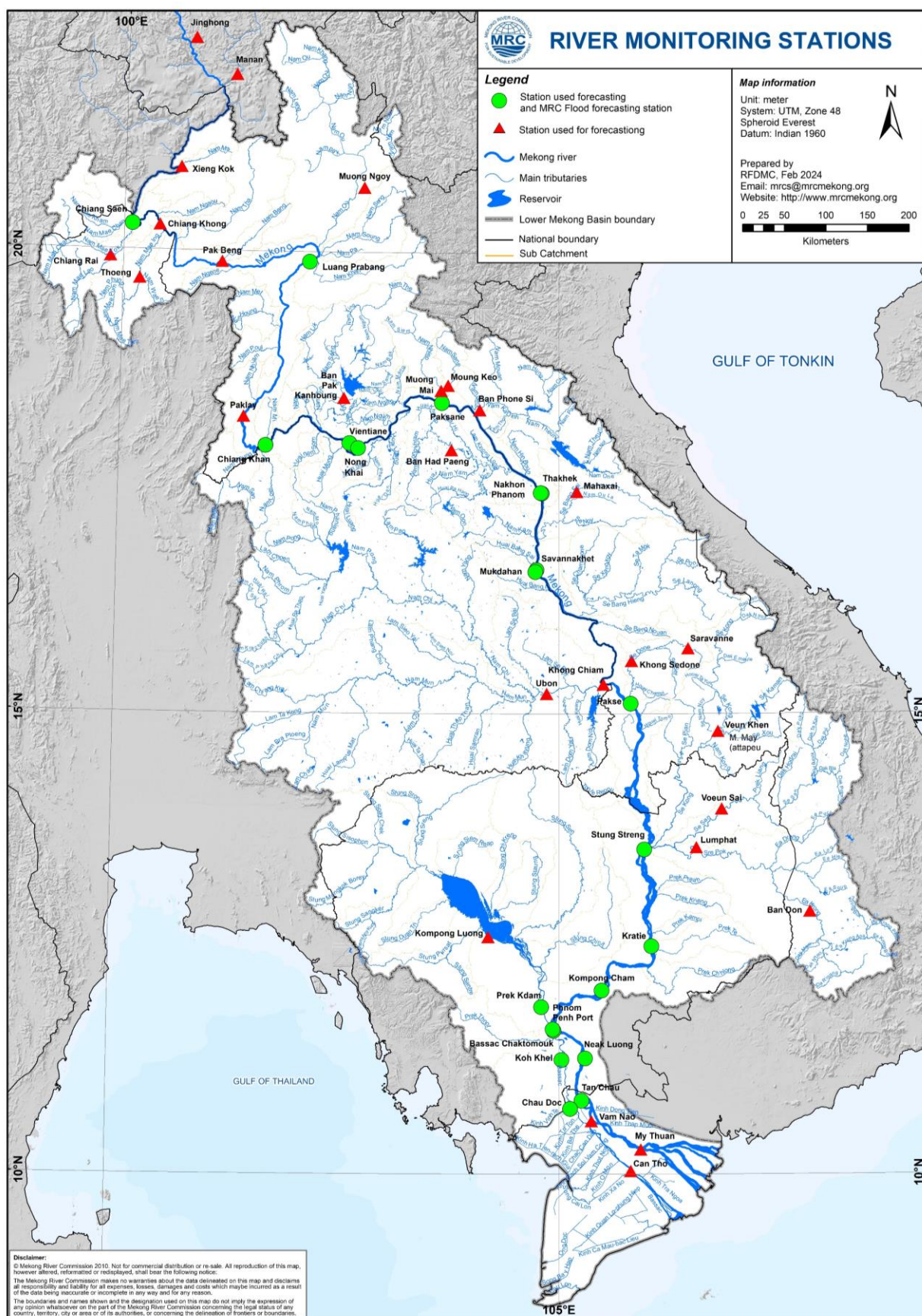


Figure 5: The key stations along LMB for river flood forecasting

The water levels in key monitoring stations on 30 September, water levels at all stations along Mekong mainstream are in normal conditions. However, it has increased at downstream stations from Phnom Penh Port station downward. Moreover, all stations with available PMFM (Article 6C) 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**.

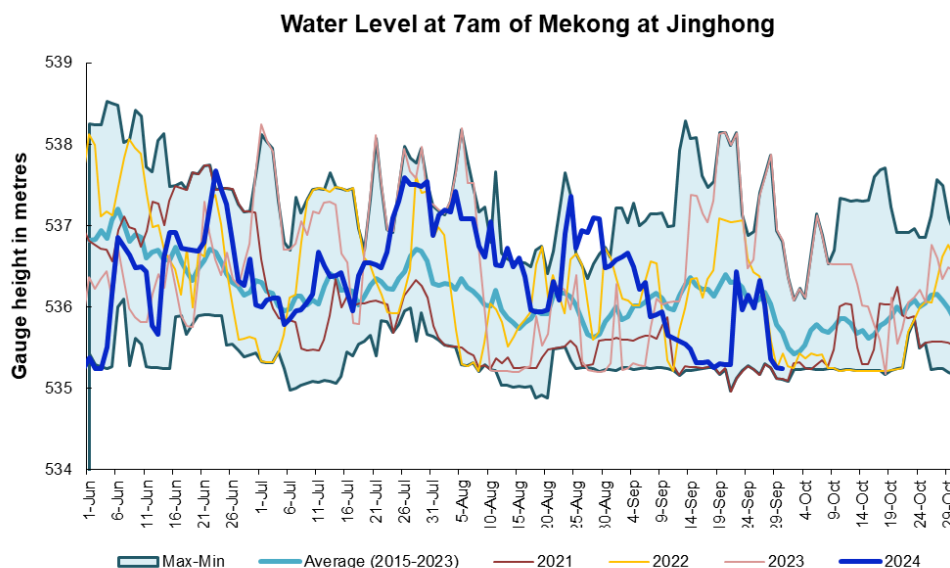


Figure 6. Water level at the Jinghong hydrological station up to 30 September 2024.

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 inflow/reverse of the Tonle Sap Lake took place since 29 June 2024.

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 7**. The reversed flow to the lake has accumulated volume of 25.31 Km³. This may be resulted from high water contribution from upstream part of the LMB due to high rainfall in the past weeks.

The seasonal changes in monthly flow volumes up to 30 September 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 August 2024 is lower than its LTA (about 67.32 %), 2019, 2021, 2022 and 2023 but higher than only that in 2020 during the same period (**Figure 8 and Table 1**). However, updated until 30 September 2024, the volume of the lake is approximately 78.39% of its LTA in September.

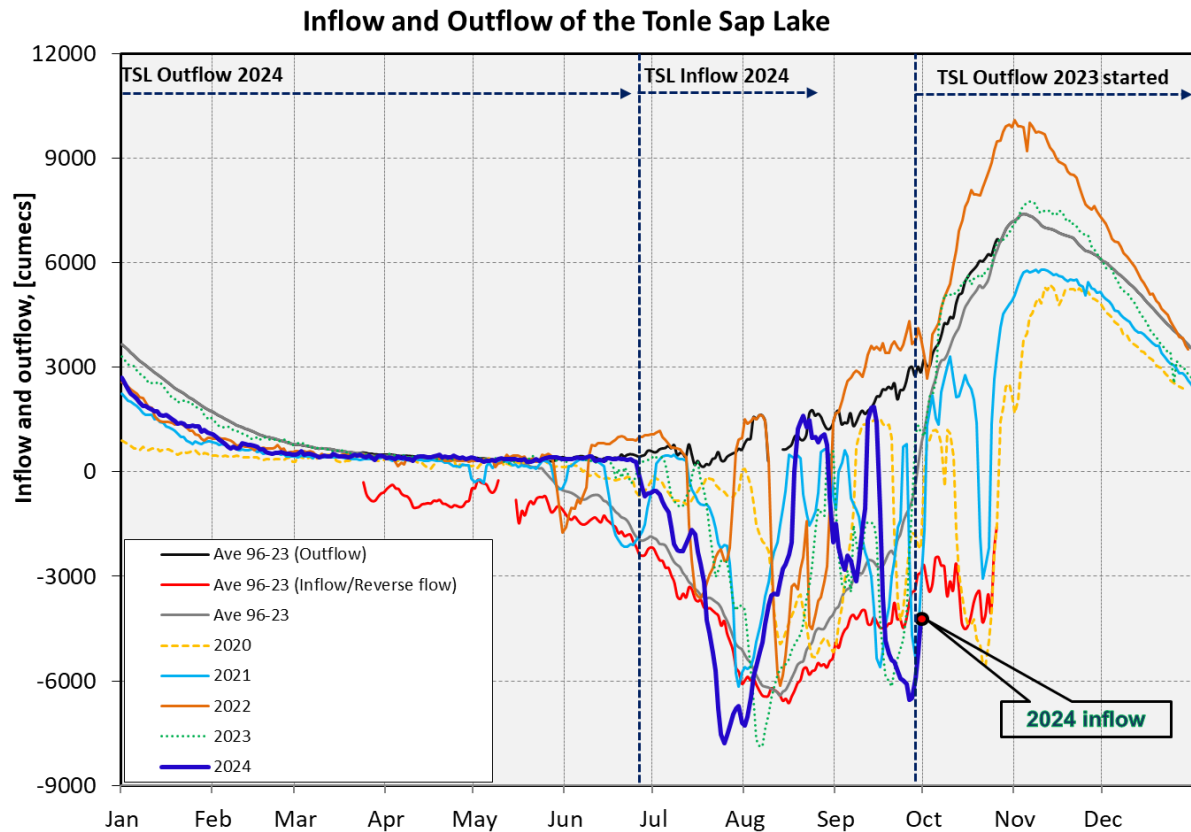


Figure 7: Seasonal change of inflows and outflows of Tonle Sap Lake.

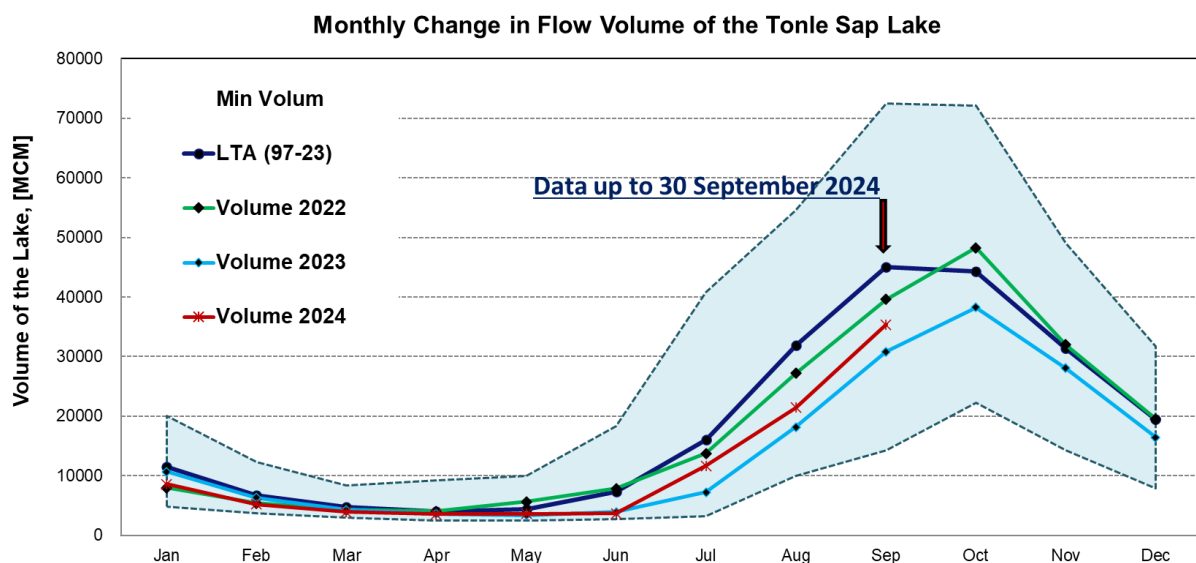


Figure 8. The seasonal change in monthly volume of Tonle Sap Lake.

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

Month	LTA (97-22) [MCM]	Max Volume [MCM]	Min Volume [MCM]	Volume 2019 [MCM]	Volume 2020 [MCM]	Volume 2021 [MCM]	Volume 2022 [MCM]	Volume 2023 [MCM]	Volume 2024 [MCM]	Volume in 2024 [%], compared with its LTA
Jan	11487.13	20039.88	4796.69	7998.69	4796.69	7405.81	7998.69	10700.62	8610.88	74.96
Feb	6697.79	12266.87	3757.30	4954.90	3757.30	4671.15	5405.65	6309.00	5211.05	77.80
Mar	4822.51	8340.62	3030.40	3936.30	3259.79	4147.46	4330.50	4299.86	3936.30	81.62
Apr	4033.80	9203.09	2552.38	3317.61	2635.83	3259.79	4026.48	3609.52	3580.11	88.75
May	4376.15	9938.04	2441.69	3317.61	2469.30	3462.96	5668.52	3404.68	3609.52	82.48
Jun	7357.50	18344.65	2775.77	3580.11	2832.04	4765.22	7886.07	3936.30	3698.04	50.26
Jul	16001.18	40825.01	3230.96	4269.27	3230.96	7333.01	13751.91	7260.51	11671.87	72.94
Aug	31847.52	54529.13	10021.39	12266.87	10021.39	12453.19	27226.87	18168.63	21440.19	67.32
Sep	45088.00	72427.44	14251.59	35070.22	14251.59	22430.63	39624.67	30811.08	35343.56	78.39
Oct	44317.53	72124.19	22296.87	25074.27	28782.41	32331.33	48230.13	38255.90		
Nov	31391.74	49030.83	14302.12	14302.12	23867.31	25218.90	31989.11	28075.12		
Dec	19550.90	31734.10	7886.07	7886.07	13900.73	15599.94	19545.75	16466.19		
	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 monthly volume of Tonle Sap Lake in 2024 is updated until 30 Sept 2024.

4. Flash Flood in the Lower Mekong Basin

During the weekly monitoring period from 24 – 30 September 2024, the LMB received light to very heavy rain in some areas over the LMB.

According to the Southeast Asian Flash Flood Guidance System (SEAFFGS) and analysis, flash flood guidance was detected high level in the next 1, 3, and 6 hours in some areas of Lao PDR and Cambodia during this period, the reporting period as shown in [Figure 14](#) and [Table 2](#).

Table 2. Detected moderate to high-risk flash flood in Cambodia and Lao PDR on 24 Sept

FLASH FLOOD GUIDANCE IN THE LOWER MEKONG BASIN								
In the next 1hrs			In the next 3hrs			In the next 6hrs		
Provinces	Districts	Level	Provinces	Districts	Level	Provinces	Districts	Level
Kampong Cham	Stueng Trang	High	Kampong Cham	Stueng Trang	High	Kampong Cham	Stueng Trang	High
Kampong Chhnang	Tuek Phos	Moderate	Kampong Chhnang	Tuek Phos	Moderate	Kampong Chhnang	Tuek Phos	Moderate
Kratie	Preaek Prasab	Moderate	Mondul Kiri	Kaoh Nheak	Moderate	Mondul Kiri	Kaoh Nheak	Moderate
Mondul Kiri	Kaoh Nheak	Moderate	Mondul Kiri	Pechr Chenda	High	Mondul Kiri	Pechr Chenda	High
Mondul Kiri	Ou Reang	Moderate	Ratana Kiri	Andoung Meas	Moderate	Ratana Kiri	Andoung Meas	Moderate
Mondul Kiri	Pechr Chenda	High	Ratana Kiri	Koun Mom	Moderate	Ratana Kiri	Koun Mom	Moderate

FLASH FLOOD GUIDANCE IN THE LOWER MEKONG BASIN

In the next 1hrs			In the next 3hrs			In the next 6hrs		
Provinces	Districts	Level	Provinces	Districts	Level	Provinces	Districts	Level
Preah Vihear	Chhaeb	Moderate	Ratana Kiri	Ou Chum	Moderate	Ratana Kiri	Ou Chum	Moderate
Ratana Kiri	Andoung Meas	High	Ratana Kiri	Ta Veang	High	Ratana Kiri	Ta Veang	High
Ratana Kiri	Koun Mom	High	Ratana Kiri	Veun Sai	Moderate	Ratana Kiri	Veun Sai	Moderate
Ratana Kiri	Ou Chum	Moderate	Stung Treng	Sesan	Moderate	Stung Treng	Sesan	High
Ratana Kiri	Ta Veang	High	Stung Treng	Siem Pang	High	Stung Treng	Siem Pang	High
Ratana Kiri	Veun Sai	High	Stung Treng	Thala Barivat	Moderate	Stung Treng	Thala Barivat	Moderate
Stung Treng	Sesan	High						
Stung Treng	Siem Bouk	Moderate						
Stung Treng	Siem Pang	High						
Stung Treng	Thala Barivat	Moderate						

FLASH FLOOD GUIDANCE IN THE LOWER MEKONG BASIN

In the next 1hrs			In the next 3hrs			In the next 6hrs		
Provinces	Districts	Level	Provinces	Districts	Level	Provinces	Districts	Level
Champasak	Bachiangc	Moderate	Champasak	Champasac	Moderate	Champasak	Champasac	Moderate
Champasak	Champasac	Moderate	Champasak	Phonthong	Moderate	Champasak	Phonthong	Moderate
Champasak	Pathoomph	Moderate	Champasak	Sukuma	Moderate	Champasak	Sukuma	Moderate
Champasak	Phonthong	High	Khammuane	Thakhek	Moderate	Khammuane	Thakhek	Moderate
Champasak	Sukuma	High	Khammuane	Xaybouath	Moderate	Khammuane	Xaybouath	Moderate
Khammuane	Thakhek	Moderate	Xiengkhuang	Morkmay	Moderate	Xiengkhuang	Morkmay	Moderate
Khammuane	Xaybouath	Moderate						
Oudomxay	Hoon	Moderate						
Saravane	Lakhoneph	Moderate						
Savannakhet	Vilabuly	Moderate						
Sekong	Dakcheung	Moderate						
Vientiane	Phonhong	Moderate						
Xiengkhuang	Morkmay	High						
Xiengkhuang	Pek	Moderate						

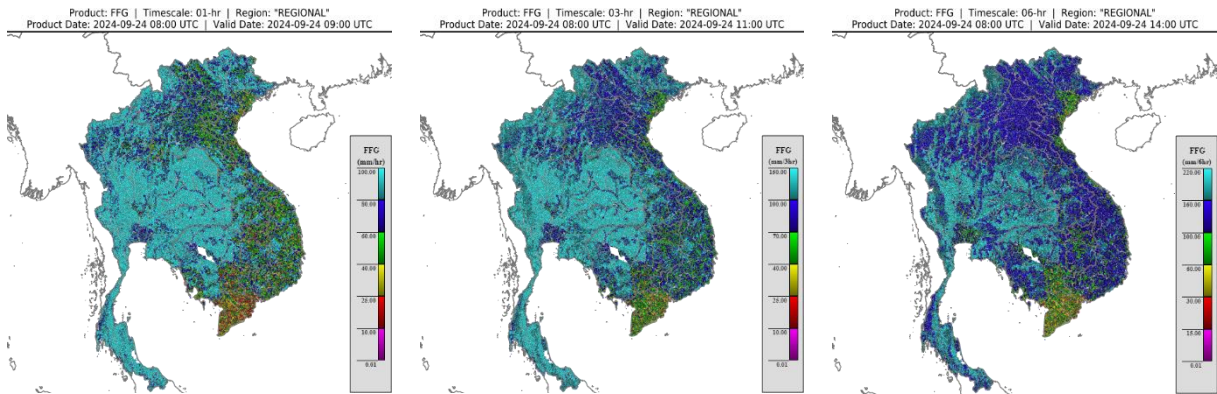


Figure 9. Flash Flood risk for the next 12-hr and 24-hr on 24 September

5. Drought Monitoring in the Lower Mekong Basin

5.2. Weekly drought monitoring from 24 - 30 September 2024

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)**

As indicated in **Figure 10** below, during 24 - 30 September, the LMB is experiencing the LMB was facing normal to wet conditions.

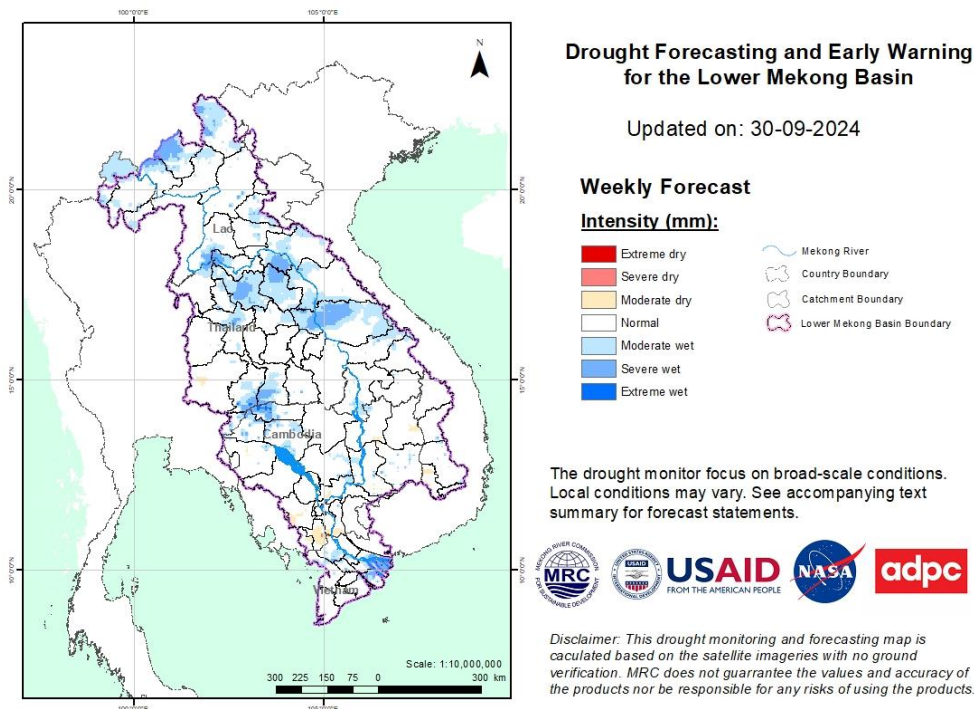


Figure 10: Weekly standardized precipitation index from 24 – 30 September.

The LMB was facing a normal condition during the monitoring week from 24 - 30 September 2024, see **Figure 10**.



The combined drought indicator, **Figure 11**, shows that No drought in most parts of the region. The impacted areas are listed below:

Note: S: short-term drought, less than 1 months; L: long-term drought, more than 1 month

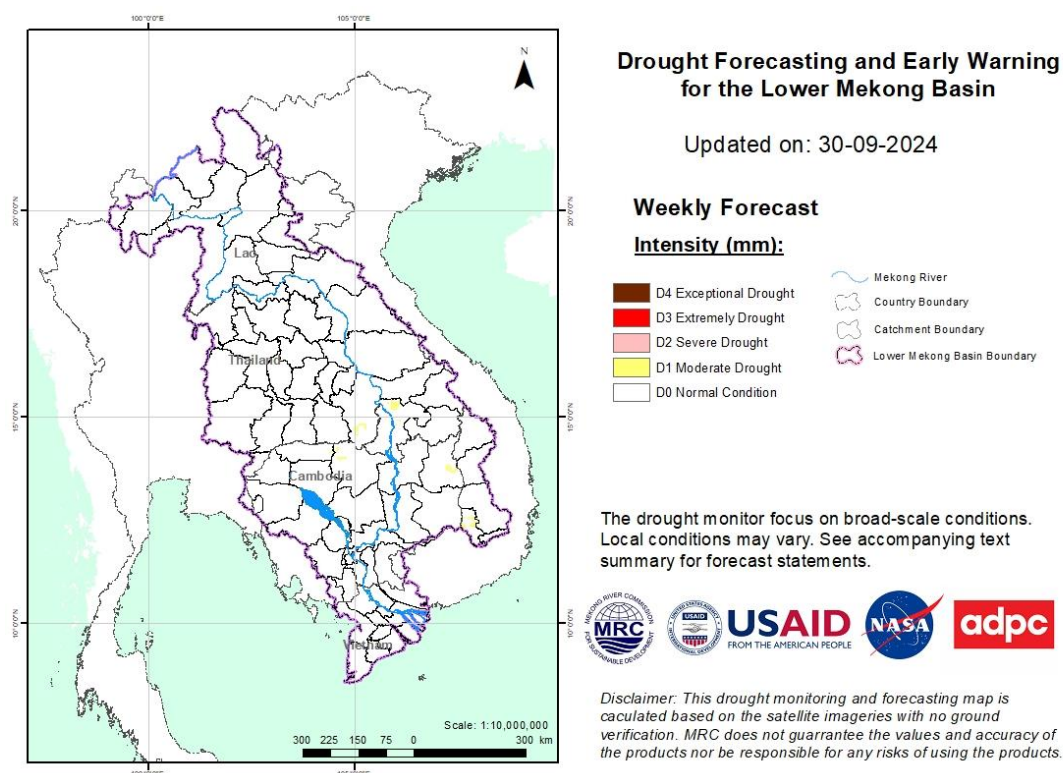


Figure 12: Weekly Combined Drought Index from 24 - 30 September.

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

From 01 – 05 October 2024, the accumulated rainfall over the entire Lower Mekong Basin is distributed with light to heavy rain based on CHIRPS-GFS (**Figure 12**). The accumulated rainfall over the entire Lower Mekong Basin is distributed with Light to moderate rain is expected over the Lower Mekong Basin. However, isolated heavy rain may occur in some areas in the upper and central part of the Lower Mekong Basin (include some provinces in the upper and central part of Lao PDR and Thailand) from 01 - 02 October; and the lower part include the Cambodia on 03 October.

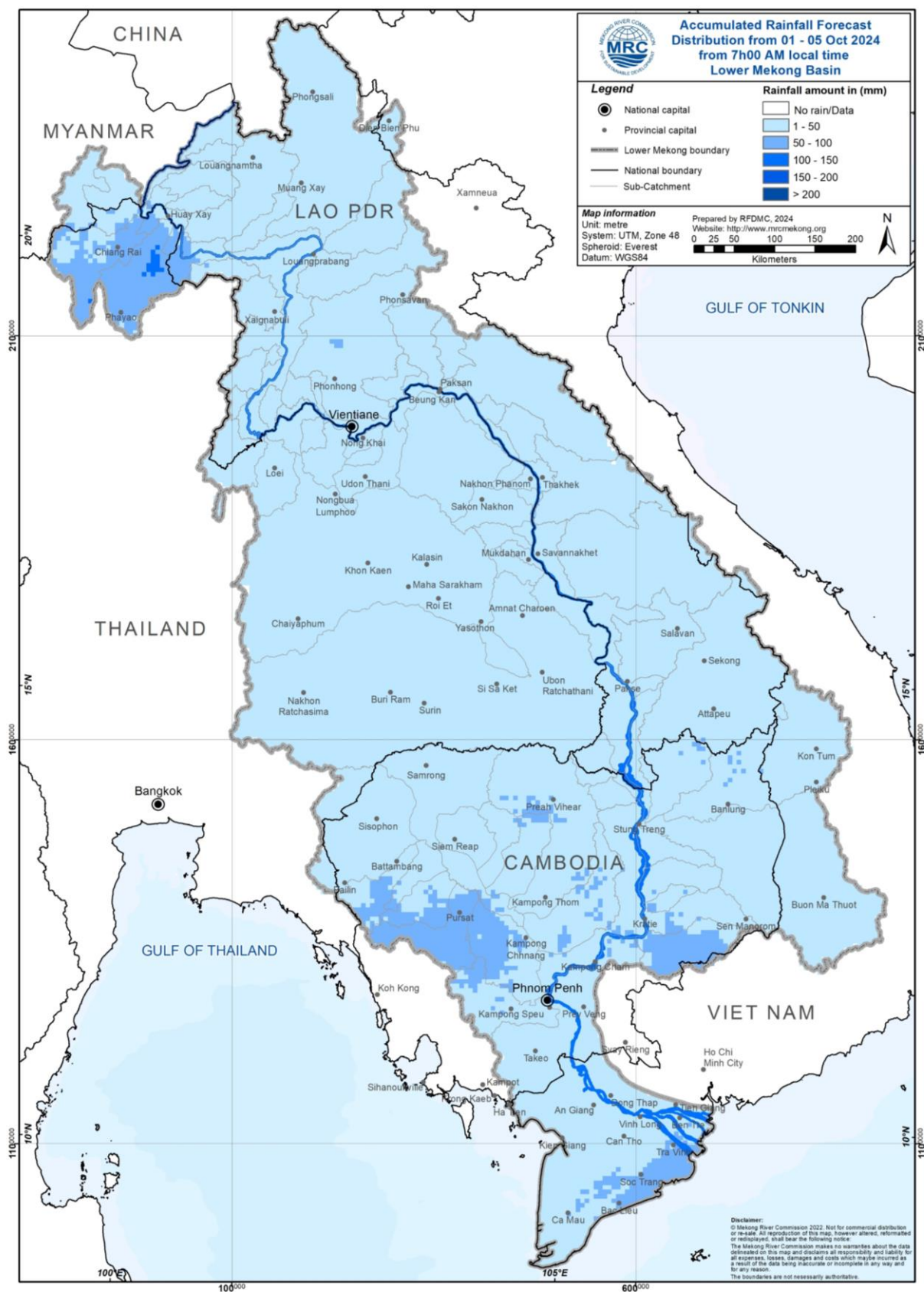


Figure 13: Accumulated rainfall forecast from CHIRPS-GEFS (01 – 05 October 2024)

6.2 Water level forecast

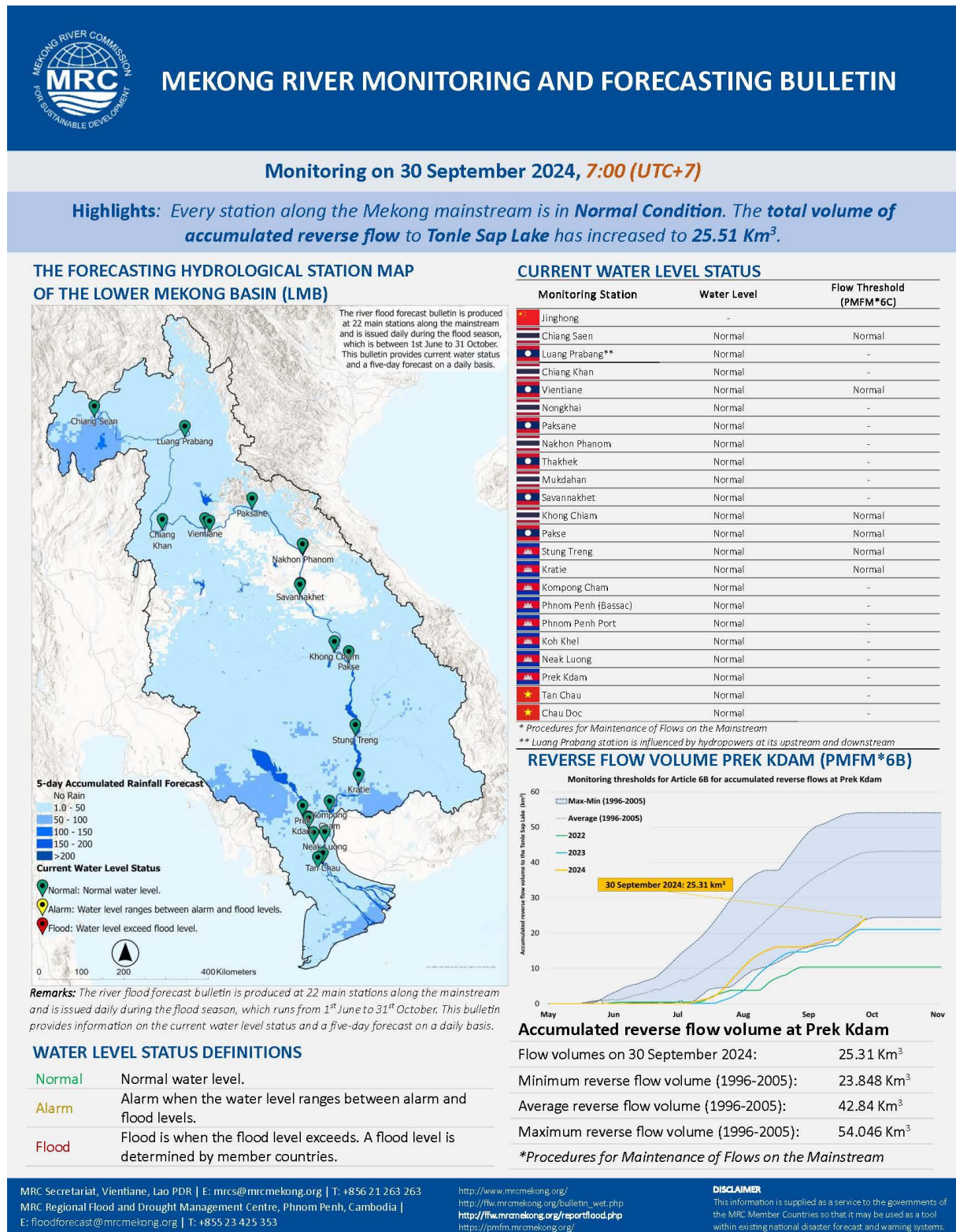
The five-day forecast is carried out from 01 to 05 October 2024 for 22 forecasting stations along the Mekong mainstream. Overall, water levels at almost all stations along the Mekong mainstream are expected to decrease except for Chiang Saen station. There are not any stations that are expected to reach alarm levels. However, some stations at downstream such as Koh Khel (Bassac), Phnom Penh (Bassac), Tan Chau and Chau Doc were approaching the alarm levels.

At Luang Prabang, Chiang Khan, Vientiane, Nongkhai, Paksane, Nakhon Phanom, and Mukdahan stations, water levels are expected to drop with approximated value of -0.32 m, -0.24 m, -0.55 m, -0.61 m, -1.0 m, -0.85 m, and -0.94 m, respectively. Moreover, Khong Chiam, Pakse, Stung Treng, Kratie, Kompong Cham, Phnom Penh (Bassac), Phnom Penh Port, Koh Khel, Neak Luong, and Prek Kdam, water levels are expected to drop approximately -1/53 m, -1.20 m, -0.98 m, -2.24 m, -1.43 m, -0.54 m, -0.42 m, -0.23 m, -0.21 m, -0.31 m, respectively.

For the Tan Chau station on the Mekong River and Chau Doc station on the Bassac River, water levels are also expected to be rise as well. At Tan Chau, water level will decrease approximately -0.12 m, while at Chau Doc -0.04 m.
























The weekly River Monitoring Bulletin and forecasting issued on 30 September 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 3. River Monitoring and Forecasting Bulletin



Forecasting from 01 to 05 October 2024

Highlights: Water Levels at all stations along Mekong mainstream are **expected to drop** except for Chiang Saen station. Water levels from **Phnom Penh Port station** downward are still relatively high but are not expected to reach **Alarm Levels**.

Forecasting Station	24 h Observed Rainfall (mm)	Zero gauge above M.S.L (m)	Observed Water Level against zero gauge (m)		Forecasted Water Level (m)					Alarm Level (m)	Flood Level (m)	Forecasted Water Levels Change in 5 days (m)	Max. Water levels change within next 5 days (m)	Min. distance to alarm level within next 5 days (m)	Min. distance to flood level within next 5 days (m)
	29-Sep		29-Sep	30-Sep	01-Oct	02-Oct	03-Oct	04-Oct	05-Oct						
 Jinghong	0.0	-	535.26	↓ 535.24	-	-	-	-	-	-	-	-	-	-	-
 Chiang Saen	0.0	357.110	3.98	↓ 3.60	↓ 3.32	↑ 3.57	↑ 3.74	↑ 3.95	↑ 4.12	11.50	12.80	↑ 0.52	0.52	7.38	8.68
 Luang Prabang	0.0	267.195	11.82	↓ 11.76	↓ 11.58	↓ 11.29	↓ 11.06	↑ 11.22	↑ 11.44	17.50	18.00	↓ -0.32	-0.70	5.92	6.42
 Chiang Khan	6.0	194.118	10.04	↓ 9.76	↓ 9.61	↓ 9.42	↓ 9.26	↑ 9.40	↑ 9.52	14.50	16.00	↓ -0.24	-0.50	4.89	6.39
 Vientiane	9.8	158.040	7.73	↓ 7.28	↓ 7.07	→ 6.99	→ 6.99	→ 6.90	↓ 6.73	11.50	12.50	↓ -0.55	-0.55	4.43	5.43
 Nongkhai	31.2	153.648	8.69	↓ 8.20	↓ 7.97	→ 7.89	→ 7.90	→ 7.81	↓ 7.59	11.40	12.20	↓ -0.61	-0.61	3.43	4.23
 Paksane	3.0	142.125	10.59	↓ 10.09	↓ 9.69	↓ 9.45	↓ 9.34	→ 9.25	↓ 9.09	13.50	14.50	↓ -1.00	-1.00	3.81	4.81
 Nakhon Phanom	5.9	130.961	10.49	↓ 10.09	↓ 9.71	↓ 9.50	↓ 9.37	→ 9.30	→ 9.24	11.50	12.00	↓ -0.85	-0.85	1.79	2.29
 Thakhek	8.2	129.629	11.46	↓ 11.05	↓ 10.65	↓ 10.47	↓ 10.32	→ 10.26	→ 10.20	13.00	14.00	↓ -0.85	-0.85	2.35	3.35
 Mukdahan	0.0	124.219	10.38	↓ 9.99	↓ 9.63	↓ 9.36	↓ 9.20	→ 9.11	→ 9.05	12.00	12.50	↓ -0.94	-0.94	2.37	2.87
 Savannakhet	0.0	124.219	8.75	↓ 8.37	↓ 8.05	↓ 7.77	↓ 7.60	→ 7.50	→ 7.43	12.00	13.00	↓ -0.94	-0.94	3.95	4.95
 Khong Chiam	0.0	89.030	12.55	↓ 12.13	↓ 11.67	↓ 11.21	↓ 10.90	↓ 10.72	↓ 10.60	13.50	14.50	↓ -1.53	-1.53	1.83	2.83
 Pakse	0.0	86.490	10.40	↓ 10.02	↓ 9.69	↓ 9.34	↓ 9.09	↓ 8.94	↓ 8.82	11.00	12.00	↓ -1.20	-1.20	1.31	2.31
 Stung Treng	0.0	36.790	9.02	↓ 8.70	↓ 8.40	↓ 8.18	↓ 8.00	↓ 7.84	↓ 7.72	10.70	12.00	↓ -0.98	-0.98	2.30	3.60
 Kratie	0.0	-0.101	20.45	↓ 20.00	↓ 19.64	↓ 19.06	↓ 18.47	↓ 18.07	↓ 17.76	22.00	23.00	↓ -2.24	-2.24	2.36	3.36
 Kompong Cham	0.0	-0.930	13.88	↓ 13.60	↓ 13.31	↓ 13.05	↓ 12.76	↓ 12.44	↓ 12.17	15.20	16.20	↓ -1.43	-1.43	1.89	2.89
 Phnom Penh (Bassac)	0.0	-1.020	9.00	↓ 8.84	↓ 8.70	↓ 8.60	↓ 8.51	↓ 8.40	↓ 8.30	10.50	12.00	↓ -0.54	-0.54	1.80	3.30
 Phnom Penh Port	nr	0.070	7.58	↓ 7.48	↓ 7.39	↓ 7.33	↓ 7.26	↓ 7.16	↓ 7.06	9.50	11.00	↓ -0.42	-0.42	2.11	3.61
 Koh Khel	0.0	-1.000	7.61	↓ 7.56	→ 7.54	↓ 7.47	↓ 7.40	↓ 7.36	↓ 7.33	7.90	8.40	↓ -0.23	-0.23	0.36	0.86
 Neak Luong	0.0	-0.330	6.46	↓ 6.39	→ 6.37	↓ 6.33	↓ 6.28	↓ 6.23	↓ 6.18	7.50	8.00	↓ -0.21	-0.21	1.13	1.63
 Prek Kdam	0.0	0.080	7.79	↓ 7.76	↓ 7.68	↓ 7.62	↓ 7.57	↓ 7.51	↓ 7.45	9.50	10.00	↓ -0.31	-0.31	1.82	2.32
 Tan Chau	0.0	0.000	3.28	↓ 3.27	→ 3.26	→ 3.24	↓ 3.21	→ 3.18	↓ 3.15	3.50	4.50	↓ -0.12	-0.12	0.24	1.24
 Chau Doc	nr	0.000	2.95	↓ 2.94	→ 2.95	→ 2.95	→ 2.94	→ 2.93	↓ 2.90	3.00	4.00	↓ -0.04	-0.04	0.05	1.05

WATER LEVEL FORECASTING DEFINITIONS

↑	Rising water level.
→	Stable water level: stable water level is defined as a daily change of less than 10cm from Chaing Saen to Savannakhet; less than 5cm at Pakse and Stung Treng; and no more than 3cm from Kratie downstream.
↓	Falling water level.
X	No data available.
Alarm stage	Alarm stage is when the water level ranges between alarm and flood levels.
Flood stage	Flood stage is when the flood level exceeds. A flood level is determined by member countries.

NOTES

- On **30 September**, water levels at all stations along the Mekong mainstream are in **normal condition** and have been **decreasing**. The **total volume of accumulated reverse flow** to Tonle Sap Lake has increased to **25.51 Km³**.
- For **01-05 October**, **light to moderate** rain is expected over the LMB. However, **isolated heavy rain** may occur in some areas in the upper and central part of the LMB (some provinces in the **upper and central part of Lao PDR and Thailand**) from **01 - 02 October**.
- For **01-05 October**, water levels at **most of the stations** along the mainstream are expected to **drop** except for Chiang Saen station.
- Water levels from **Phnom Penh Port station** downward are still **relatively high** but are not expected to reach **Alarm Level**.

DISCLAIMER

6.3 Flash Flood Information

With the predicted rainfall for the coming week, flash floods might be detected in some areas in the LMB. Local heavy rain in a short period of time is possible with unpredictable short flash floods.

Further detailed information on Flash Flood Guidance Information, as well as 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) for the seasonal outlook of rainfall.

Figure 13 below shows the monthly forecasts of combined drought indicator from October to December 2024 over the LMB area.

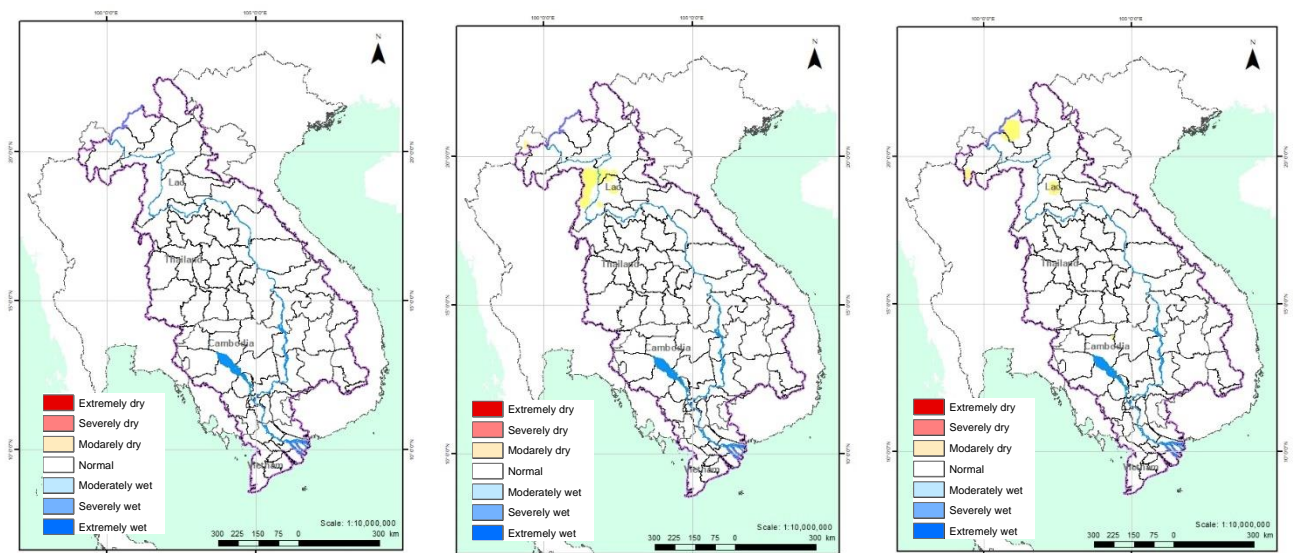


Figure 14. Monthly forecasts of combined drought indicator for a) October, b) November and c) December 2024.

Figure 14 illustrates the monthly drought forecast for the upcoming three months using the Combined Drought Indicator (CDI). The forecast indicates that no significant drought conditions are expected across the entire LMB during this period. However, in November 2024, the upper part of the LMB, including Xayabouly province, is anticipated to experience moderate drought conditions; and in December, Luang Namtha province, is anticipated to experience moderate drought conditions.

7 Summary and Possible Implications

7.1. Rainfall and its forecast

In the period of 24 – 30 September 2024, light to heavy rainfall has been observed over the LMB. Especially, heavy to very heavy rain occurred in some areas in Vang Vieng, Sayaboury, Vientiane, Savannakhet, Paklay, Mahaxai, Kratie, Koh Khel, Neak Luong, Sesan.

From 01 – 07 October 2024, Light to moderate rain is expected over the Lower Mekong Basin. However, isolated heavy rain may occur in some areas in the upper and central part of the Lower Mekong Basin (include some provinces in the upper and central part of Lao PDR and Thailand) from 01 - 02 October; and the lower part include the Cambodia on 03 October.

7.2. Water level and its forecast

At 22 key monitoring stations along the Mekong mainstream from 24 – 30 September 2024, water levels have decreased from Chiang Saen to Kompong Cham stations, while it has been increasing from Phnom Penh Port station downward. The total accumulated volume of the reverse flow to Tonle Sap Lake remains 25.31 Km³.

In the period of 01 – 05 October 2024, water levels at upstream stations along Mekong mainstream from are likely expected to drop and return to normal conditions. There are not any stations that are expected to reach alarm levels.

7.3. Flash flood and its trends

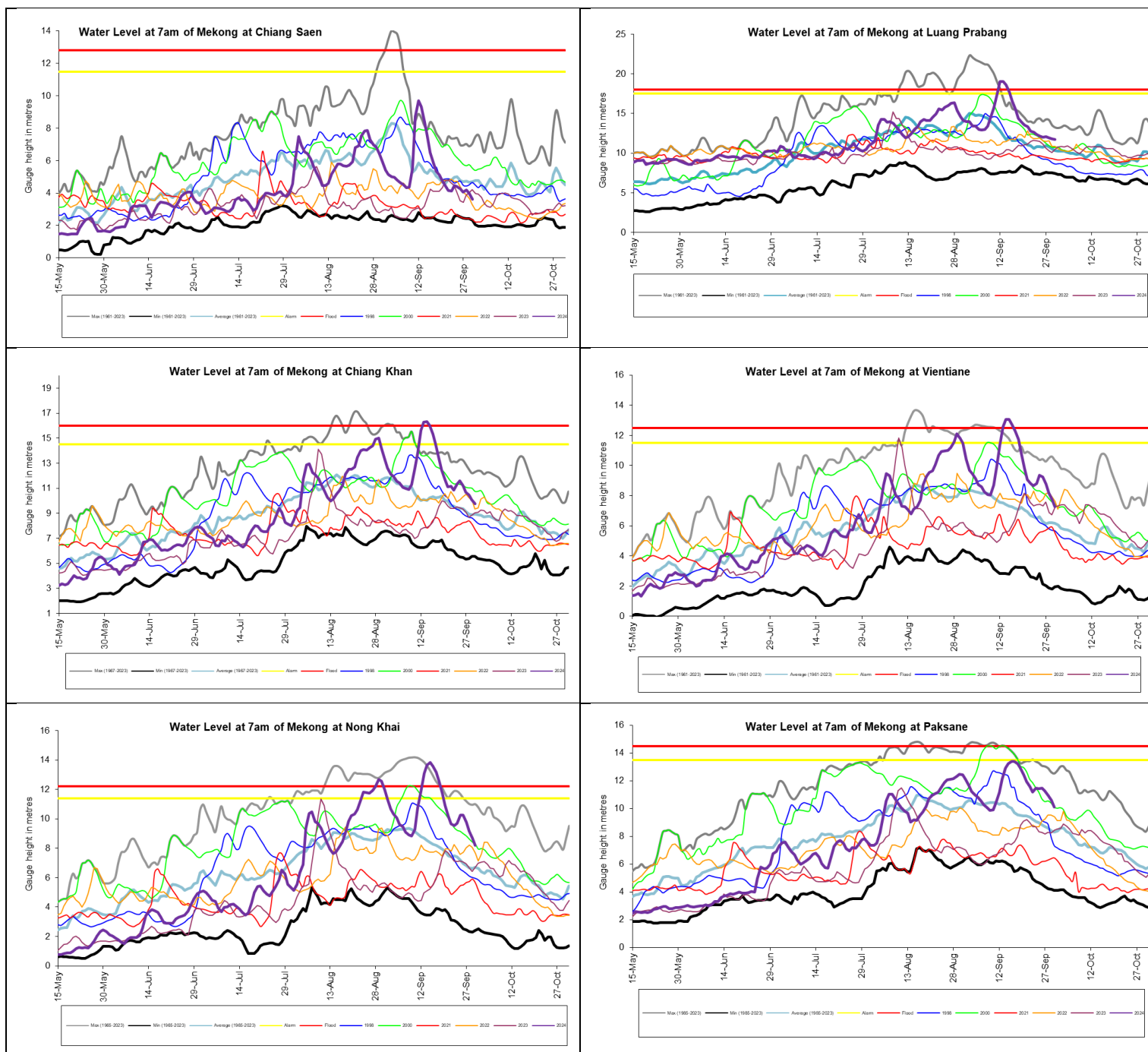
With the predicted of rainfall for the coming week as mentioned earlier in part 2, the flash flood guidance at a low to high level will likely be detected in some areas of the LMB.

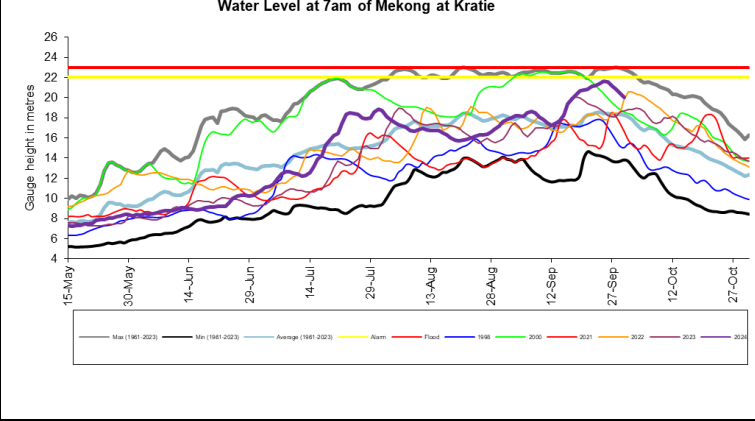
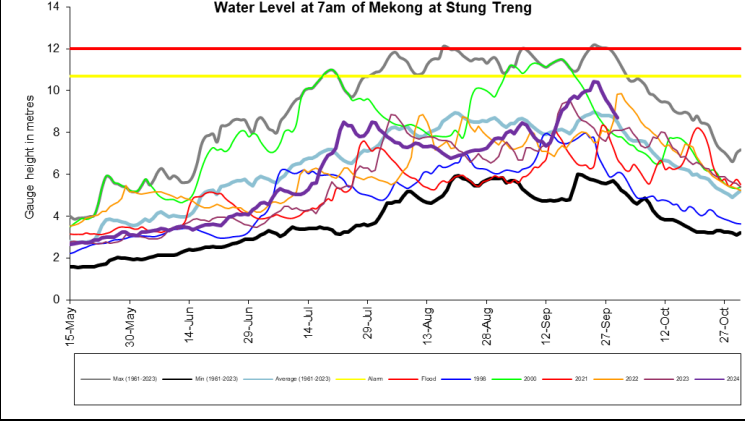
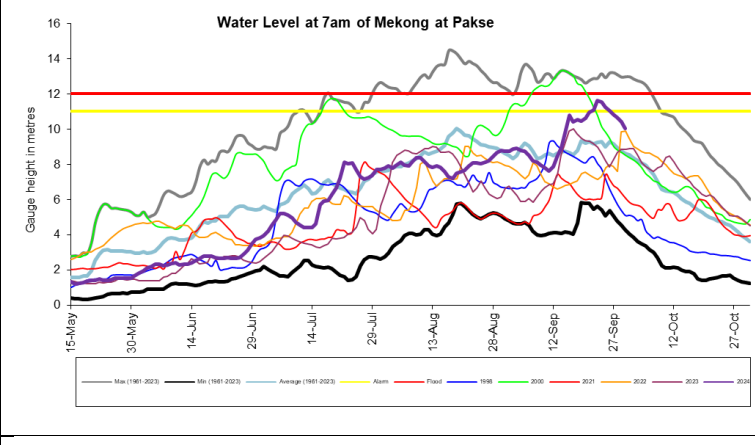
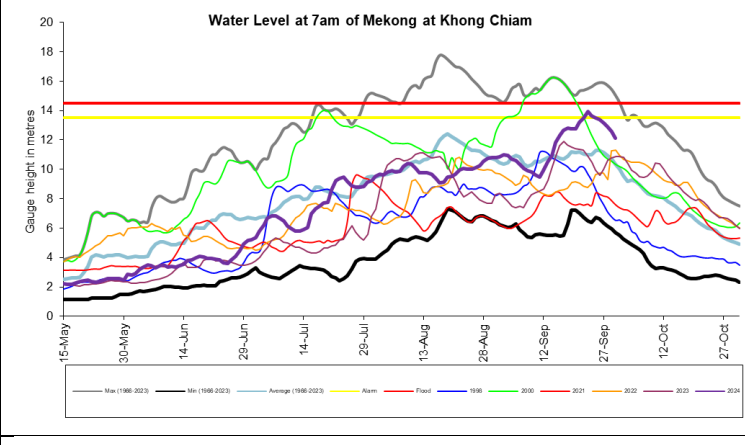
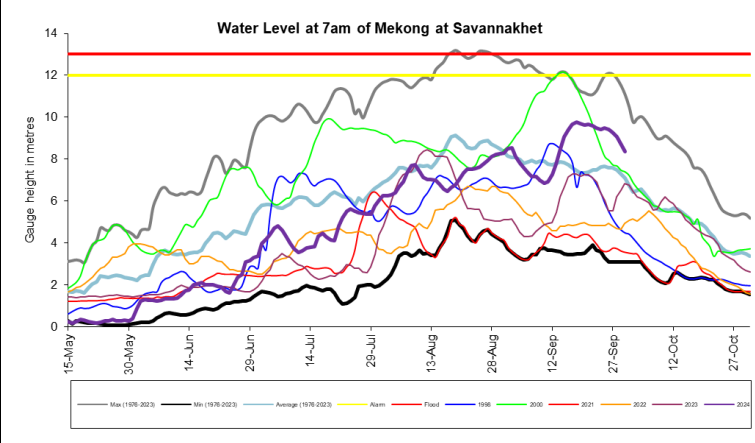
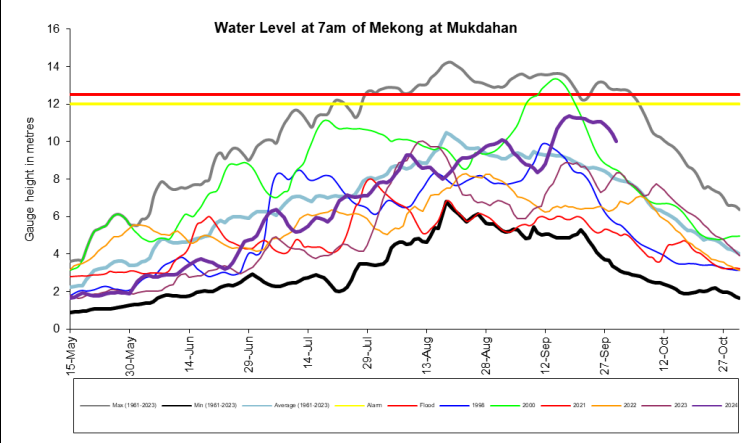
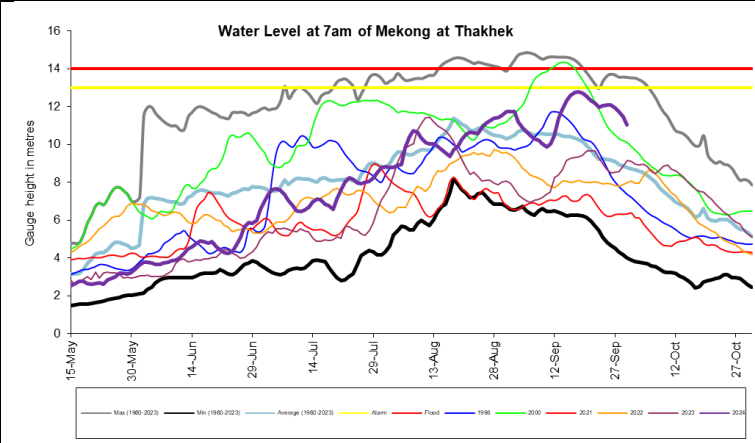
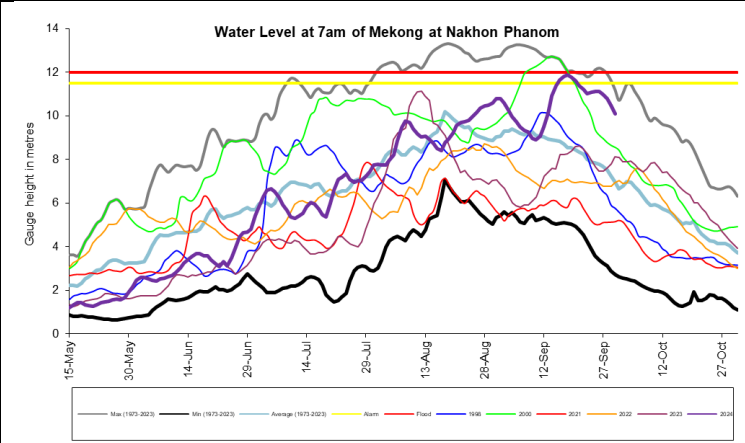
7.4. Drought condition and its forecast

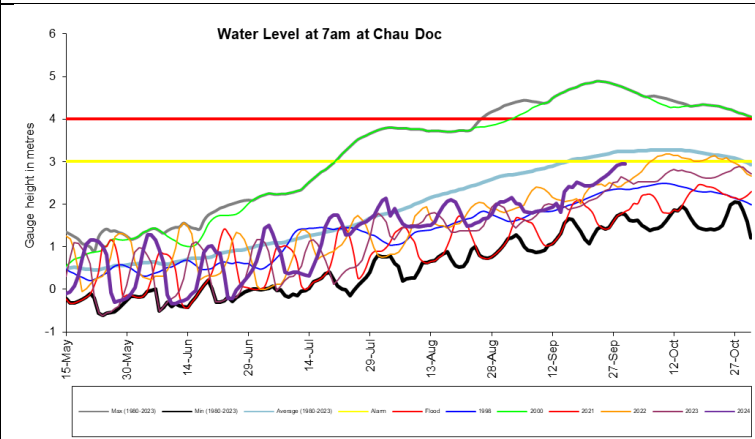
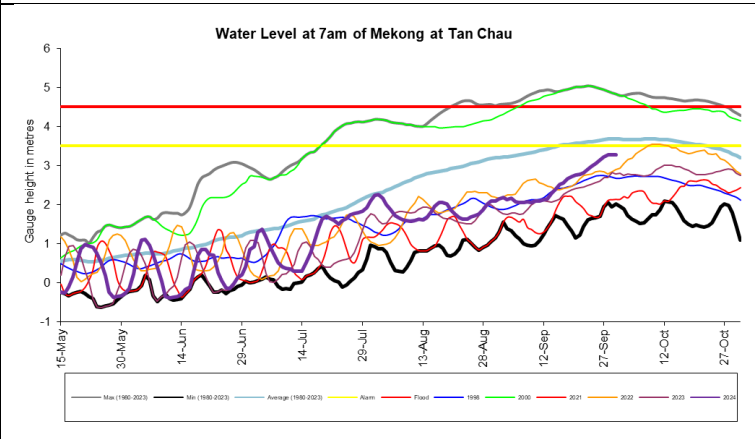
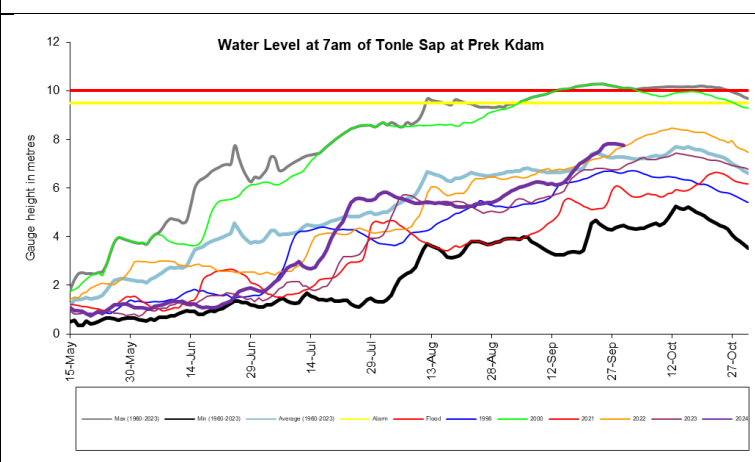
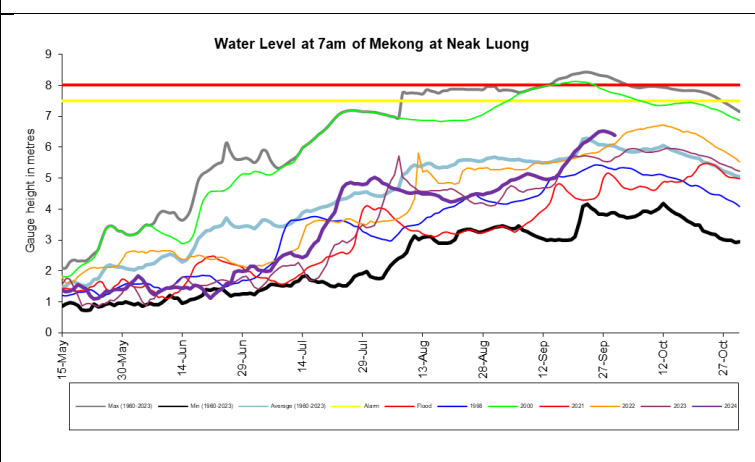
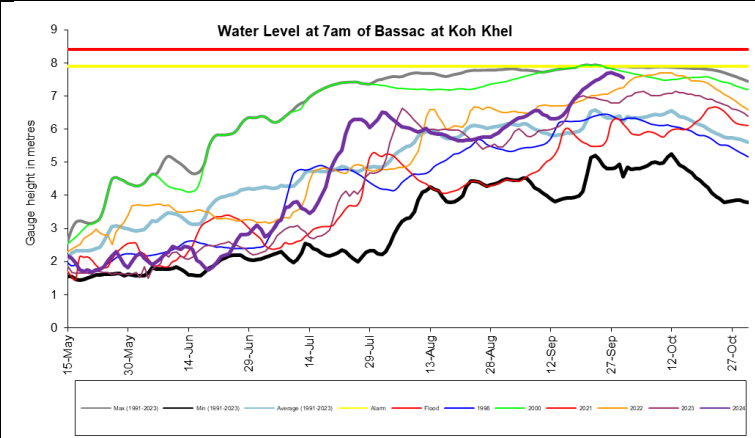
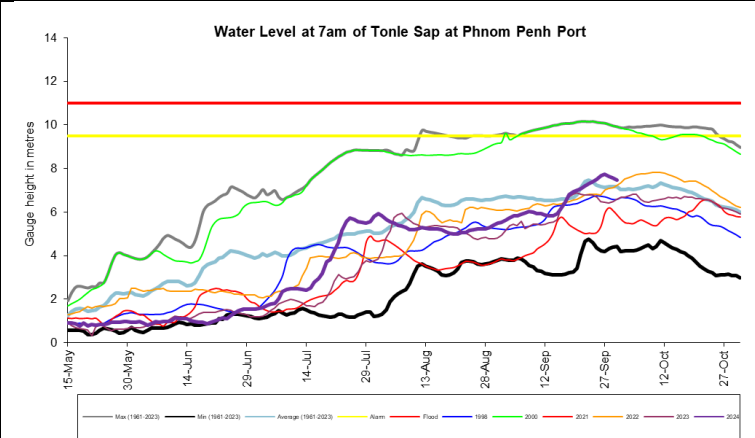
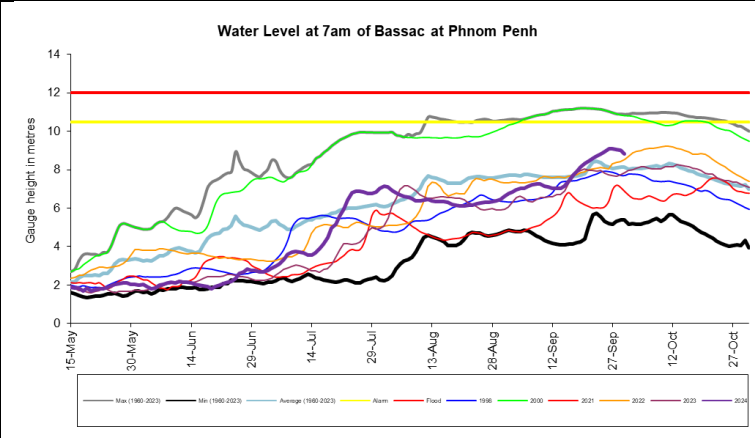
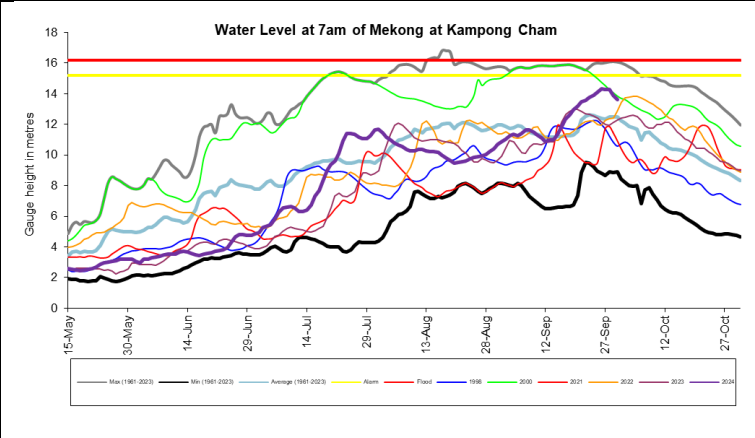
From 24 - 30 September 2024, the LMB is experiencing normal to wet conditions. From 01 – 07 October 2024, the LMB is likely at normal conditions. No drought is forecasted for the whole region.

From October to December 2024, The forecast indicates that no significant drought conditions are expected across the entire LMB during this period. However, in November 2024, the upper part of the LMB, including Xayabouly province, is anticipated to experience moderate drought conditions; and in December, Luang Namtha province, is anticipated to experience moderate drought conditions.

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
24/09/2024	536.14	4.46	12.34	11.33	8.81	9.68	11.45	11.08	12.04	11.01	9.41	13.66	11.54	10.44	21.40	13.90	8.84	7.40	7.52	6.30	7.52	2.98	2.59
25/09/2024	535.99	4.41	12.14	11.59	9.36	10.25	11.44	11.13	12.09	11.07	9.48	13.49	11.23	10.40	21.64	14.10	8.95	7.51	7.60	6.40	7.75	3.06	2.65
26/09/2024	536.33	4.26	12.04	11.20	9.24	10.26	11.48	11.10	12.07	11.05	9.42	13.38	11.06	9.98	21.53	14.30	9.08	7.68	7.68	6.49	7.81	3.14	2.73
27/09/2024	536.03	4.06	12.06	10.69	8.77	9.75	11.26	10.97	11.94	10.91	9.28	13.15	10.84	9.56	21.21	14.26	9.10	7.73	7.71	6.53	7.81	3.22	2.82
28/09/2024	535.36	4.20	11.95	10.45	8.17	9.15	10.94	10.78	11.74	10.68	9.05	12.90	10.65	9.31	20.82	14.28	9.05	7.65	7.67	6.51	7.82	3.27	2.91
29/09/2024	535.26	3.98	11.82	10.04	7.73	8.69	10.59	10.49	11.46	10.38	8.75	12.55	10.40	9.02	20.45	13.88	9.00	7.58	7.61	6.46	7.79	3.28	2.95
30/09/2024	535.24	3.60	11.76	9.76	7.28	8.20	10.09	10.09	11.05	9.99	8.37	12.13	10.02	8.70	20.00	13.60	8.84	7.48	7.56	6.39	7.76	3.27	2.94
Flood level		12.80	18.00	16.00	12.50	12.00	14.50	12.50	14.00	12.50	13.00	14.50	12.00	12.00	23.00	16.20	12.00	11.00	7.90	8.00	10.00	4.50	4.00

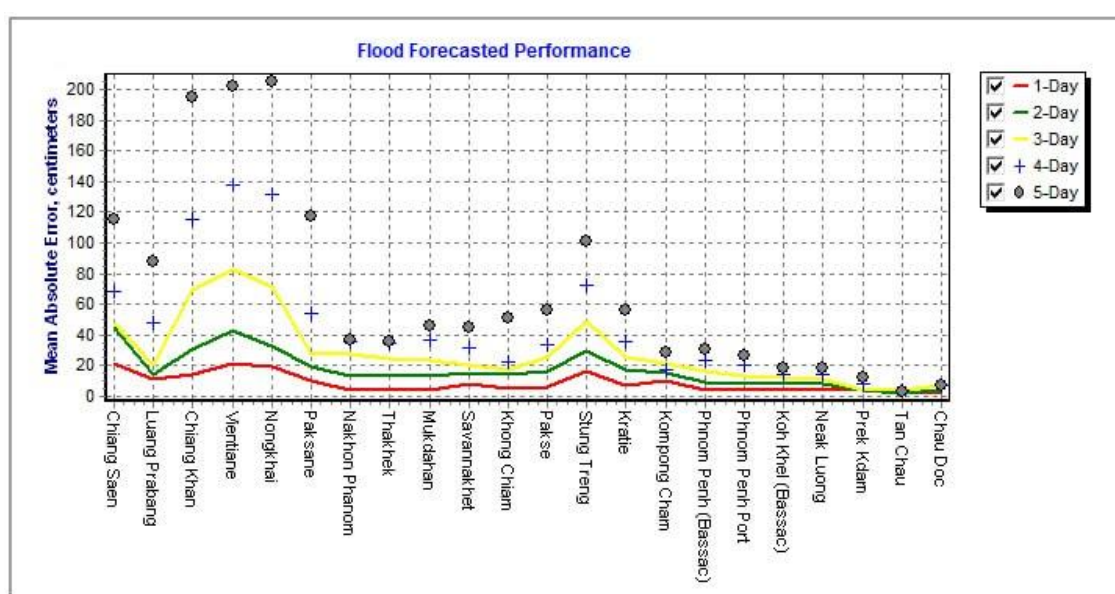
Table A2: Weekly observed rainfall

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
24/09/2024	0	4.2	0	17	40.8	21.5	21.6	23.9	22.7	13.5	60	4	4	18	84	61	18		0	0.6	0	29.6	0
25/09/2024	0	0	0	40	8.6	12.8	0.3	4.2	5	43	30.8	6.5	0	0	0	0	0		0	0	0	0	0.5
26/09/2024	0	0.4	0	3.3	5.4	1.5	0.6	0	0	0	0	0	0	10	48.5	23.5	3.4		0	17.7	8.2	6.7	0.3
27/09/2024	0	1	0	0	0	0	0	0	0	0	0	1.8	0	8	5.9	13	11.8		33.4	33.1	11.2	1.8	20.9
28/09/2024	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0		0	0	0	0	0.2
29/09/2024	0	0.4	0	0	0	0	0.4	7.8	0	7.5	0	0	0	0	0	0	0		0	0	0	0	0
30/09/2024	0	0	0	6	9.8	31.2	3	5.9	8.2	0	0	0	0	0	0	0	0		0	0	0	0	0
Sum	0.0	6.0	0.0	66.3	64.6	67.0	25.9	41.8	35.9	64.0	90.8	13.3	4.0	36.0	138.4	97.5	33.2	0.0	33.4	51.4	19.4	38.1	21.9

Annex C: Performance of the weekly flood forecasting

“Accuracy” here refers to the state where data recorded in the MRC’s Mekong River Flood Forecasting System are cleaned and verified.

The adjustment of flood forecasting outcomes from the flood forecasting system requires flood forecasters to have extensive knowledge in hydrology and statistical modelling for estimating the relationships between stations upstream and downstream in the Mekong River Basin. Flood forecasting performance presented in the graph below shows the average flood forecasting accuracy at each key station along the Mekong mainstream from 24 to 30 September 2024.



The forecasting values from 24 to 30 September 2024 show that the overall accuracy is fair for a four-day to five-day forecast in lead time (less than 250 cm) for all forecasting stations.

Note: The higher percentage of flood forecasting accuracy is due to several key factors as follows:

- Missing rainfall in Cambodia (DOM) data and data input are not sufficient to be used for inputting into the flood forecasting model system.
- Chiang Saen station is influenced by hydropower upstream operation from China.
- Luang Prabang to Chiang Khan and Paksane to Stung Treng to Kratie have been influenced by hydropower operations upstream, tributaries inflows.
- The influence of heavy rainfall caused by storms and hydropower operations from upstream, tributaries inflows and the lower part of the Mekong floodplain, including the 3S (Stung Treng and Kratie).
- Fluctuations of the water levels at Tan Chau and Chau Doc stations were due to daily tidal effects of the sea in the Mekong Delta.
- Satellite rainfall data were not representative of the actual rainfall at ground stations in some areas of the Mekong region.



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