



**Mekong River Commission**

# **Weekly Wet Season Situation Report in the Lower Mekong River Basin 25-31 October 2022**

Prepared by  
The Regional Flood and Drought Management Centre  
1 November 2022

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## Key Messages

Key messages for this weekly report are presented below:

### Rainfall and its forecast

- Rainfall focused in the areas from Stung Treng in Cambodia to Tan Chau and Chau Doc in Viet Nam, including the upper, middle and lower parts of the LMB covering Lao PDR and Cambodia, varying from 2.80 millimetres (mm) to 65.60 mm.
- There will be below-average rainfalls for the next 5 days over the Mekong region from 1 to 7 November 2022 because there is not any movement of tropical storm moving towards the Mekong region.

### Water level and its forecast

- According to MRC's observed water level at Jinghong, it showed increased water levels from 536.06 m to 536.74 m during 25-31 October 2022. The outflow at Jinghong station increased between 1360.00 m<sup>3</sup>/s and 1870.00 m<sup>3</sup>/s between 25 and 31 October 2022.
- With the increased outflow from Jinghong upstream and less rainfall at catchment inflow, water levels of monitoring stations at Chiang Saen in Thailand slightly increased about 0.61 m from 25 to 31 October 2022, staying about 0.61 m lower than its LTA level. Wls at Xieng Kok upstream of Chiang Saen also increased about 2.75 m.
- Water level at Chiang Khan in Thailand from 25 to 31 October 2022 increased about 0.18 m and stayed about 1.31 m lower than its LTA value, while water level at Vientiane decreased about 0.24 m but still stayed about 0.82 m lower than its LTA level. Water levels at Nong Khai decreased 0.35 m and stayed about 1.87 m lower than its LTA, while at Paksane it decreased about 0.63 m, staying about 2.10 m lower than its LTA value. Water levels at these stations are still considered normal.
- Water levels from Nakhon Phanom in Thailand and Pakse in Lao PDR decreased between 0.55 m and to 0.91 m due to less contributions of rainfalls and inflows from upstream. The current Wls at Khong Chiam and Pakse stations are staying higher than their LTA level, considering normal. From the stretches of the river from Stung Treng, Kratie to Kompong Cham, water level decreased and stayed higher than their LTA value, which was also considered normal.
- Water levels from downstream at Chaktomuk, Koh Khel on the Bassac and Phnom Penh Port to Prek Kdam in Cambodia fluctuated and stayed close or higher than their LTA level, considered normal.

- The current water levels for most of the stations are below their LTA values. WLS at the 2 tidal stations at Tan Chau and Chau Doc dropped down to the level lower than their LTA value, during this monitoring period.
- Over the next five days, the water levels at the middle and lower parts from Nakhon Phanom to Pakse and those in downstream from Stung Treng down to the Mekong floodplain area are expected to go down due to less rainfall and dam operation upstream.

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

- During October 23-29, the LMB was facing some moderate and severe droughts in the north and the south which were mainly caused by severe dry soil moisture. Those drought-hit areas covered **Phongsaly, Chiang Mai, Chiang Rai, Luang Prabang, Oudomxay, Xiengkhuang, Vientiane, Borikhamxay, Nong Khai, Nakhon Phanom, and Khammuane in the north, and Siem Reap, Preah Vihea, Stung Treng, Kratie, Otdar Meanchey, Surin Si Saket, Burirum, and Ratchasima** in the south. The situation was much more serious than the previous week.
- During the next three months, October and November are ultimately wet in general with the wettest areas in the eastern part. While **December** is receiving below-average rainfall in the northern part covering **Chiang Mai, Chiang Rai, Payao, Bokeo, Luangnamtha, and Vientiane** with **moderate and severe droughts**. The forecast predicts that the eastern area is also extremely wet in December.



# 1 Introduction

This Weekly Wet Season Situation Report presents a preliminary analysis of the weekly hydrological and drought situation in the Lower Mekong River Basin (LMB) for the period from **25-31 October 2022**. 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 (MCs) – Cambodia, Lao PDR, Thailand, and Viet Nam – and on satellite data. All the water levels indicated in this report refer to an above zero gauge of each station.

The report covers the following topics that are updated weekly:

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

Mekong River water levels are updated daily and can be accessed from:  
[http://ffw.mrcmekong.org/bulletin\\_wet.php](http://ffw.mrcmekong.org/bulletin_wet.php).

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

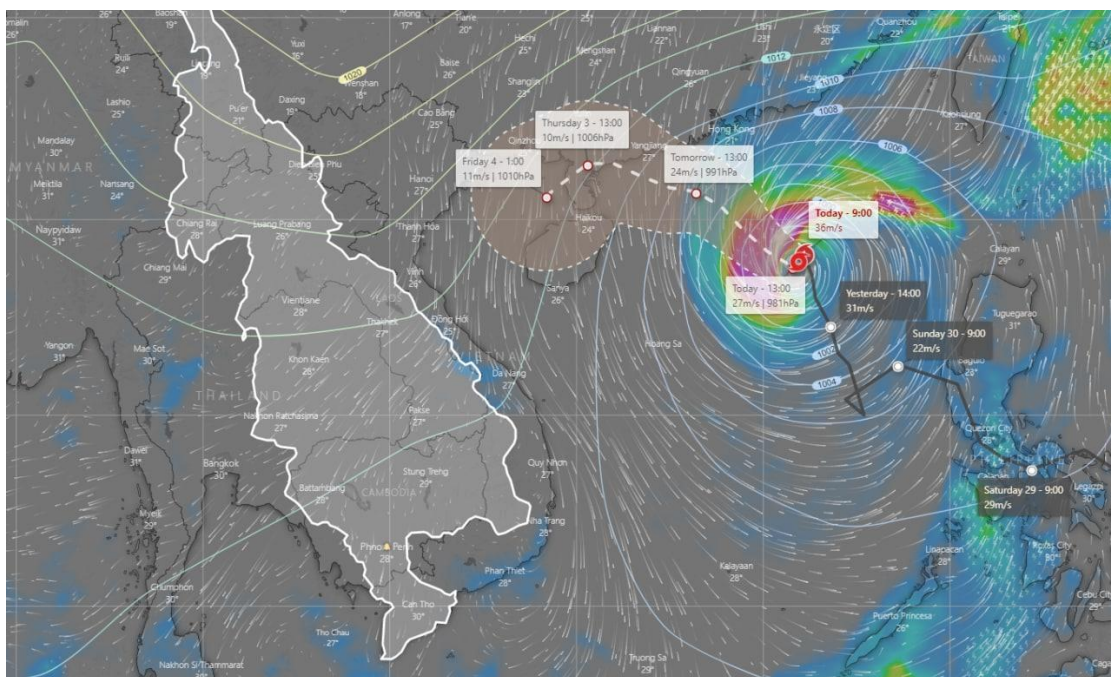
Flash flood information is accessible at: <http://ffw.mrcmekong.org/ffg.php>

## 2 General Weather Patterns

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

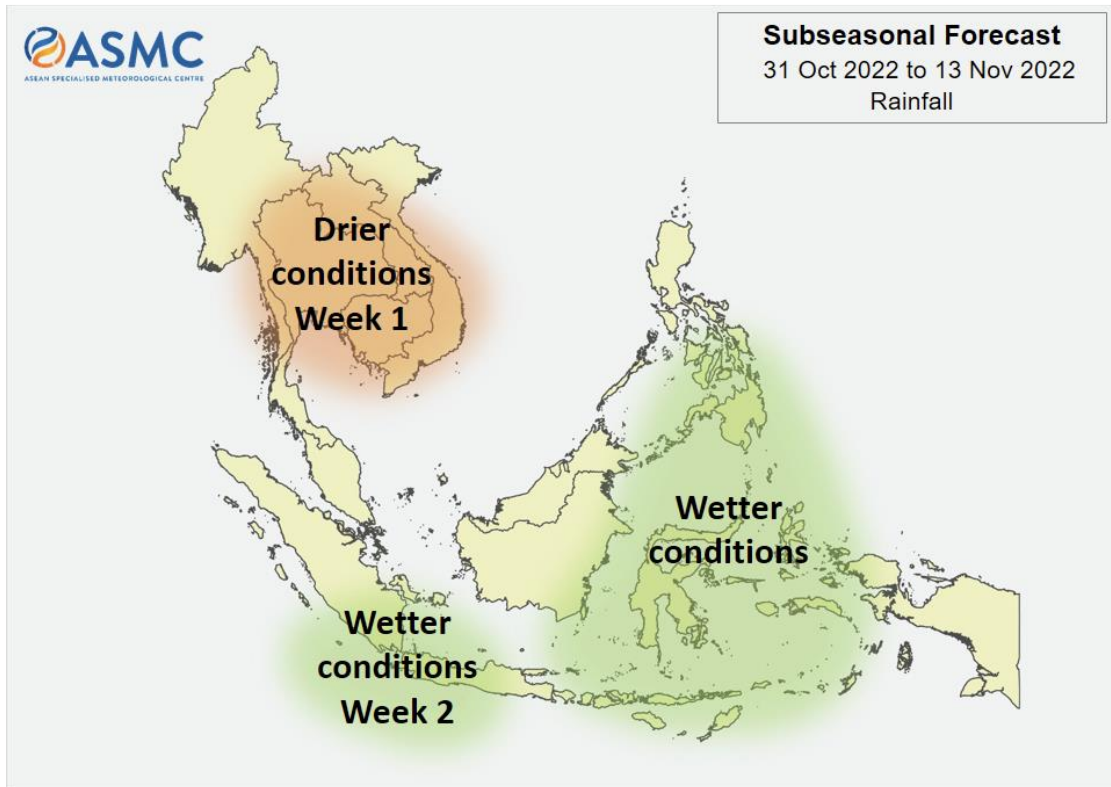
Since the beginning of October 2022, above-average rainfall has dropped over the LMB with increasing water levels in both mainstream and tributaries. The data from the TMD predicted that between 28 and 31 October 2022, the moderate high-pressure system from China will extend to upper Thailand and the South China Sea. Less rains, strong wind and decreasing temperature are likely to take place in the upper of LMB. Temperature will decrease in the Northeast first and move to other places of the region. The monsoon trough lies across the middle and the lower part of the South throughout the period with continuous rainfall and isolated heavy rains in the South.

[Figure 1](#) presents the weather map of 31 October 2022, showing no movement of Tropical Storm moving towards the LMB. Rainfall accumulated in lower part of the Mekong Delta in Viet Nam.



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

According to the ASEAN Specialised Meteorological Centre (ASMC), the highest probability of warm and dry condition is predicted over the lower part of the Mekong region from 31 October to 13 November 2022. Therefore, the Mekong region is likely dominated by warm and dry conditions, which may bring warm and cold temperatures in general to the upper and lower parts of the LMB. **Figure 2** shows the outlook of weather condition from 31 October to 13 November 2022 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

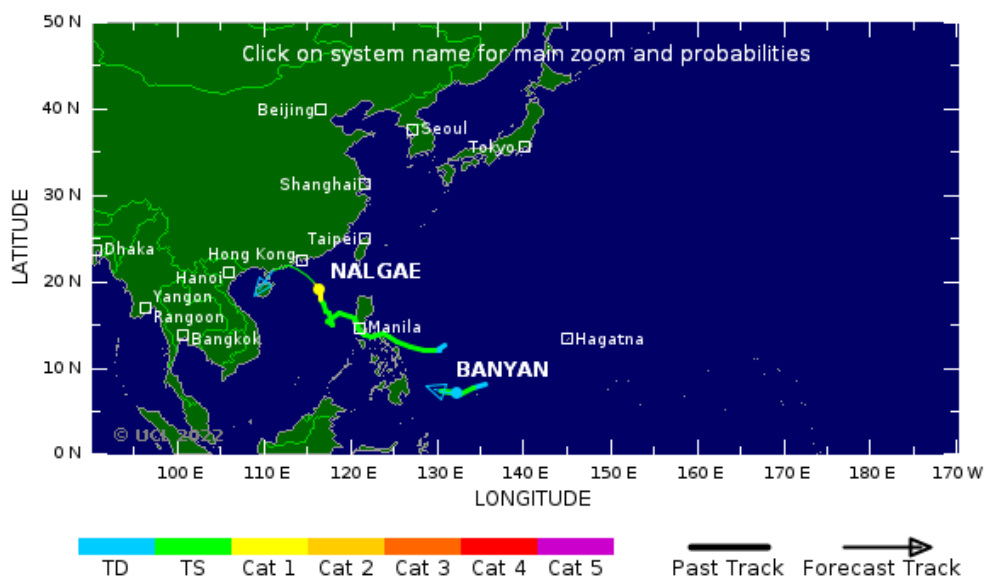


**Figure 2.** Outlook of wet and dry conditions over the Asian countries by ASMC.

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

There was no movement of any Storm from the Sea to the LMB between 25 and 31 October 2022. No low-pressure line was observed over the Mekong region as shown in [Figure 1](#). The active system for the LMB on October 31 is displayed in [Figure 3](#).

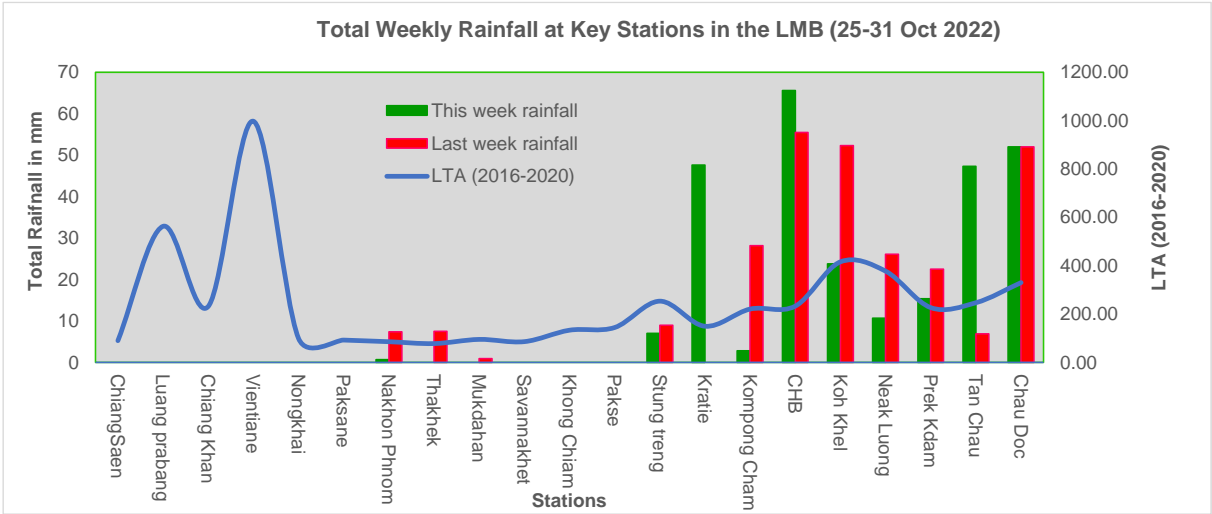
#### Active system as of 31 October 3:17 GMT



**Figure 3.** A tropical depression risk observed on 31 October 2022.

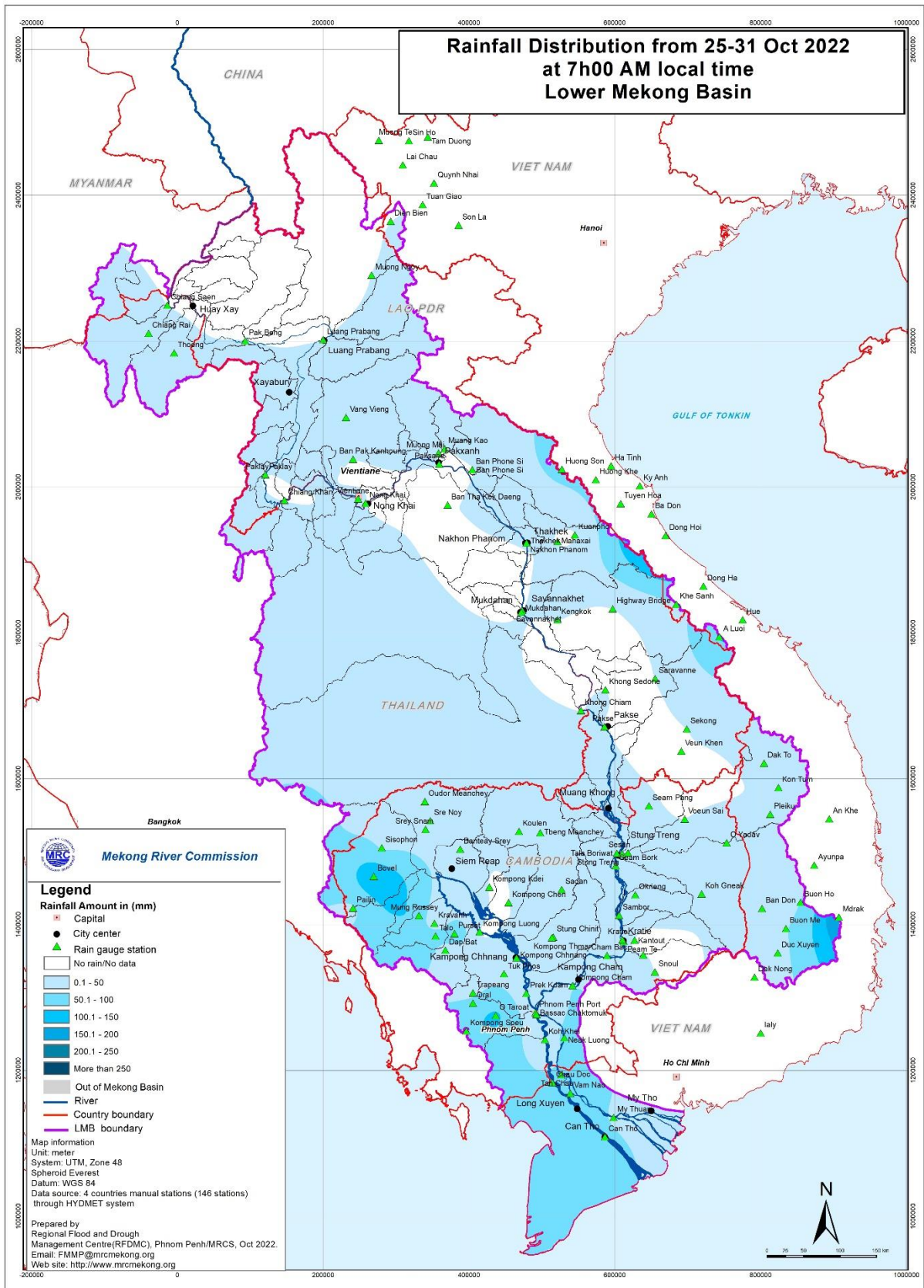
**2.2 Rainfall patterns over the LMB**

This week from 25 to 31 October 2022, rainfall was observed from the middle to the lower parts from Stung Treng in Cambodia to Tan Chau and Chau Doc in Viet Nam of the Lower Mekong Basin, varied from 2.80 mm to 65.60 mm. The highest rainfall of this week report concentrated from Chaktomuk in Cambodia to Tan Chau and Chau Doc in Viet Nam which reached up to 65.60 mm. 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](#). The total rainfall of this week was considered low, compared with its LTA and last week rainfall in most of the stations.



**Figure 4.** Weekly total rainfall at key stations in the LMB during 25-31 Oct 2022.

To verify area rainfall distribution, [Figure 5](#) shows a map of the weekly accumulated rainfall based on observed data provided by the MRC Member Countries – Cambodia, Lao PDR, Thailand, and Viet Nam – from 25 to 31 October 2022.

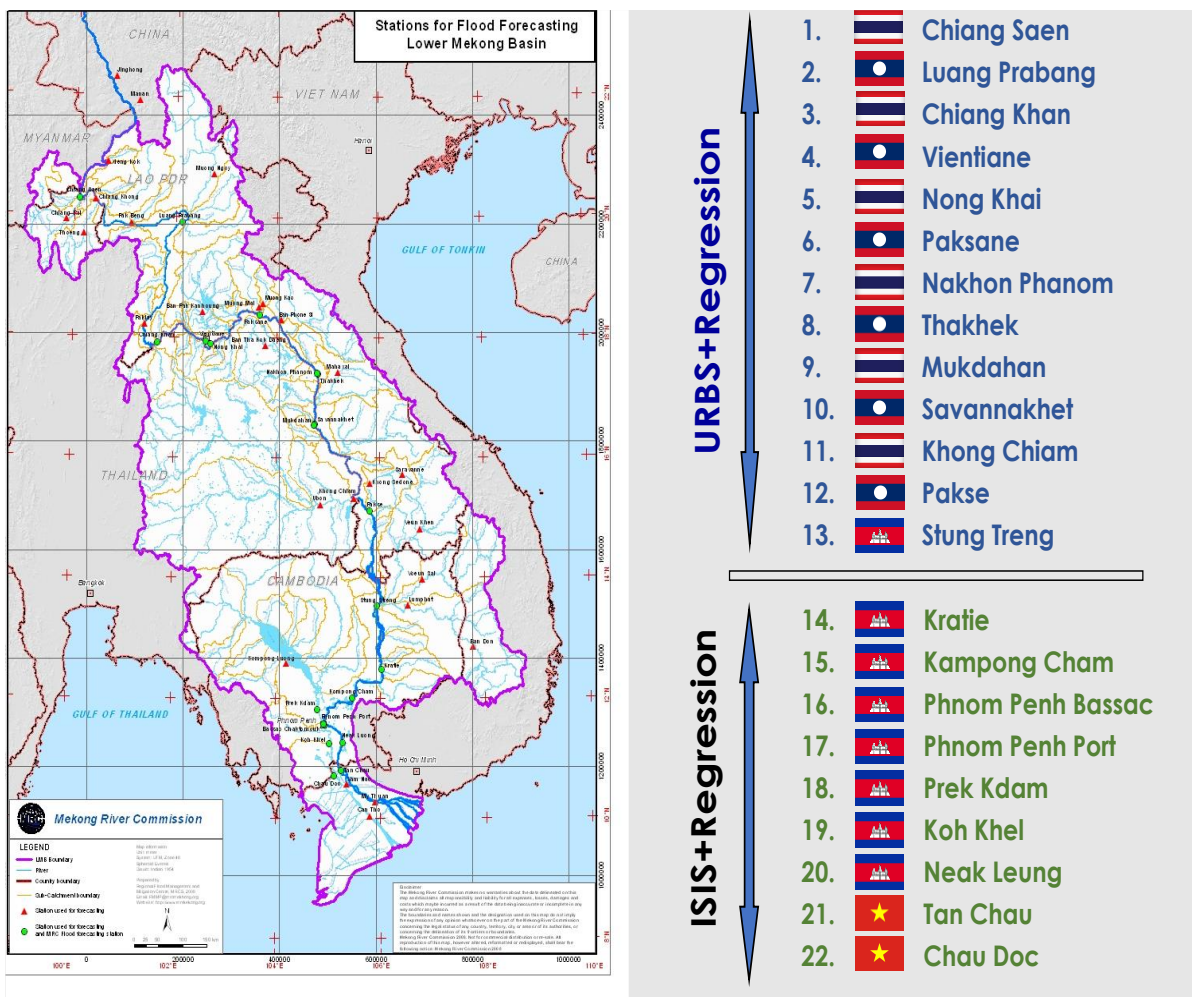


**Figure 5.** Weekly rainfall distribution over the LMB during 25-31 Oct 2022.

### 3 Water Levels in the Lower Mekong Basin

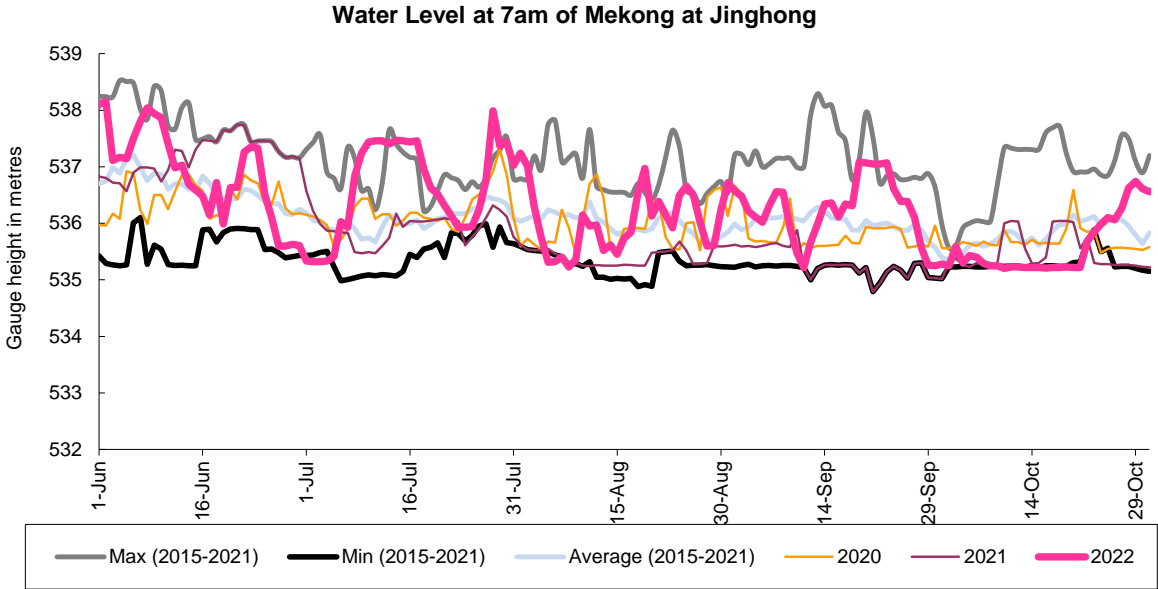
The hydrological regimes of the Mekong mainstream are illustrated by recorded water levels and flows at key mainstream stations: at Chiang Saen in Thailand to capture mainstream flows entering from the Upper Mekong Basin (UMB); at Vientiane in Lao PDR to present flows generated by climate conditions in the upper part of the LMB; at Pakse in Lao PDR 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.

According to MRC’s observed water level at Jinghong, it showed increased water levels from **536.06 m to 536.74 m** during 25-31 October 2022 (**recorded on 7:00 am**). The current level is staying about 0.73 m higher than its Long-Term-Average (LTA: 2015-2021) value. The outflow at Jinghong station increased between 1360.00 m<sup>3</sup>/s and 1870.00 m<sup>3</sup>/s between 25 and 31 October 2022. [Figure 7](#) below presents water level that fluctuated at the Jinghong hydrological station<sup>1</sup>, indicating the trend of fluctuating water level up to 31 October 2022.



**Figure 7.** Water level at the Jinghong hydrological station up to 31 October 2022.

Along with the increased outflow from Jinghong upstream, water levels of monitoring stations at Xieng Kok in Lao PDR upper of Chiang Saen increased about 2.14 m, while at Chiang Saen in Thailand it showed also increase of about 0.63 m from 25 to 31 October 2022, staying about 0.61 m lower than its LTA level, which considered normal.

Water level at Chiang Khan in Thailand from 25 to 31 October 2022, moreover, increased about 0.18 m and stayed about 1.31 m lower than its LTA value, while water level at Vientiane station decreased about 0.24 m and stayed about 0.82 m lower than its LTA level, which **considered a low water level situation**. Water levels at Nong Khai decreased 0.35 m and at Paksane it decreased about 0.63 m, staying about 1.87 m and 2.10 m lower than their LTA value respectively, **which considered a low water level situation**.

Water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR decreased from 0.54 m to 0.91 m. The current WLs at these stations are staying over 1.50 m lower than their LTA level, except at Khong Chiam and Pakse where WLs are slightly above their LTA value, **considered low water levels**. From the stretches of the river at Stung Treng, WL decreased 0.57 m and stayed about 0.17 m higher than its LTA, while at Kratie water level was down about 1.34 m, staying 0.36 m higher than its LTA level, **considered normal**.

<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>.

Water level at Kompong Cham was down about 1.20 m and stayed 0.37 m lower than its LTA value. Water levels at Chaktomuk, Koh Khel and Phnom Penh Port and Prek Kdam in Cambodia decreased between 0.48 m and 0.64 m, and the remaining WLS at Koh Khel and Prek Kdam were still slightly higher than its LTA level, **considered normal**.

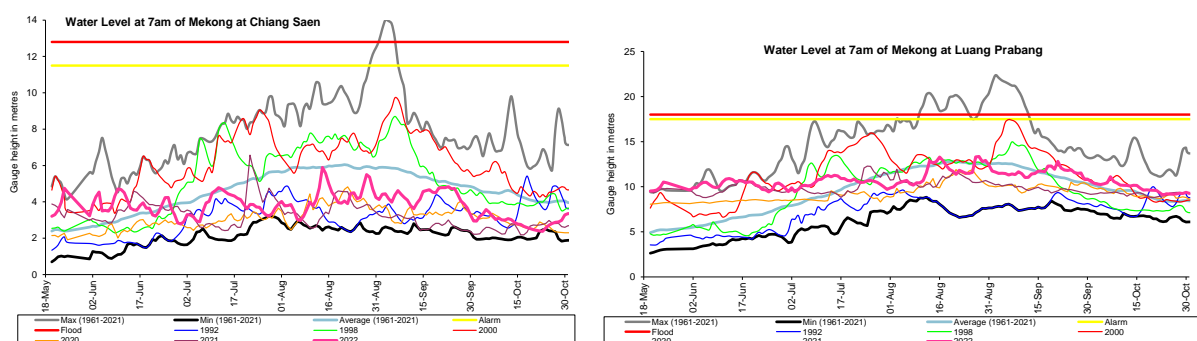
Water levels at all stations along the Mekong River are staying lower than their LTA value in the upper part, while at the lower part they are remaining close to their LTA value during this week report.

Based on hydrological phenomenon, the contribution of inflow water from the upstream of Lancang-Mekong in China to the Mekong mainstream is from 16% to 18% in total during the wet season from June to October. 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

The water level from 25 to 31 October 2022 at Thailand’s Chiang Saen station increased from 2.70 m to 3.35 m, showing 0.61 m lower than its Long-Term-Average (LTA) value, which was considered normal. The water level at Luang Prabang station in Lao PDR was also up about 0.06 m from 9.20 m to 9.26 m during the reporting period. This level still shows 0.83 m higher than its LTA. The trend – sometimes higher or lower to its historical maximum and LTA values – has been observed since early 2022. The phenomenon was potentially caused by upstream dam operations, downstream Xayaburi dam, and heavy rainfall in the surrounding areas. 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 of wet and dry season.**



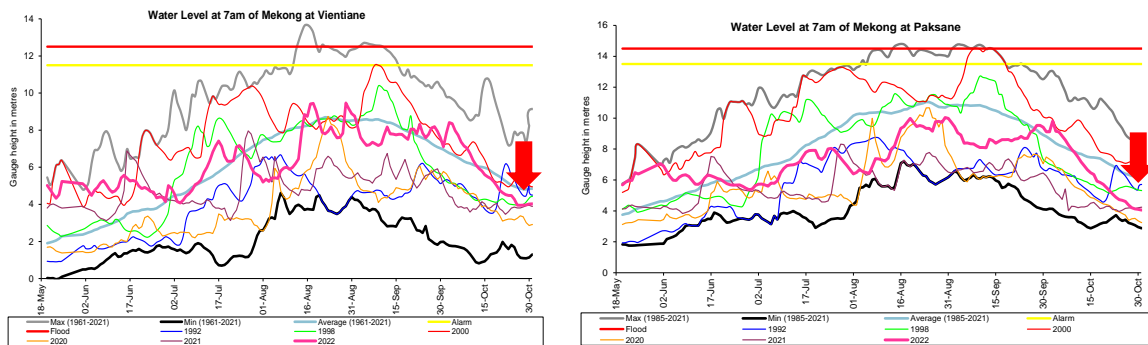
**Figure 8.** Water levels at Chiang Saen in Thailand and Luang Prabang in Lao PDR.

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

The water level at Chiang Khan in Thailand (downstream of the Xayaburi dam) increased from 6.40 m to 6.58 m during the reporting week. It showed 1.31 m lower than its LTA value. The water level downstream at Vientiane in Lao PDR decreased from 4.27 m to 4.03 m and was about 0.82 m lower than its LTA during 25-31 October 2022. At Nong Khai station in Thailand, the water level was also down during the reporting period. It decreased about 0.35 m from



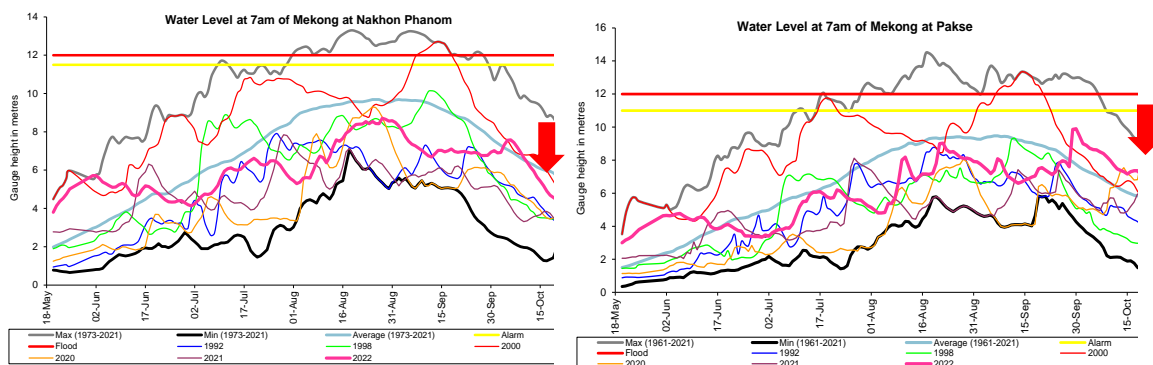
3.78 m to 3.43 m and showed 1.87 m lower than its LTA. At Paksane in Lao PDR, water level decreased about 0.63 m from 4.69 m to 4.06 m. The water level at this station was about 2.10 m lower than its LTA value. The recently decreased water levels were obviously due to the no rainfall contribution from the sub-catchment area along with the less inflows and water stored at upstream parts. The water levels at Vientiane and Paksane are shown in [Figure 9](#) below.



**Figure 9.** Water levels Veintiane and Paksane in Lao PDR.

### Nakhon Phanom to Pakse

The water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR decreased between 0.55 m and 0.91 m. Based on the observation, water levels at Khong Chiam in Thailand and Pakse in Lao PDR are still slightly higher than their LTA value. **Water levels at these two stations are staying about 0.40 m and 0.19 m higher than their LTA level respectively and considered normal.** [Figure 10](#) shows the water levels at Nakhon Phanom and Pakse stations.

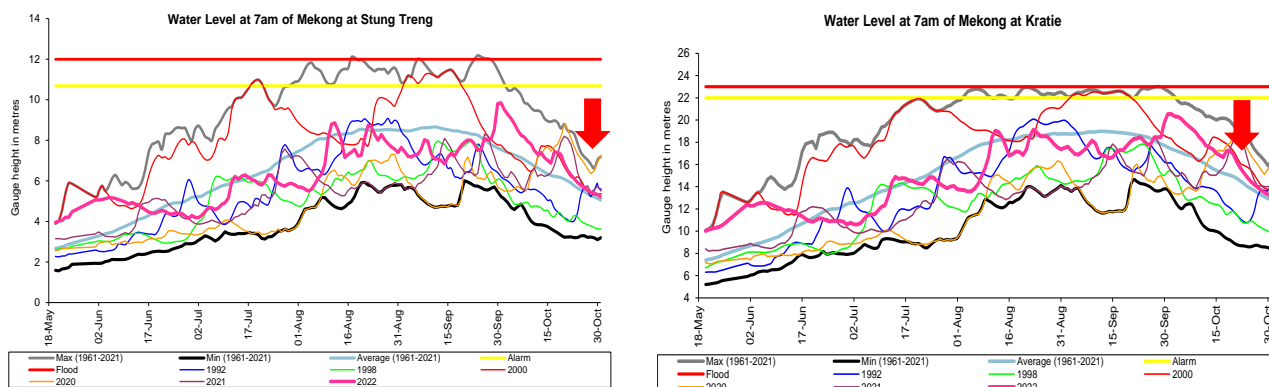


**Figure 10.** Weekly water levels at Nakhon Phanom in Thailand and Pakse in Lao PDR

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

Following the same trend 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 were decreasing during 25-31 October 2022. The water levels at Stung Treng decreased about 0.57 m and stayed about 0.17 m higher than its LTA, while at Kratie it decreased about 1.34 m, staying about 0.36 m higher than its LTA (as showed in [Figure 11](#)). The water level at Kompong Cham station also decreased about 1.20 m and was about 0.37 m lower than its LTA. The water

levels at these stations were influenced by rainfall in their catchment areas, including Sekong, Se San and Srepok river basins.



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

At Chaktomuk on the Bassac River, due to less accumulated rainfall and contributed flows from upstream catchment, the water level decreased by about 0.74 m and stayed 0.51 m lower than its LTA value; while at Koh Khel, water level decreased about 0.48 m, staying 0.27 m higher than its LTA value. The water level at Prek Kdam on the Tonle Sap Lake decreased about 0.46 m and was about 0.25 m higher than its LTA value. The water level at the Tonle Sap Lake (observed at Kampong Luong) was similar to Prek Kdam station’s water level. The recently decreased water level at Prek Kdam was due to less rainfall 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 Kampong Luong) followed the same trend of Prek Kdam station’s water level. From next week, **water levels at most of those stations will continue to stay close to their LTA level, which are considered normal.**

### Tidal stations at Tan Chau and Chau Doc

Like last week, the water levels from 25 to 31 October 2022 at Viet Nam’s Tan Chau and Chau Doc were fluctuating due to daily tidal effects from the sea. The fluctuation levels were between 2.66 m and 3.30 m; they were in between the range of their LTA and historical minimum level and **considered normal.**

### The Tonle Sap Flow

At the end of the dry season, when water levels along the Mekong River rise and the inflows of the Mekong River return into the Tonle Sap Lake. This phenomenon normally takes place from end of May to July. Based on flow observation at Prek Kdam, the inflow of the Tonle Sap Lake took place first from May 29 to June 9 and the second inflow happened between 13 and 27 July 2022.

[Figure 12](#) shows the seasonal changes of the outflow and the inflow/reversed flow of the TSL at Prek Kdam in comparison with the flows of 2019 and 2020, and their LTA level (1997-2020). Up to October 31 of this reporting period, **it was observed that the main outflow from the Tonle Sap Lake decreased due to less rainfall and inflows from upstream.** This decreased inflow into the Tonle Sap Lake was most likely caused by less inflows and rainfall from the

catchment area. Up to present, the inflow into the Tonle Sap Lake condition in 2022 is higher than 2019, 2020, 2021 its LTA (1997-2021) inflow conditions. For next week, less rainfall is forecasted for the Tonle Sap area; thus, the inflow into the Tonle Sap Lake is likely expected to go down from the current level.

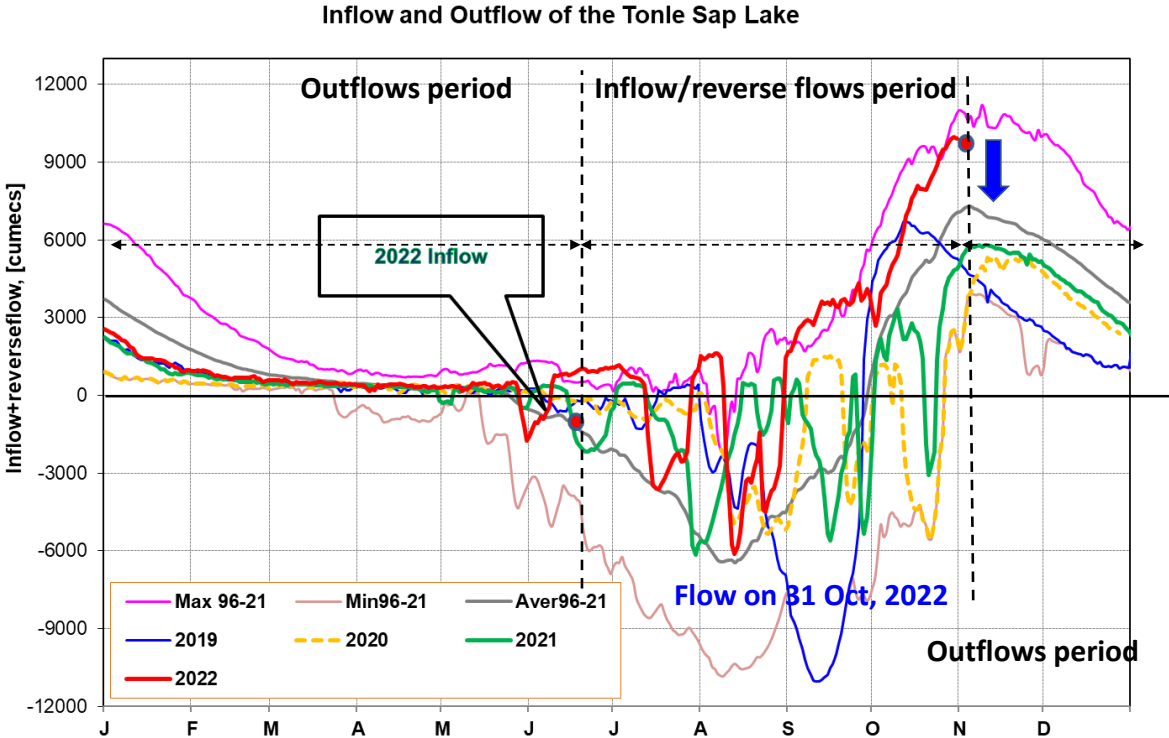
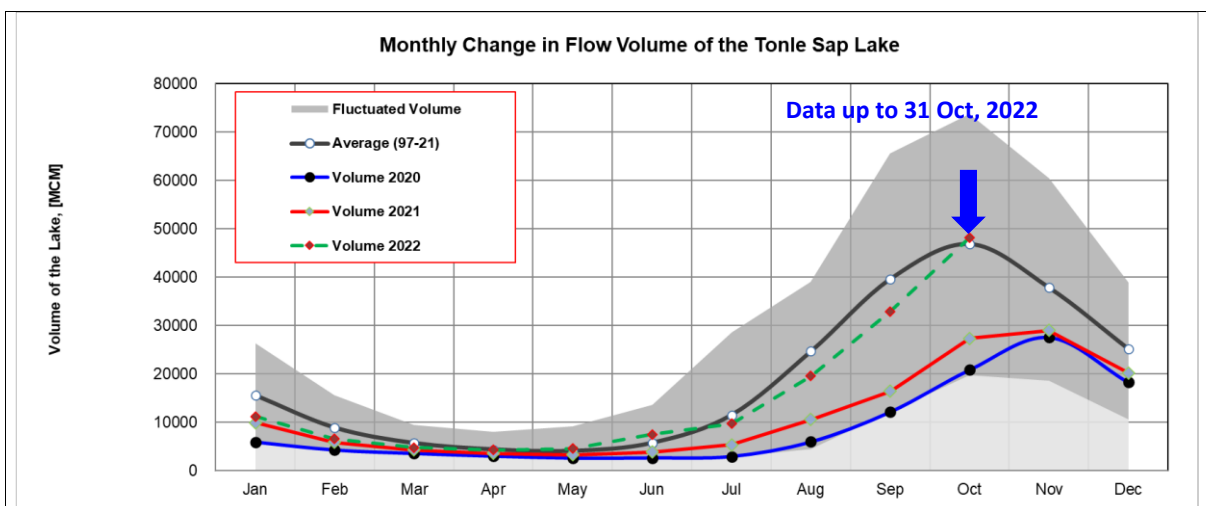


Figure 12. Seasonal change of inflows and outflows of Tonle Sap Lake

Figure 13 shows seasonal changes in monthly flow volumes up to 31 October 2022 for the Lake compared with the volumes in 2019, 2020, 2021 and their LTA, and the fluctuation levels (1997–2021). It shows that up to October 31, **the water volume of the Tonle Sap Lake was higher than 2019, 2020, 2021 and close with its LTA (about 2%), 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 tributaries and rainfall in the surrounding sub-catchments and **considered as normal situation.**

This demonstrates the influence of the relationships of the reverse and out 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 13.** The seasonal change in monthly flow volume of Tonle Sap Lake.

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

Month	LTA (97-21) [MCM]	Max Volume [MCM]	Min Volume [MCM]	Volume 2018 [MCM]	Volume 2019 [MCM]	Volume 2020 [MCM]	Volume 2021 [MCM]	Volume 2022 [MCM]	Volume in 2022 [%], compared with its LTA
Jan	15523.23	26357.53	5906.80	13633.41	10285.31	5906.80	9923.80	11214.32	72.24
Feb	8837.89	15596.22	4198.60	7729.72	6019.30	4264.19	5832.97	6558.79	74.21
Mar	5654.18	9438.24	3347.07	5037.06	4354.62	3553.99	4264.88	4736.52	83.77
Apr	4346.65	8009.14	2866.91	3956.47	3667.47	2992.61	3556.68	4288.31	98.66
May	4030.23	9176.93	2417.81	3864.00	3266.43	2594.92	3240.78	4556.83	113.07
Jun	5708.30	13635.01	2468.70	5919.18	3517.06	2641.88	3798.29	7489.04	131.20
Jul	11493.25	28599.56	2925.86	12024.96	4001.99	2925.86	5346.73	9703.79	84.43
Aug	24666.69	39015.12	4433.46	22399.65	7622.71	5941.07	10547.80	19554.70	79.28
Sep	39634.03	65632.35	12105.31	53639.54	24194.19	12105.31	16382.34	32860.34	82.91
Oct	46873.44	73757.23	19705.50	48193.08	30358.38	20799.13	27318.21	48199.12	102.83
Nov	37823.16	60367.33	18534.61	31036.07	19112.65	27546.80	28982.93		
Dec	25126.11	38888.95	10563.49	18469.21	10577.29	18251.65	20170.76		
	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 October 25-31, the LMB was affected by three weather factors including (i) The moderate high-pressure system from China covering the upper parts; (ii) The typhoon NALGAE laid across the upper East Sea then it is predicted to move over to the coastline of Guangdong, China during 2-3 November 2022; and (iii) the northeast monsoon prevailed over the Gulf of Thailand during the weekend.


These conditions caused moderate and small rainfall in some areas in the whole LMB parts during the entire week.

According to the MRC-Flash Flood Guidance System (MRC-FFGS) and analysis, low-risk flash flood events were detected during the reporting period in several areas of Lao PDR, Cambodia and Viet Nam as shown in [Figure 14](#) and [Table 2](#).


**Table 2.** Detected low-risk flash flood in Lao PDR, Cambodia, and Viet Nam during 25-31 October

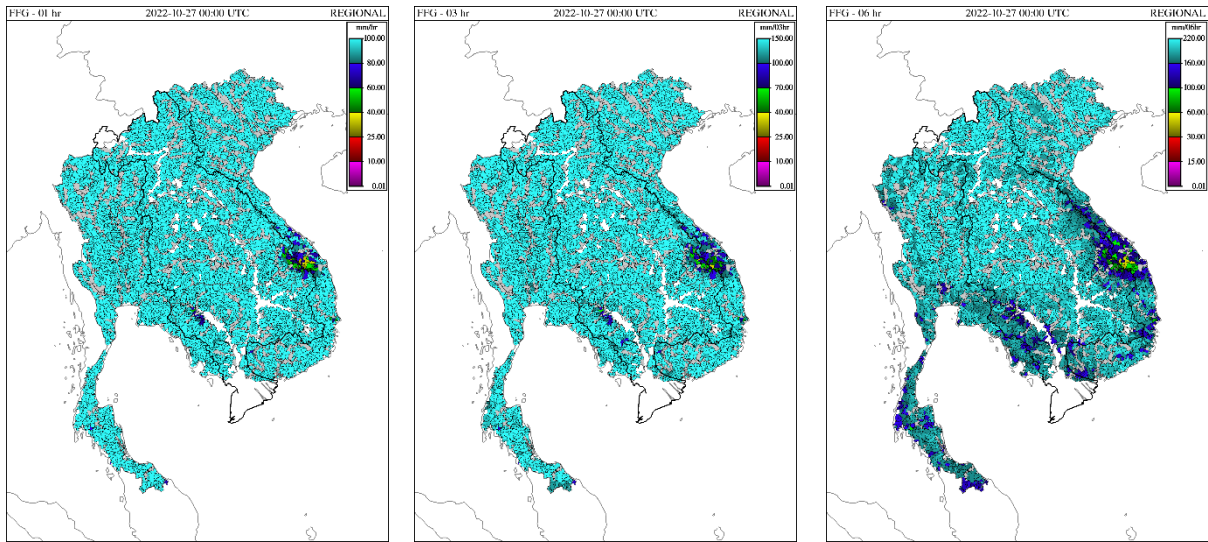
 <b>Rate-risk and location of the flash flood may occur in the next 1, 3, and 6 hours in Lao PDR</b>														
Date of FFG products 10/27/2022 0:00 UTC time														
01-Hour Flash Flood Risk and Location					03-Hour Flash Flood Risk and Location					06-Hour Flash Flood Risk and Location				
Provinces	Districts	Villages	Region	Level Risk	Provinces	Districts	Villages	Region	Level Risk	Provinces	Districts	Villages	Region	Level Risk
Sekong	Kaleum	STTHORN	Southeast	Low-Risk	Sekong	Kaleum	STTHORN	Southeast	Low-Risk	Sekong	Kaleum	AR-PEUANG	Southeast	Low-Risk
Sekong	Dakcheung	DAKDEN	Southeast	Low-Risk	Sekong	Dakcheung	DAKDEN	Southeast	Low-Risk	Sekong	Kaleum	STTHORN	Southeast	Low-Risk
Sekong	Dakcheung	DAKKE	Southeast	Low-Risk	Sekong	Dakcheung	DAKVANG	Southeast	Moderate-Risk	Sekong	Lamam	KANONG MAI	Southeast	Low-Risk
Sekong	Dakcheung	DAKVANG	Southeast	Moderate-Risk	Sekong	Dakcheung	DAKXAM	Southeast	Low-Risk	Sekong	Dakcheung	DAKDEN	Southeast	Low-Risk
Sekong	Dakcheung	DAKXAM	Southeast	Low-Risk						Sekong	Dakcheung	DAKKE	Southeast	Moderate-Risk
										Sekong	Dakcheung	DAKVANG	Southeast	Moderate-Risk
										Sekong	Dakcheung	DAKXAM	Southeast	Low-Risk

 <b>Rate-risk and location of the flash flood may occur in the next 1, 3, and 6 hours in Cambodia</b>														
Date of FFG products 10/27/2022 0:00 UTC time														
01-Hour Flash Flood Risk and Location					03-Hour Flash Flood Risk and Location					06-Hour Flash Flood Risk and Location				
Provinces	Districts	Villages	Region	Level Risk	Provinces	Districts	Villages	Region	Level Risk	Provinces	Districts	Villages	Region	Level Risk
Battambang	Baldambang	Tumpung Cheung	Northwest	Low-Risk	Battambang	Baldambang	Tumpung Cheung	Northwest	Low-Risk	Battambang	Baldambang	Tumpung Cheung	Northwest	Low-Risk
										Battambang	Moung Ruessel	Koun Khlong	Northwest	Low-Risk

 <b>Rate-risk and location of the flash flood may occur in the next 1, 3, and 6 hours in Viet Nam</b>														
Date of FFG products 10/27/2022 0:00 UTC time														
01-Hour Flash Flood Risk and Location				3-Hour Flash Flood Risk and Location in Vietnam				6-Hour Flash Flood Risk and Location in Vietnam						
Provinces	Districts	Region	Level Risks	Provinces	Districts	Region	Level Risks	Provinces	Districts	Region	Level Risks			
Quang Nam	Nam Giang	South Central Coast	Low-Risk	Quang Nam	Nam Giang	South Central Coast	Low-Risk	Quang Nam	Nam Giang	South Central Coast	Low-Risk			
Quang Nam	Tra My	South Central Coast	Moderate-Risk	Quang Nam	Tra My	South Central Coast	Low-Risk	Quang Nam	Tra My	South Central Coast	Moderate-Risk			
Kon Tum	Dak Glei	Central Highlands	Moderate-Risk	Kon Tum	Dak Glei	Central Highlands	Low-Risk	Kon Tum	Dak Glei	Central Highlands	Low-Risk			
Kon Tum	Dak To	Central Highlands	Moderate-Risk	Kon Tum	Dak To	Central Highlands	Low-Risk	Thua Thien Hue A Luoi		North Central	Low-Risk			
Kon Tum	Kon Plong	Central Highlands	Low-Risk	Quang Ngai	Tra Bong	South Central Coast	Low-Risk	Kon Tum	Dak Glei	Central Highlands	Moderate-Risk			
Quang Ngai	Son Tay	South Central Coast	Low-Risk	Kon Tum	Ngoc Hoi	Central Highlands	Low-Risk	Quang Nam	Hien	South Central Coast	Low-Risk			
Kon Tum	Kon Plong	Central Highlands	Low-Risk	Quang Nam	Tra My	South Central Coast	Low-Risk	Quang Nam	Dai Loc	South Central Coast	Low-Risk			
Phu Yen	Tuy Hoa	South Central Coast	Low-Risk	Quang Ngai	Son Tay	South Central Coast	Low-Risk	Quang Nam	Nam Giang	South Central Coast	Low-Risk			
Khanh Hoa	Van Ninh	South Central Coast	Low-Risk	Kon Tum	Kon Plong	Central Highlands	Low-Risk	Kon Tum	Dak To	Central Highlands	Moderate-Risk			
Kon Tum	Dak To	Central Highlands	Low-Risk	Phu Yen	Tuy Hoa	South Central Coast	Low-Risk	Kon Tum	Dak To	Central Highlands	Low-Risk			
Quang Ngai	Tra Bong	South Central Coast	Moderate-Risk	Khanh Hoa	Van Ninh	South Central Coast	Low-Risk	Kon Tum	Dak To	Central Highlands	Moderate-Risk			
Kon Tum	Ngoc Hoi	Central Highlands	Low-Risk	Kon Tum	Dak Glei	Central Highlands	Low-Risk	Quang Nam	Nam Giang	South Central Coast	Low-Risk			
				Kon Tum	Dak To	Central Highlands	Moderate-Risk	Kon Tum	Kon Plong	Central Highlands	Low-Risk			
								Quang Nam	Que Son	South Central Coast	Low-Risk			
								Quang Ngai	Son Ha	South Central Coast	Low-Risk			
								Kon Tum	Ngoc Hoi	Central Highlands	Low-Risk			
								Quang Ngai	Son Tay	South Central Coast	Low-Risk			
								Quang Ngai	Tra Bong	South Central Coast	Low-Risk			
								Quang Ngai	Son Tay	South Central Coast	Low-Risk			



**Figure 14.** Flash Flood Guidance for the next 1-hr, 3-hr and 6-hr on 27 October

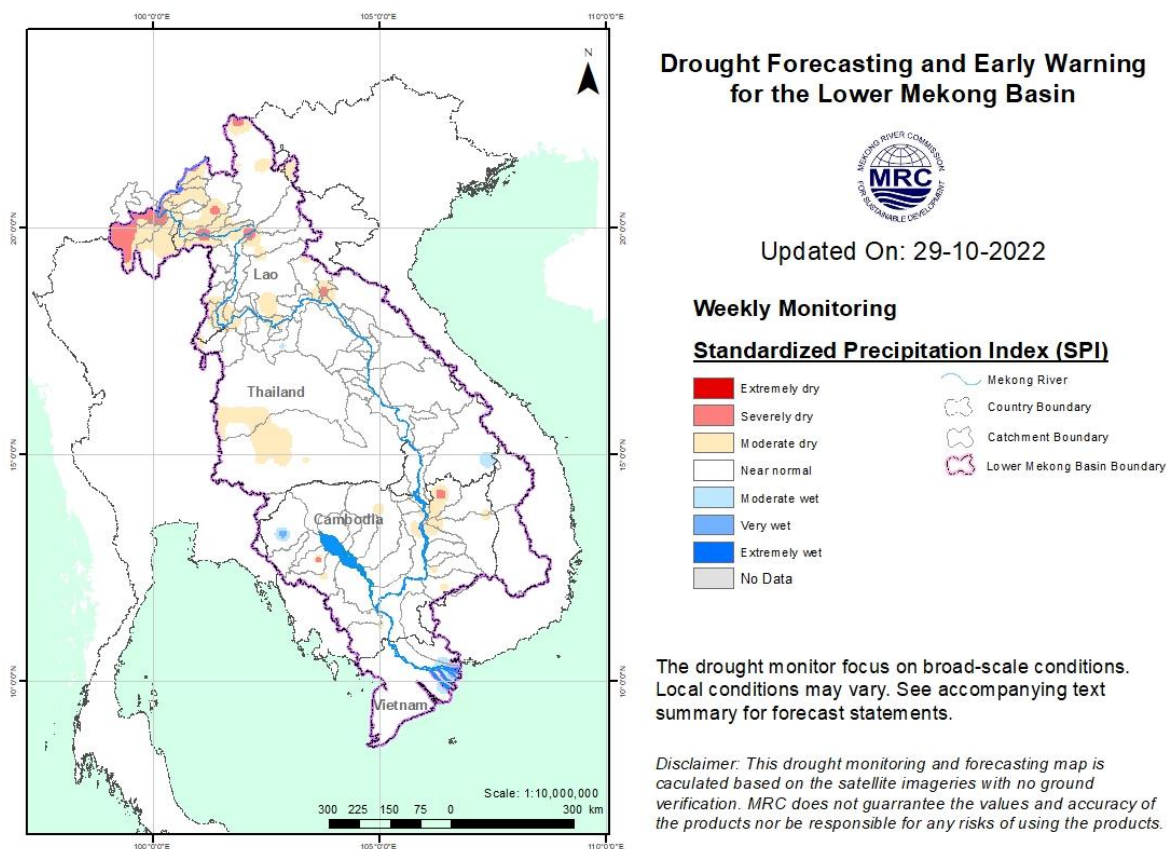
## 5 Drought Monitoring in the Lower Mekong Basin

### Weekly drought monitoring from 16 to 22 October 2022

Drought monitoring data in 2022 are available from Sunday to Saturday every week; thus, the reporting period is normally delayed by three days 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)**

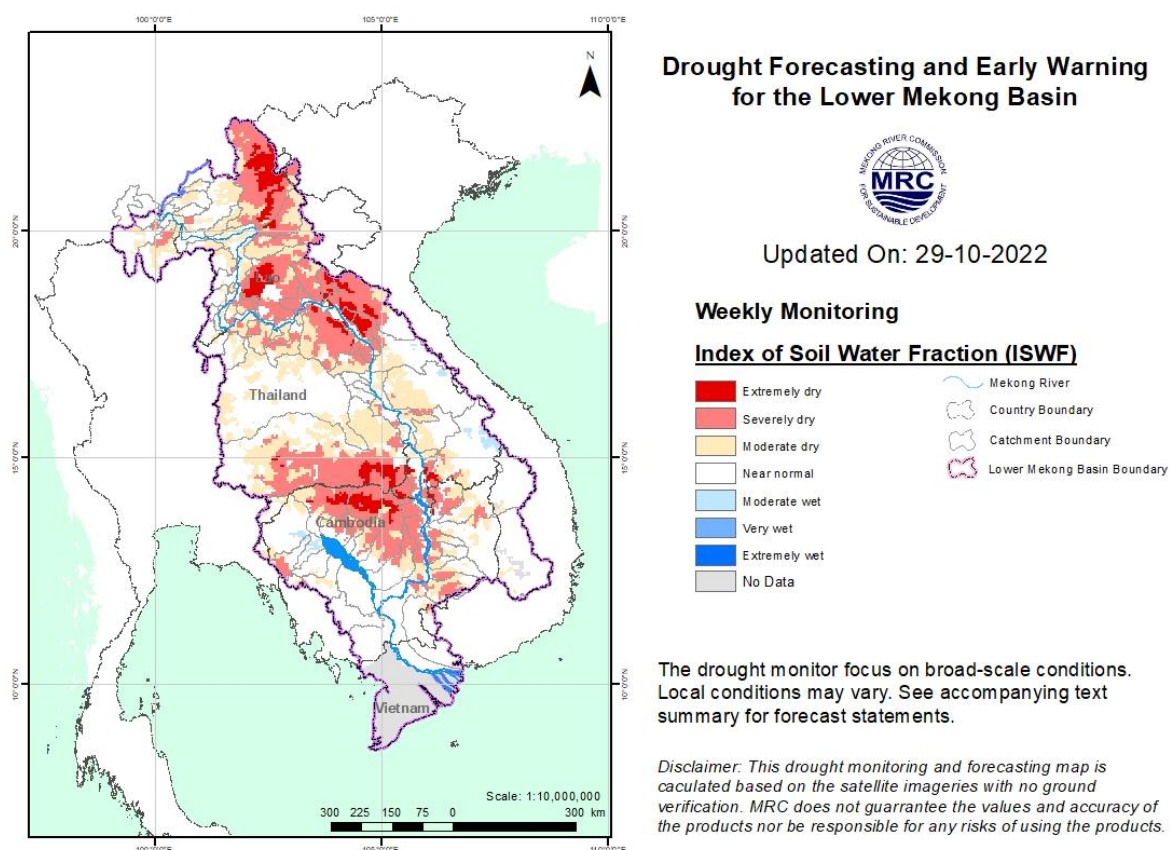
The meteorological drought indicator of SPI from October 23 to 29, as displayed in [Figure 15](#), shows that the LMB received below average rainfall in the north and about average rainfall in other areas of the region. The below average rainfall took place in **Chiang Rai, Chiang Mai, Bokeo, Luangnamtha, Oudomxay, Xayaburi, Luang Prabang, and Borikhamxay** with moderate and severe droughts. However, the situation was not serious.



**Figure 15.** Weekly standardized precipitation index from 23 to 29 October 2022.

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

For the agricultural indicator, the nowcast this week from October 23 to 29 indicates that agricultural droughts took place in the north and the south with moderate and severe conditions. Specifically, droughts covered **Phongsaly, Chiang Rai, Bokeo, Oudomxay, Luang Prabang, Xiengkhuang, Xaysomboun, Vientiane, Borikhamxay, Khammuane, Savannakhet, Nakhon Phanom, Nong Khai, Sakon, Nakhon, Udon Thani, Burirum, Surin, Si Saket, Ubon Ratchathani, Champasack, Ordar Meanchey, Siem Reap, Preah Vihea, Stung Treng, Kampong Thom, Battambang, Pailin, Kratie, and Kompong Cham**. The situation was much more serious than the previous week from 16 to 22 October. [Figure 16](#) below displays agricultural drought map of the monitoring week.

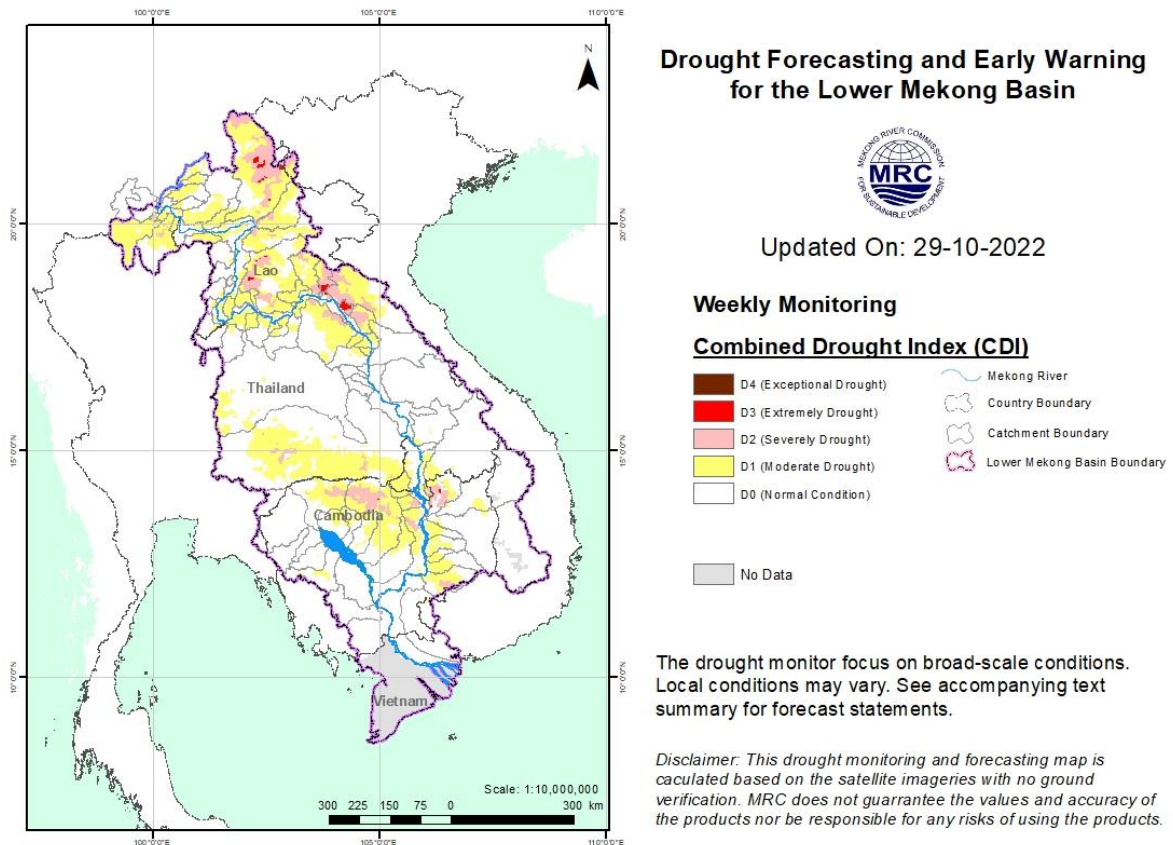


**Figure 16.** Index of Soil Water Fraction from 23 to 29 October 2022.

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

The combined drought indicator from the meteorological and agricultural indices from October 23 to 29, as displayed in [Figure 17](#), shows moderate and severe drought took place in the northern and southern parts of the LMB which was mainly caused by severe dry soil moisture. Those drought hit areas covered **Phongsaly, Chiang Mai, Chiang Rai, Luang Prabang, Oudomxay, Xiengkhuang, Vientiane, Borikhamxay, Nong Khai, Nakhon Phanom, and Khammuane** in the north, and **Siem Reap, Preah Vihea, Stung Treng, Kratie, Otdar Meanchey, Surin Si Saket, Burirum, and Ratchasima** in the south. The situation was much more serious than the previous week.





**Figure 17.** Weekly Combined Drought Index from 23 to 29 October 2022.

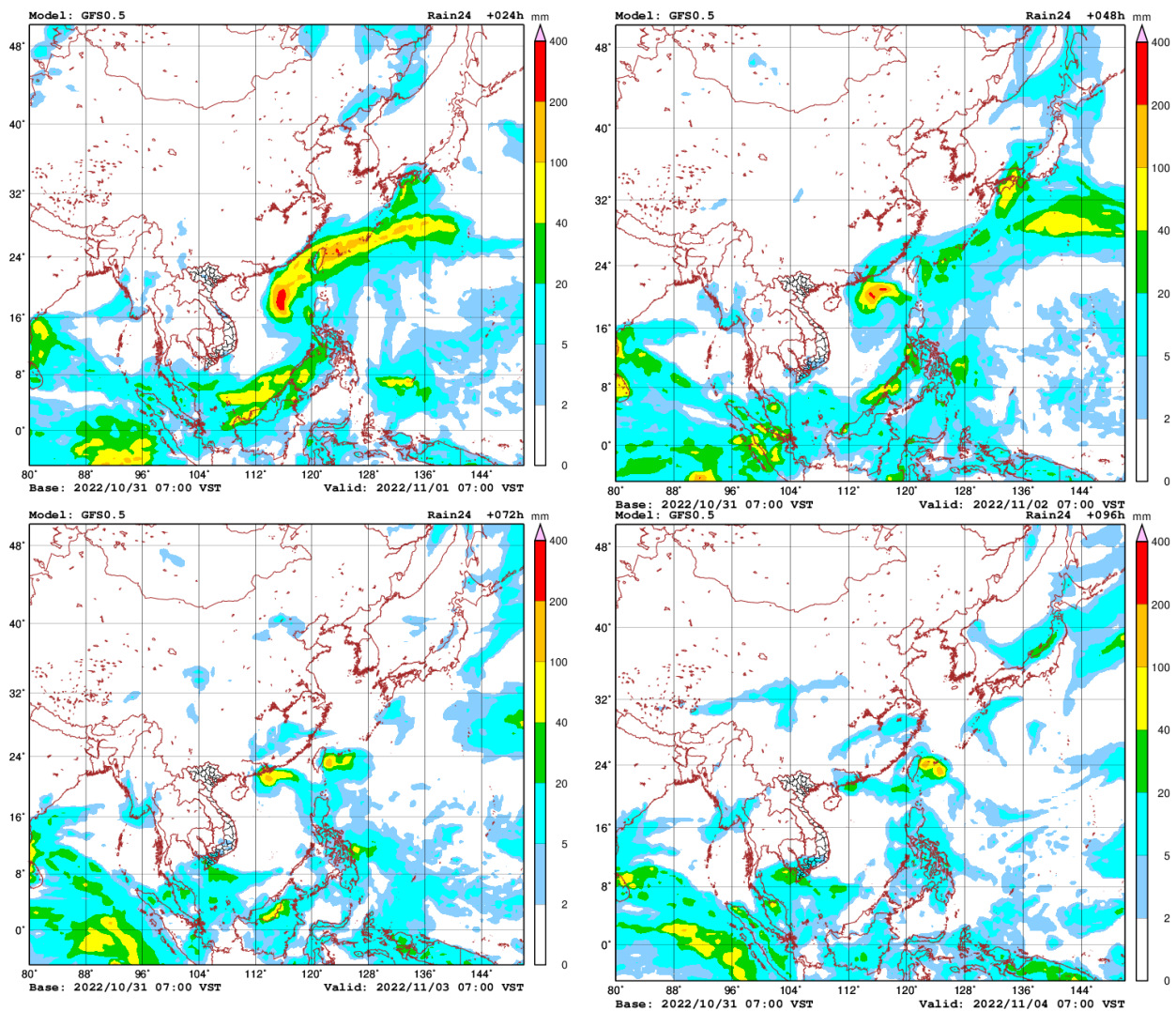
More information on Drought Forecasting and Early Warning (DFEW) as well as the explanation is available here: <http://droughtforecast.mrcmekong.org/templates/view/our-product>. DFEW provides not only weekly monitoring and forecasting information but also a three-month forecast of drought indicators 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.

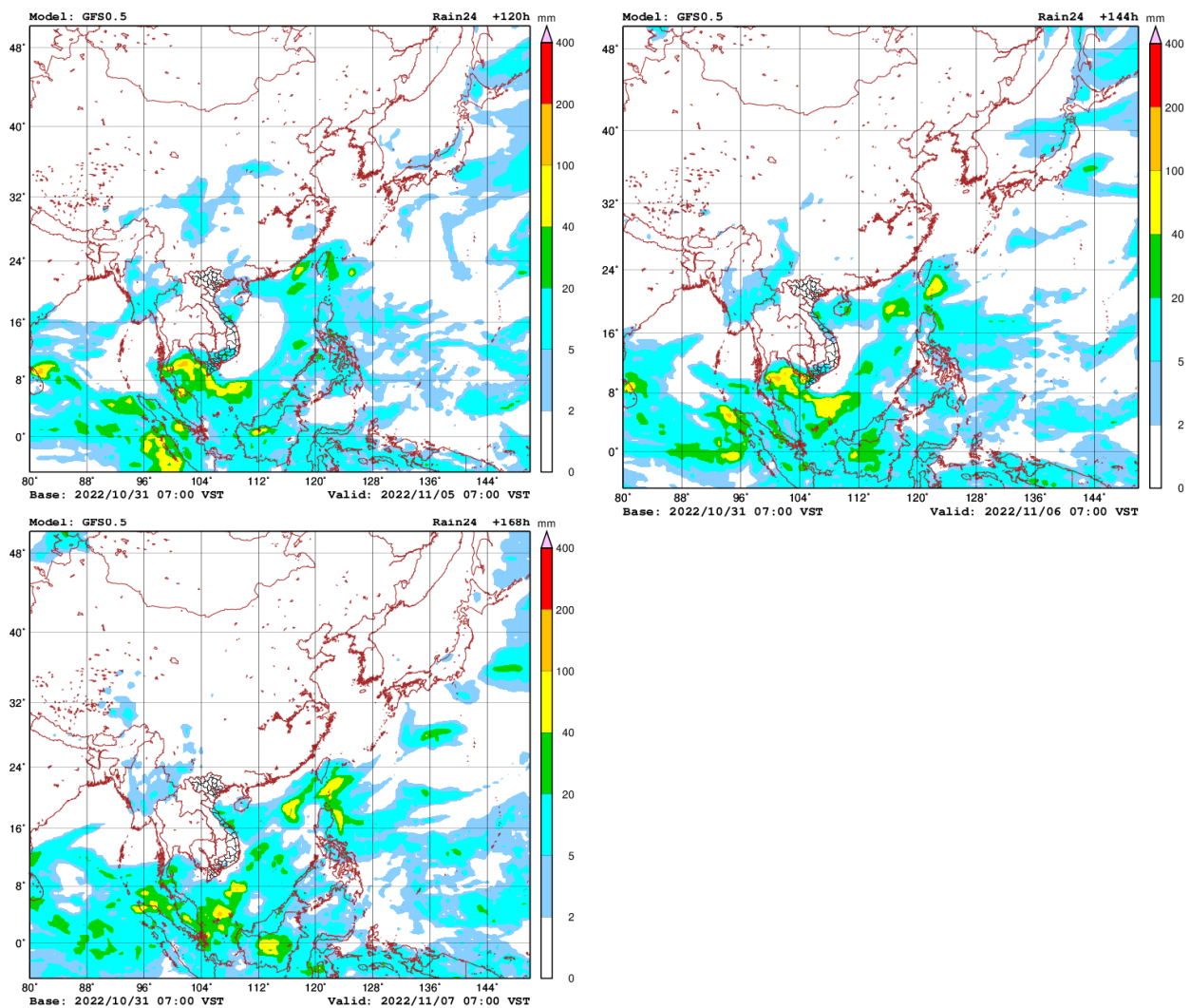
## 6 Weather and Water Level Forecast and Flash Flood Information

### 6.1 Weather and rainfall forecast

Based on the analysis of the synoptic meteorological information and result from the Global Forecast System (GFS) model, in the coming week, the southwest monsoon and low-pressure cell will continue prevailing over the LMB

In general, during 1-7 November 2022, small (2-20 mm/24h) amounts of rainfall will likely occur in over the LMB. [Figure 18](#) shows accumulated rainfall forecast (24 h) of the GFS model from 1 to 7 November 2022.





**Figure 18.** Accumulated rainfall forecast (24 h) based on a GFS model.

## 6.2 Water level forecast

### Chiang Saen and Luang Prabang

Based on October 31's daily flood forecasting bulletin, the daily forecasted water level at Chiang Saen in Thailand shows a decrease of water level between 3.35 m and 3.04 m over the next five days. The trend will keep the water level at this station lower than its LTA.

For Luang Prabang in Lao PDR, the water level will decrease about 0.09 m during the next five days. The current water level is higher than its LTA. No precipitation is forecasted for the area between Chiang Saen and Luang Prabang next week.

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

The water level at Chiang Khan in Thailand is forecasted to go down approximately 0.08 m, while water level at Vientiane in Lao PDR will increase about 0.02 m. Furthermore, in Nong Khai of Thailand the water level will increase about 0.02 m over the next five days; at Paksane in Lao PDR water level will decrease about 0.03 m due to less forecasted rainfalls and dam operation in the upper catchments. No rainfall is forecasted for the area of Paksane next week.

The water levels at these stations will stay lower than their LTA value.

### **Nakhon Phanom to Pakse**

The water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR are forecasted to go down over 0.55 m, because of less rainfall predicted in these areas. Water level at Khong Chaim and Pakse will stay slightly close to their LTA levels. No rainfall is forecasted for the area next week.

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

WL at Stung Treng and Kratie in Cambodia will go down between 0.39 m and 0.70 m, while at Kompong Cham along the Mekong River the water level will go down about 0.69 m over the next five days. Precipitation is 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 go down about 0.45 m over the next five days.

Water levels at most of the stations will go down during next week. WLS will be still staying lower than their LTA value, particularly in the upper part of the region from Chiang Saen to Paksane. From Khong Chiam down to Pakse, Stung Treng and Kratie, water levels will still be staying higher than their LTA. Precipitation 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, the water levels will be slightly fluctuating over their LTA level, following daily tidal effects from the sea. Rainfall is forecasted for the Delta area next week.

The performance of the weekly flood forecast, with an accuracy and data input evaluation from 25-31 October 2022, is presented in **Annex 1**.

[Table 2](#) shows the daily flood forecasting Bulletin issued on 31 October 2022. Results of the weekly river monitoring bulletin are also available at [http://ffw.mrcmekong.org/bulletin\\_wet.php](http://ffw.mrcmekong.org/bulletin_wet.php).

## **6.3 Flash Flood Information**

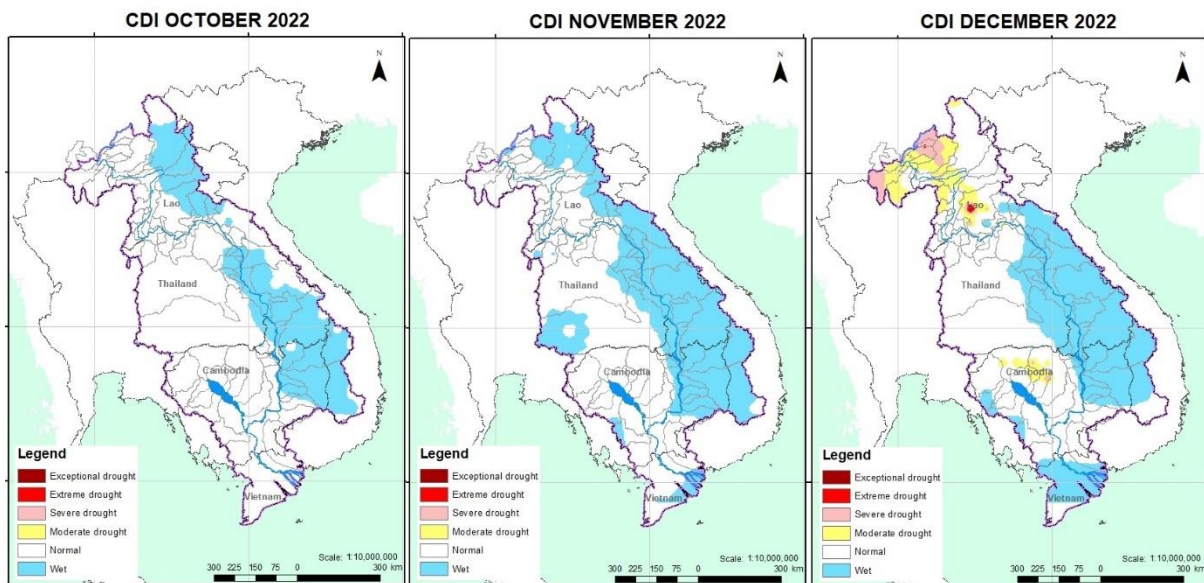
With small and moderate rainfall forecasted for next week, flash floods with high levels are not expected to take place in the LMB. However local heavy rain in a short period of time is possible with unexpected short flash floods.

Detailed information on Flash Flood Warning 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 until November 2022. The MRC's DFEWS adopts an ensemble model called the North America Multi-Model Ensemble (NMME), which averages all scenarios, and downscales the forecasts to the regional level. The Viable Infiltration Capability (VIC) is then used to generate soil moisture and runoff for the whole basin.

[Figure 19](#) below shows the Combine Drought Indicator (CDI) forecast for September, October, and November 2022. CDI is a combination of meteorological and agricultural indicators.



**Figure 19.** Monthly forecast of CDI for October, November, and December 2022.

Figure 19 above shows that October and November are generally wet with the wettest areas in the eastern part. While **December** is receiving below-average rainfall in the northern part covering **Chiang Mai, Chiang Rai, Payao, Bokeo, Luangnamtha, and Vientiane with moderate and severe droughts**. The forecast predicts that the eastern area is also extremely wet in December.

**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: [foodforecast@mrcmekong.org](mailto:foodforecast@mrcmekong.org)  
 River Flood Forecast: 01 November - 05 November 2022

Date: 31 October 2022

Location	Country	24-hr Observed Rainfall (mm)	Zero gauge above M.S.L (m)	Flood level (m)	Alarm level (m)	Observed W. level against zero gauge (m)		Forecasted Water Levels (m)					There is currently no flood warning in place at monitoring sites on the Mekong							
						30-Oct	31-Oct	01-Nov	02-Nov	03-Nov	04-Nov	05-Nov	31	01	02	03	04	05		
Jinghong		0.0				536.61	536.56									X	X	X	X	X
Chiang Saen		0.0	357.110	12.80	11.50	3.28	3.35	3.28	3.25	3.18	3.12	3.04								
Luang Prabang		0.0	267.195	18.00	17.50	9.38	9.26	9.35	9.40	9.30	9.25	9.17	↓							
Chiang Khan		0.0	194.118	16.00	14.50	6.58	6.58	6.52	6.59	6.62	6.55	6.50								
Vientiane		0.0	158.040	12.50	11.50	4.02	4.03	4.05	4.00	4.08	4.13	4.05								
Nongkhai		0.0	153.648	12.20	11.40	3.42	3.43	3.45	3.40	3.47	3.52	3.45								
Paksane		0.0	142.125	14.50	13.50	4.10	4.06	4.00	4.00	3.96	4.00	4.03								
Nakhon Phanom		0.0	130.961	12.00	11.50	3.11	2.98	2.87	2.75	2.73	2.67	2.70	↓	↓	↓					
Thakhek		0.0	129.629	14.00	13.00	4.27	4.18	4.10	3.99	3.96	3.90	3.94			↓					
Mukdahan		0.0	124.219	12.50	12.00	3.20	3.12	3.02	2.93	2.81	2.77	2.70				↓				
Savannakhet		0.0	125.410	13.00	12.00	1.64	1.56	1.47	1.39	1.28	1.25	1.19					↓			
Khong Chiam		0.0	89.030	14.50	13.50	6.19	6.02	5.90	5.76	5.64	5.49	5.41	↓	↓	↓	↓	↓	↓	↓	↓
Pakse		0.0	86.490	12.00	11.00	4.68	4.54	4.45	4.34	4.25	4.13	4.07	↓	↓	↓	↓	↓	↓	↓	↓
Stung Treng		nr	36.790	12.00	10.70	5.33	5.22	5.12	5.06	4.98	4.92	4.83	↓	↓	↓	↓	↓	↓	↓	↓
Kratie		nr	-0.101	23.00	22.00	13.31	13.14	12.92	12.75	12.64	12.53	12.44	↓	↓	↓	↓	↓	↓	↓	↓
Kompong Cham		nr	-0.930	16.20	15.20	9.02	8.86	8.70	8.50	8.35	8.26	8.17	↓	↓	↓	↓	↓	↓	↓	↓
Phnom Penh (Bassac)		nr	-1.020	12.00	10.50	7.52	7.40	7.31	7.22	7.14	7.10	7.05	↓	↓	↓	↓	↓	↓	↓	↓
Phnom Penh Port		-	0.070	11.00	9.50	6.29	6.21	6.14	6.07	6.00	5.97	5.93	↓	↓	↓	↓	↓	↓	↓	↓
Koh Khel (Bassac)		nr	-1.000	8.40	7.90	6.66	6.58	6.51	6.45	6.40	6.38	6.35	↓	↓	↓	↓	↓	↓	↓	↓
Neak Luong		nr	-0.330	8.00	7.50	5.64	5.52	5.41	5.30	5.20	5.14	5.10	↓	↓	↓	↓	↓	↓	↓	↓
Prek Kdam		nr	0.080	10.00	9.50	7.55	7.48	7.42	7.35	7.29	7.26	7.23	↓	↓	↓	↓	↓	↓	↓	↓
Tan Chau		0.0	0.000	4.50	3.50	2.85	2.78	2.72	2.66	2.61	2.57	2.53	↓	↓	↓	↓	↓	↓	↓	↓
Chau Doc		nr	0.000	4.00	3.00	2.72	2.66	2.60	2.54	2.48	2.43	2.39	↓	↓	↓	↓	↓	↓	↓	↓

**REMARKS:**

-: not available.  
 nr: no rain.

LEGEND		
rising water level		<p><b>Note:</b> Stable water level is defined as a daily change of less than 10cm from Chiang Saen to Savannakhet; less than 5cm at Pakse and Stung Treng; and no more than 3cm cm from Kratie downstream.</p> <p><b>Flood stage</b> is when the flood level exceeds. A flood level is determined by each Member Country.</p> <p><b>Alarm stage</b> is when the water level ranges between alarm and flood levels.</p> <p><b>Alarm situation</b> is when the water level is forecasted to reach the flood stage within the next three days.</p>
stable water level		
falling water level		
alarm stage		
alarm situation		
flood stage		
no data available		

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://fw.mrcmekong.org/bulletin\\_wet.php](http://fw.mrcmekong.org/bulletin_wet.php); <http://fw.mrcmekong.org/reportflood.php>

## 7 Summary and Possible Implications

### 7.1 Rainfall and its forecast

Rain was observed from Stung Treng in Cambodia to Tan Chau and Chau Doc in Viet Nam during October 25-31, including the lower part in Lao PDR and Cambodia, varying from 2.80 mm to 65.60 mm due to no low-pressure line nominating over the LMB during the report period. However, this week rainfall was considered low in the upper and middle parts of the LMB compared with last week rainfall.

Based on the forecasted satellite data, rainfall is forecasted for some areas of the LMB with the value range from 10 mm to 50 mm for the next seven days. The forecasting model using GFS data, moreover, shows no significant rainfall (<100 mm) is likely to take place in the Mekong region from 1 to 7 November 2022.

### 7.2 Water level and its forecast

According to MRC's observed water level at Jinghong, it showed increased water levels from **536.06 m** to **536.74 m** during 25-31 October 2022. The current level is staying about 0.73 m higher than its LTA. The outflow at Jinghong station increased between 1360.00 m<sup>3</sup>/s and 1870.00 m<sup>3</sup>/s between 25 and 31 October 2022.

Along with the increased outflow from Jinghong upstream, water levels of monitoring stations at Chiang Saen increased 0.63 m from 25 to 31 October 2022. Furthermore, WLS at Chiang Khan increased 0.18 m and at Vientiane decreased 0.24 m from October 25 to 31 due to the influence of less rainfall and dam operation upstream. Water levels from Nakhon Phanom to Pakse decreased between 0.55 m and 0.91 m, but still staying slightly higher than their LTA value at Khong Chiam and Pakse. Water levels from the stretches of the river from Stung Treng to Kratie and at Kompong Cham in Cambodia decreased during this reporting week, due to the less contributed rainfall from upstream parts including Pakse and 3S area in Viet Nam.

The flow volume of the Tonle Sap Lake is slightly higher than its LTA up to October 31. From next week, the flow is expected to decrease due to below-average rainfall forecasted in the inflow catchments of the Tonle Sap Lake in next week.

From Stung Treng to Kratie and Kompong Cham on the Mekong River, the water levels are expected to decrease about 0.65 m and will stay lower than their LTA value. The water levels – at Prek Kdam to Phnom Penh Port on the Tonle Sap, and Chaktomuk to Koh Khel on the Bassac – are forecasted to stay lower than their LTA.

The situation in Tan Chau on the Mekong River and Chau Doc on the Bassac River is expected to remain unchanged.

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 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 amount of rainfall for the coming week as mentioned earlier in [section 6.1](#), major flash floods are not expected in the LMB during next week. However local heavy rain in a short period of time is possible with unexpected short flash flood.

### 7.4 Drought condition and its forecast

During October 23-29, the LMB was facing some moderate and severe droughts in the north and the south which were mainly caused by severe dry soil moisture. Those drought hit areas covered **Phongsaly, Chiang Mai, Chiang Rai, Luang Prabang, Oudomxay, Xiengkhuang, Vientiane, Borikhamxay, Nong Khai, Nakhon Phanom, and Khammuane in the north, and Siem Reap, Preah Vihea, Stung Treng, Kratie, Otdar Meanchey, Surin Si Saket, Burirum, and Ratchasima** in the south. The situation was much more serious than the previous week.

During the next three months, October and November are ultimately wet in general with the wettest areas in the eastern part. While **December** is receiving below-average rainfall in the northern part covering **Chiang Mai, Chiang Rai, Payao, Bokeo, Luangnamtha, and Vientiane** with **moderate and severe droughts**. The forecast predicts that the eastern area is also extremely wet in December.



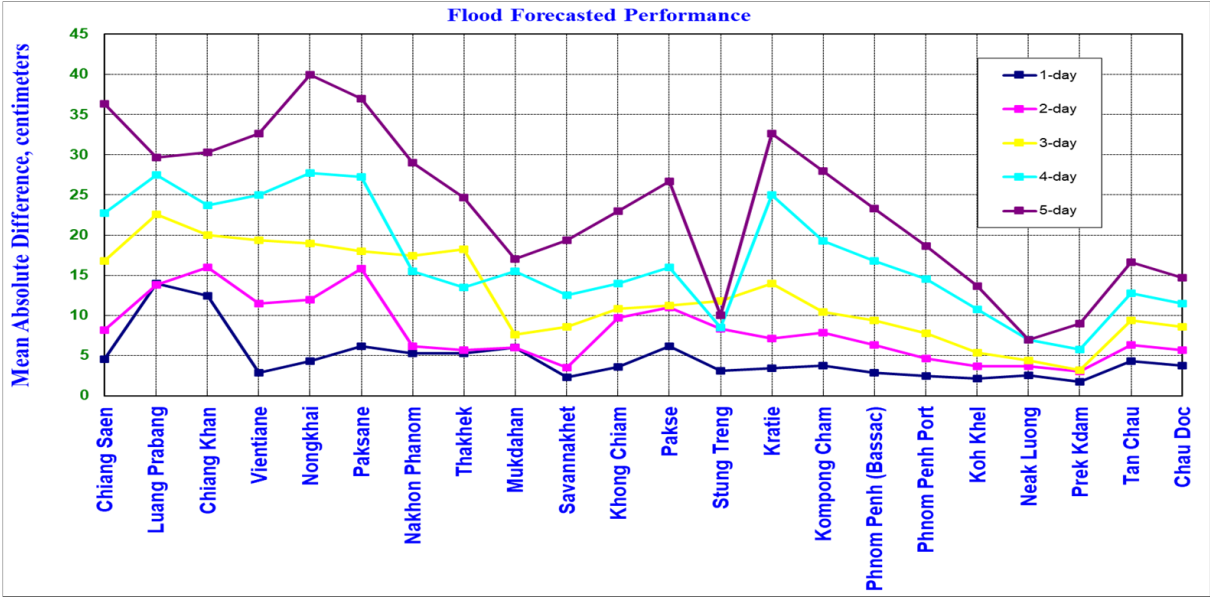
# Annex 1: Performance of the weekly flood forecasting

## Accuracy

“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 25 to 31 October 2022.

The forecasting values from 25 to 31 October 2022 show that the overall accuracy is fair for a one-day to four-day forecast in lead time at stations in the lower parts of the Mekong River from Khong Chiam to Kompong Cham because of rainfall and dams' operation in this area during the report period.



**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.
- Luang Prabang to Chiang Khan and Stung Treng to Kratie have been effluent 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).
- Khong Chiam, Pakse, Stung Treng and Kratie stations have been affected by heavy rainfall from Viet Nam and some hydropower operations on Sekong, Sesan and Sre Pok

(water retention and release). Rainfall always accumulates at this spot, which could be causing rapidly high-water levels.

- 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.

### Performance based on data from the Member Countries

Flood forecasting performance is based on the hydro-met data received from the Member Countries. The flood forecasting achievement indicated in (%) and (cm) from 1 day to 5 days at each key station, against with Old Benchmark are presented in Table B1 and Table B2.

The evaluation of performance indicators, missing data and completion time for flood forecasting are presented in Table B3 and Figures B4, B5 and B6, respectively from 25 to 31 October 2022.

**Table B1:** The Mean Absolute Difference (Error) of Flood Forecasting base on old defined Benchmark from 25 to 31 October 2022 in cm

Lead-time Forecasted	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
1-day	5	14	12	3	4	6	5	5	6	2	4	6	3	3	4	3	2	2	3	2	4	4
2-day	8	14	16	12	12	16	6	6	6	4	10	11	8	7	8	6	5	4	4	3	6	6
3-day	17	<u>23</u>	<u>20</u>	19	19	18	17	18	8	9	11	11	12	14	10	9	8	5	4	3	9	9
4-day	<u>23</u>	<u>28</u>	<u>24</u>	<u>25</u>	<u>28</u>	<u>27</u>	16	14	16	13	14	16	9	<u>25</u>	19	17	15	11	7	6	13	12
5-day	<u>36</u>	<u>30</u>	<u>30</u>	<u>33</u>	<u>40</u>	<u>37</u>	<u>29</u>	<u>25</u>	17	19	<u>23</u>	<u>27</u>	10	<u>33</u>	<u>28</u>	<u>23</u>	19	14	7	9	17	15

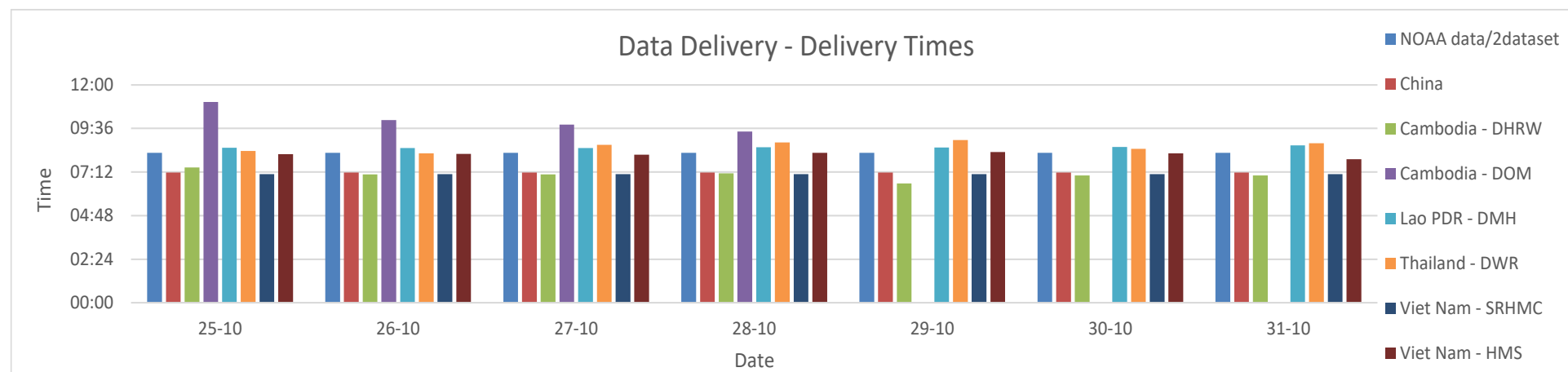
**Table B2:** The Mean Absolute Difference (Error) of Flood Forecasting base on old defined Benchmark from 25 to 31 October 2022 in %

Lead-time Forecasted	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	Average	
1-day	71.4	57.1	71.4	57.1	71.4	57.1	57.1	57.1	57.1	71.4	<u>42.9</u>	<u>42.9</u>	71.4	57.1	71.4	57.1	<u>42.9</u>	71.4	57.1	<u>42.9</u>	57.1	57.1	57.1	<b>59.1</b>
2-day	<u>50.0</u>	66.7	66.7	66.7	66.7	<u>50.0</u>	66.7	<u>50.0</u>	66.7	66.7	<u>50.0</u>	<u>50.0</u>	66.7	<u>50.0</u>	16.7	66.7	66.7	66.7	66.7	66.7	<u>50.0</u>	<u>50.0</u>	57.1	<b>58.3</b>
3-day	<u>40.0</u>	60.0	80.0	60.0	60.0	60.0	60.0	<u>40.0</u>	<u>40.0</u>	60.0	80.0	60.0	<u>40.0</u>	60.0	60.0	<u>40.0</u>	60.0	60.0	60.0	60.0	<u>40.0</u>	<u>40.0</u>	66.7	<b>55.5</b>
4-day	<u>50.0</u>	<u>50.0</u>	75.0	75.0	<u>50.0</u>	<u>25.0</u>	<u>50.0</u>	<u>50.0</u>	<u>25.0</u>	<u>50.0</u>	<u>50.0</u>	<u>50.0</u>	<u>50.0</u>	<u>50.0</u>	<u>25.0</u>	75.0	<u>50.0</u>	75.0	75.0	<u>25.0</u>	<u>50.0</u>	<u>50.0</u>	66.7	<b>51.1</b>
5-day	66.7	<u>33.3</u>	66.7	66.7	66.7	<u>33.3</u>	66.7	66.7	66.7	66.7	66.7	<u>33.3</u>	66.7	66.7	<u>33.3</u>	<u>33.3</u>	<u>33.3</u>	66.7	66.7	<u>33.3</u>	66.7	66.7	66.7	<b>56.1</b>

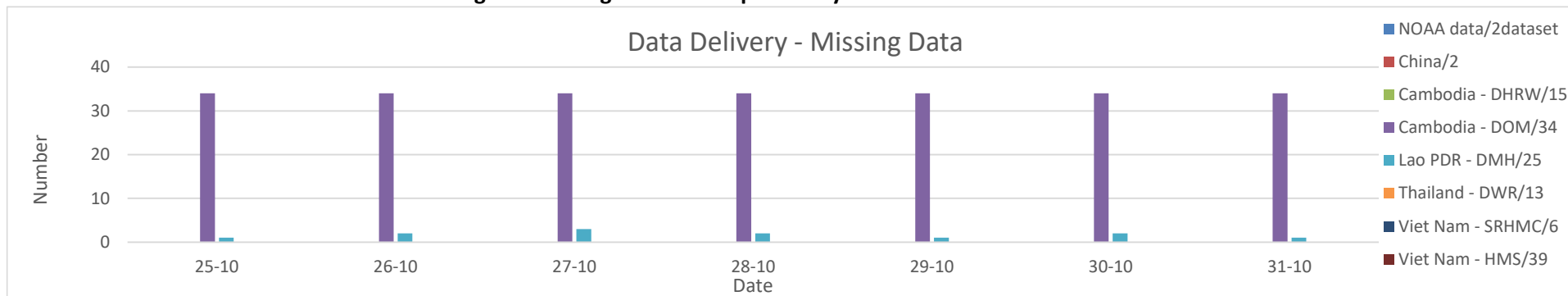
**Table B3: Overview of performance indicators for the past 7 days from 25 to 31 October 2022**

	FF time sent				Arrival time of input data								Missing data (number-mainstream and trib.st.)							
	FF completed and sent (time)	Stations without forecast	FF2 completed and sent (time)	Weather data available (time)	NOAA data	China	Cambodia - DHRW	Cambodia - DOM	Lao PDR - DMH	Thailand - DWR	Viet Nam - SRHMC	Viet Nam - HMS	NOAA data/2dataset	China/2	Cambodia - DHRW/15	Cambodia - DOM/34	Lao PDR - DMH/32	Thailand - DWR/13	Viet Nam - SRHMC/6	Viet Nam - HMS/39
<b>2022</b>																				
week	10:19	#DIV/0!	-	-	08:15	07:10	07:02	10:05	08:33	08:37	07:05	08:10	0	0	0	238	12	0	0	0
month	10:27	#DIV/0!	-	-	08:15	07:10	07:16	08:01	08:33	08:25	07:16	08:10	0	0	0	34	69	0	0	2

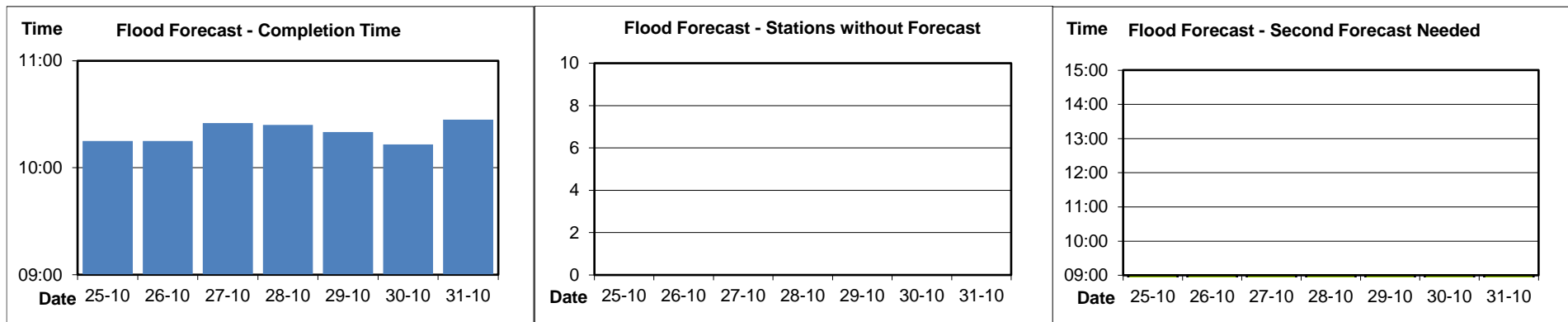
**Fig. B4: Data delivery times for the past 7 days from 25 to 31 October 2022**



**Fig. B5: Missing data for the past 7 days from 25 to 31 October 2022**



**Fig. B6: Flood forecast completion time, stations without forecasts, and second forecasts need from 25 to 31 October 2022**





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