



Mekong River Commission

Weekly Dry Season Situation Report in the Lower Mekong River Basin 8-14 March 2022

Prepared by
The Regional Flood and Drought Management Centre
15 March 2022

The MRC is funded by contributions from its Member Countries and Development Partners, including Australia, Belgium, the European Union, Finland, France, Germany, Japan, Luxembourg, the Netherlands, Sweden, Switzerland, the United States and the World Bank.

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First published (2020)

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Title: Weekly wet season situation report in the Lower Mekong River Basin for 8 - 14 March 2022.

ISSN: 1728-3248

Keywords: flood/drought/weather/Mekong/Tonle Sap

For bibliographic purposes, this volume may be cited as:

Mekong River Commission. (2020). *Weekly dry season situation report in the Lower Mekong River Basin for 8-14 March 2022*. Vientiane: MRC Secretariat.

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Key Messages

Key messages for this weekly report are presented below.

Rainfall and its forecast

- During 8-14 March 2022, rainfall was detected in the upper part of the Mekong River Basin (MRB) from Chiang Saen to Mukdahan, varied from 2.40 mm to 29.10 mm.
- There will be some rain for the next 7 days over the Mekong region from 15 to 21 March 2022 in the upper and the lower parts.

Water level and its forecast

- According to MRC's observed water level (WL) at Jinghong station, the WL still rapidly increased with 0.39 m from 537.23 m to 537.62 m during the weekly monitoring period from 8 to 14 Mar 2022 (recorded on 7:00 am), and stayed about 1.26 m higher than its two-year average (2020-2021) value. The sudden increased WL has been observed since 28 Feb till 14 Mar 2022, which increased by about 2.10 m from 535.52 m to 537.62 m. The outflow at Jinghong station increased from 2,246.26 m³/s to 2,536.81 m³/s from 8 to 14 March 2022.
- Along with the sudden increased outflow from Jinghong upstream, water level (WL) of monitoring station at Chiang Saen in Thailand also increased about 0.36 m and stayed 1.92 m higher than its long-term average (LTA), considered as abnormal. Water level at Lao PDR's Luang Prabang increased about 0.51 m compared with last week and stayed 0.17 m higher than its historical maximum value. WL at the monitoring stations at Vientiane of Lao PDR significantly increased up to 1.13 m and rose 0.55 m higher than its historical maximum value, considered abnormal. Water levels at Nong Khai in Thailand were up about 1.25 m, while at Paksane in Lao PDR was also up about 0.82 m, rising higher than their LTA level and considered normal. WLs from Thailand's Nakhon Phanom to Pakse in Lao PDR increased about 0.25 m, which rose higher than their LTA level. The current WL at Savannakhet in Lao PDR is also higher than its LTA level, which considered normal. WLs from Cambodia's Stung Treng to Kratie increased 0.03 m and stayed about 0.57 m and 1.03 m higher than their LTA value. From Kompong Cham to Neak Luong on the Mekong River, Koh Khel on the Bassac River increased 0.05 m, but at Chaktomuk and Prekdam on the Tonle Sap River decreased about 0.03 m. WLs at these stations are currently staying close to their LTA. For the tidal stations at Viet Nam's Tan Chau and Chau Doc, WLs fluctuated between their Maximum and Minimum levels due to daily tidal effects from the sea and considered as critical.
- The water volume of the Tonle Sap Lake up to 14 Mar 2022 was lower than its LTA but higher than the levels in 2019, 2020 and 2021 during the report period, and still considered critical.
- Water levels at Tan Chau and Chau Doc remained fluctuating between their Minimum and Maximum values due to the tidal process.
- Over the next seven days, the water levels across the monitoring stations are expected to go up from Kompong Cham to Chaktomuk and Koh Khel in Cambodia (due to back-water affect during the dry season. Water levels at most of stations currently remain higher than their long-term average value, while the others remain lower.

Drought condition and its forecast

- Drought conditions of the LMB from March 6 to 12 were normal in most parts of the LMB except some moderate and severe soil moistures in the middle and south-eastern parts due to absence of rain but it is quite normal during dry season. The region showed no significant threat.
- For the upcoming two-month forecast, the LMB is likely to receive average rainfall and under normal conditions in March while receive relatively high amount of rain in April 2022. Based on the rainfall forecasts, April is likely to be much wetter than normal year especially in the north and central parts of the LMB.

1 Introduction

This Weekly Dry Season Situation Report presents a preliminary analysis of the weekly hydrological situation in the Lower Mekong River Basin (LMB) for **8-14 March 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 – Cambodia, Lao PDR, Thailand, and Viet Nam – and on satellite data. Water level indicated in this report refers to an above zero gauge of each station.

The report covers the following topics that are updated weekly:

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

Mekong River water levels are updated daily and can be accessed from:
http://ffw.mrcmekong.org/bulletin_wet.php.

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 (March April and May) and the weather maps issued by the Thai Meteorological Department (TMD) were used to verify weather conditions in the LMB.

Since the end of March 2022, the warm weather has come because the influentially high-pressure air mass areas prevail over the LMB with gradually decreasing water levels in both mainstream and tributaries. The data from the TMD predict that low pressure of air-mass will bring warm and wet weather conditions in the upper part and lower part of LMB. From March to May, it is the period of summer when the high-pressure air mass areas prevailing over the Mekong region, which will bring some rainfalls for the transitional period between dry and wet seasons.

[Figure 1](#) presents the weather map of 14 March 2022, showing low pressure points dominating the upper part of the Mekong area, which will have rain for the next few days.

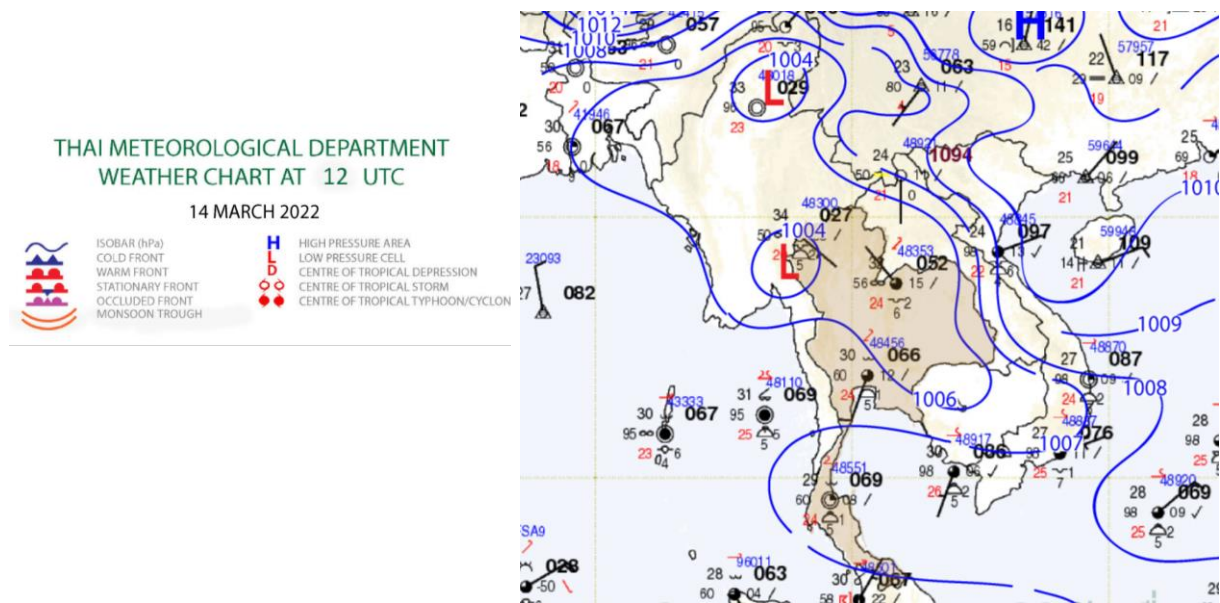


Figure 1: Summary of weather conditions over the LMB.

According to the ASEAN Specialised Meteorological Centre (ASMC), the highest probability of warm condition is predicted over the lower part of the Mekong region covering Lao PDR and Thailand from 7 to 20 March 2022, during the 1st and 3rd weeks of March 2022. Moreover, the Mekong region is likely dominated by warm conditions, which may bring warmer temperature in general to the lower part of the LMB. **Figure 2** shows the outlook of weather condition from 7 to 20 March 2022 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

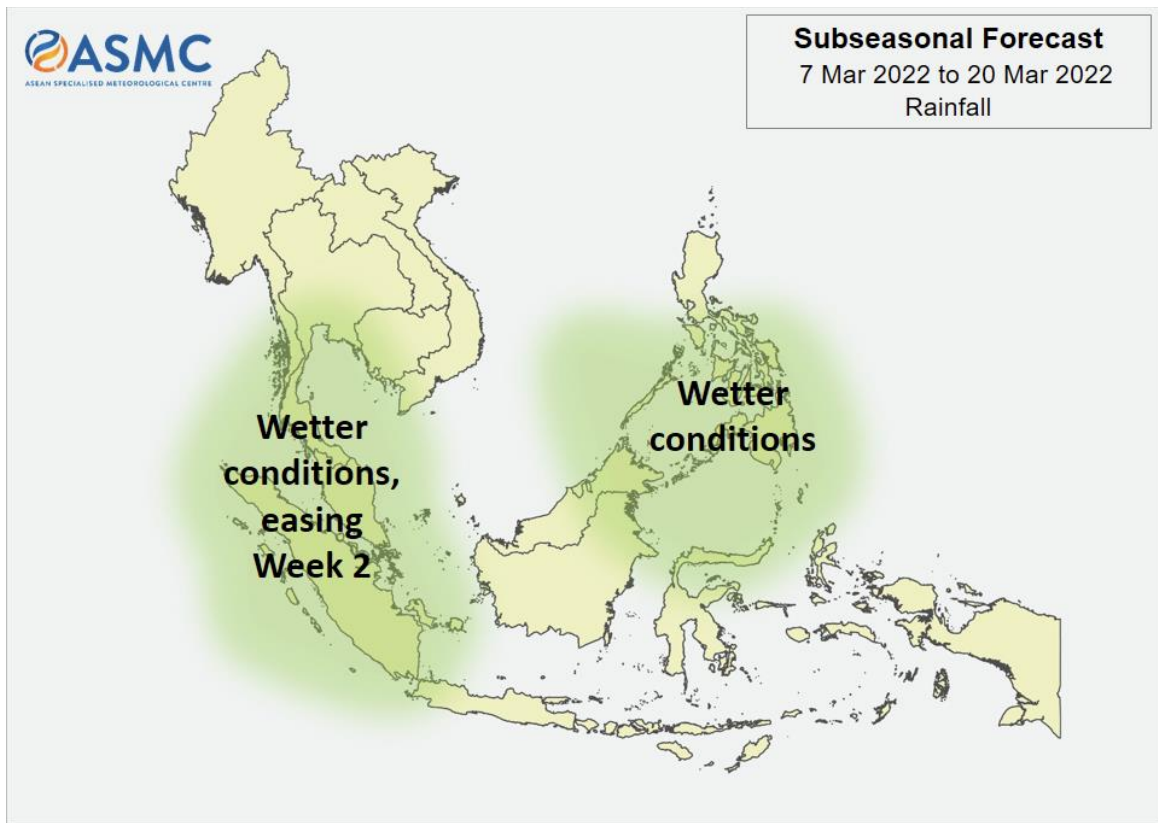


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

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

There was no tracking storm covering the LMB during 8-14 March 2022, meaning no movement of storm detected from the South Sea of Viet Nam, as displayed in [Figure 3](#).

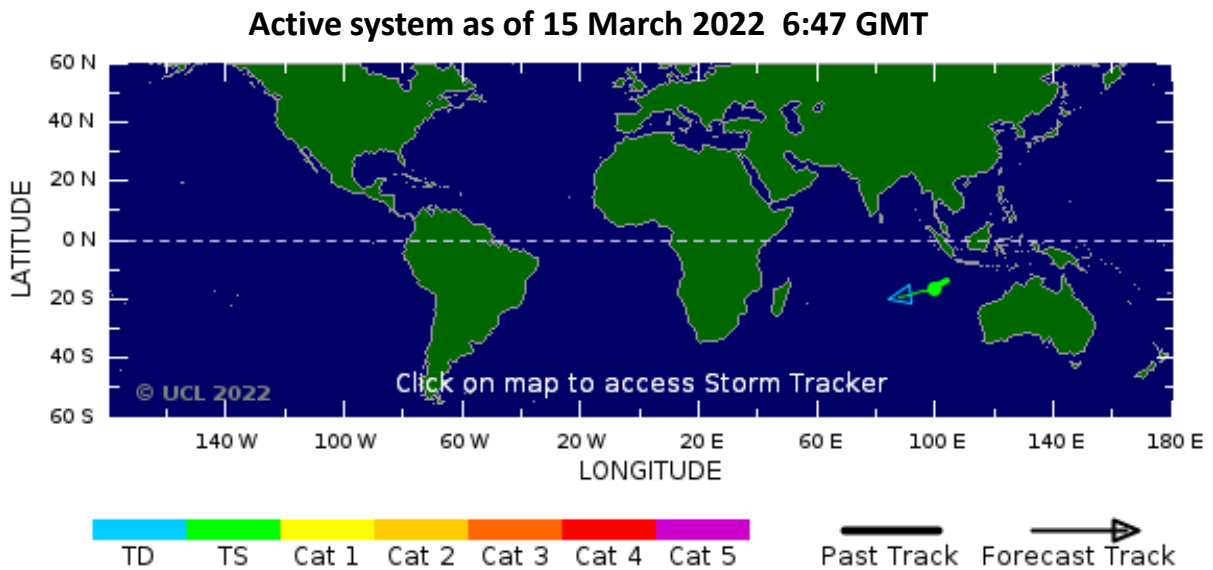


Figure 3: No tropical storm risk observed on 15 March 2022.

Rainfall patterns over the LMB

This week from 8 to 14 March 2022, rainfall was observed over the upper part of the Mekong Basin, from Chiang Saen to Mukdahan in Thailand, varying from 2.40 mm to 29.10 mm. The rainfall from 8 to 14 March focused in the upper part while last week rainfall occurred in the lower part of the region, as shown in [Figure 4](#).

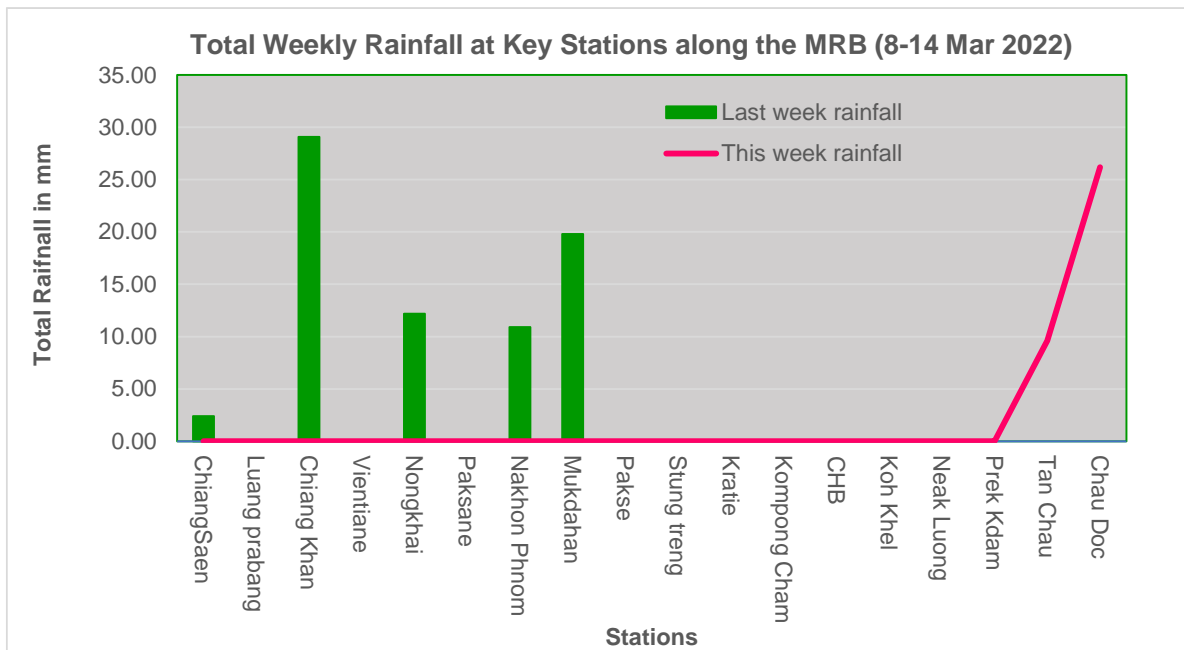


Figure 4: Weekly total rainfall at key stations in the LMB.

To verify area rainfall distribution, [Figure 5](#) shows a map of the weekly accumulated rainfall based on the observed data provided by the MRC Member Countries – Cambodia, Lao PDR, Thailand, and Viet Nam – from 8 to 14 March 2022.

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

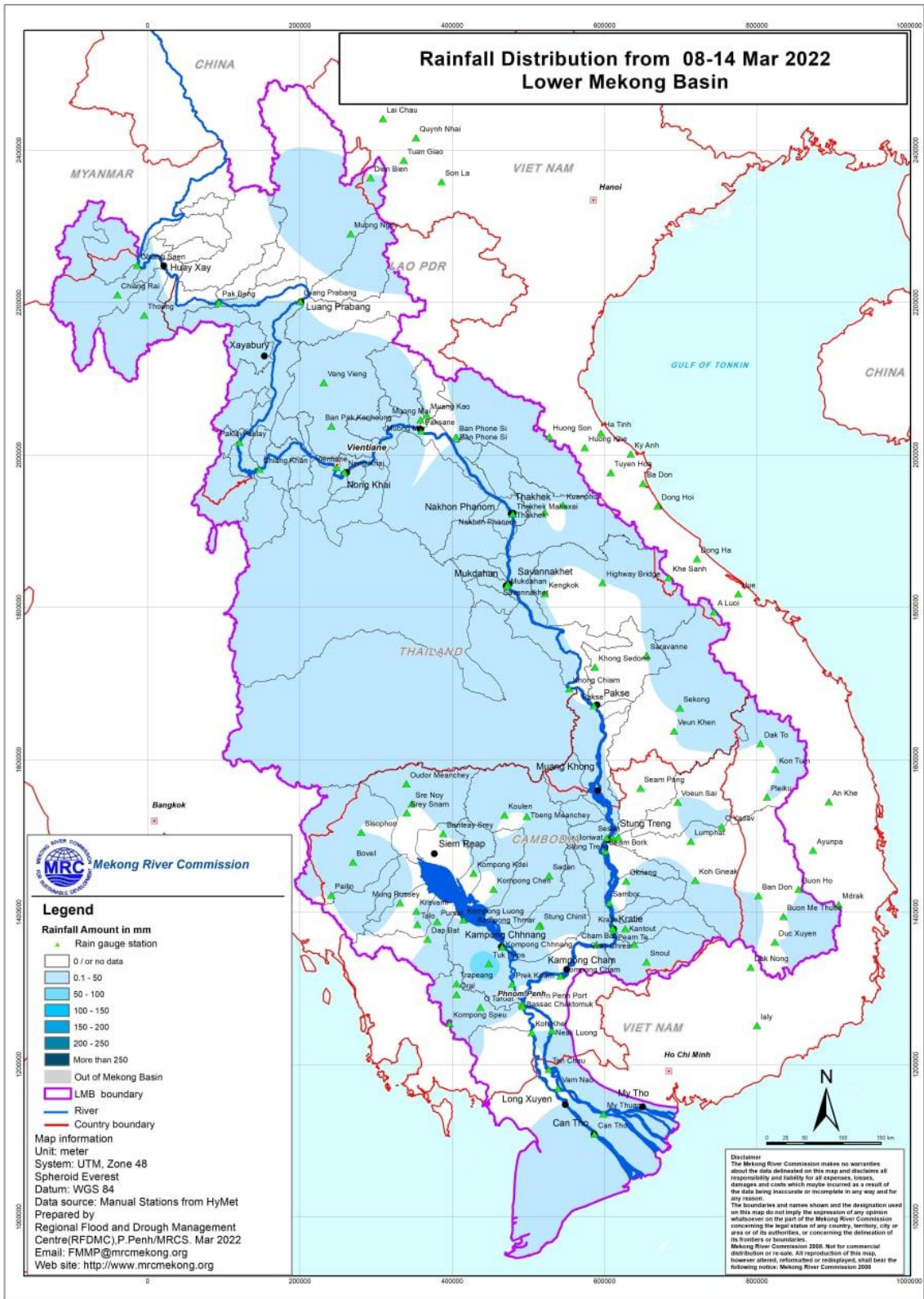


Figure 5: Weekly rainfall distribution over the LMB.

3 Water Levels in the Lower Mekong River

The hydrological regimes of the Mekong mainstream are illustrated by recorded water levels and flows at key mainstream stations: at Chiang Saen to capture mainstream flows entering from the Upper Mekong Basin (UMB); at Vientiane to present flows generated by climate conditions in the upper part of the LMB; at Pakse to investigate flows influenced by inflows from the larger Mekong tributaries; at Kratie in Cambodia to capture overall flows of the Mekong Basin; and at Viet Nam’s Tan Chau and Chau Doc to monitor flows to the Delta.

The key stations along the LMB and their respective model application for River Flood Forecasting during the wet season from June to October and River Monitoring during the dry season from November to May are presented in [Figure 6](#). The hydrograph for each key station is available from the MRC’s River Flood Forecasting: <http://ffw.mrcmekong.org/overview.php>. The weekly water levels and rainfall at each key station are summarised in **Annex A**.

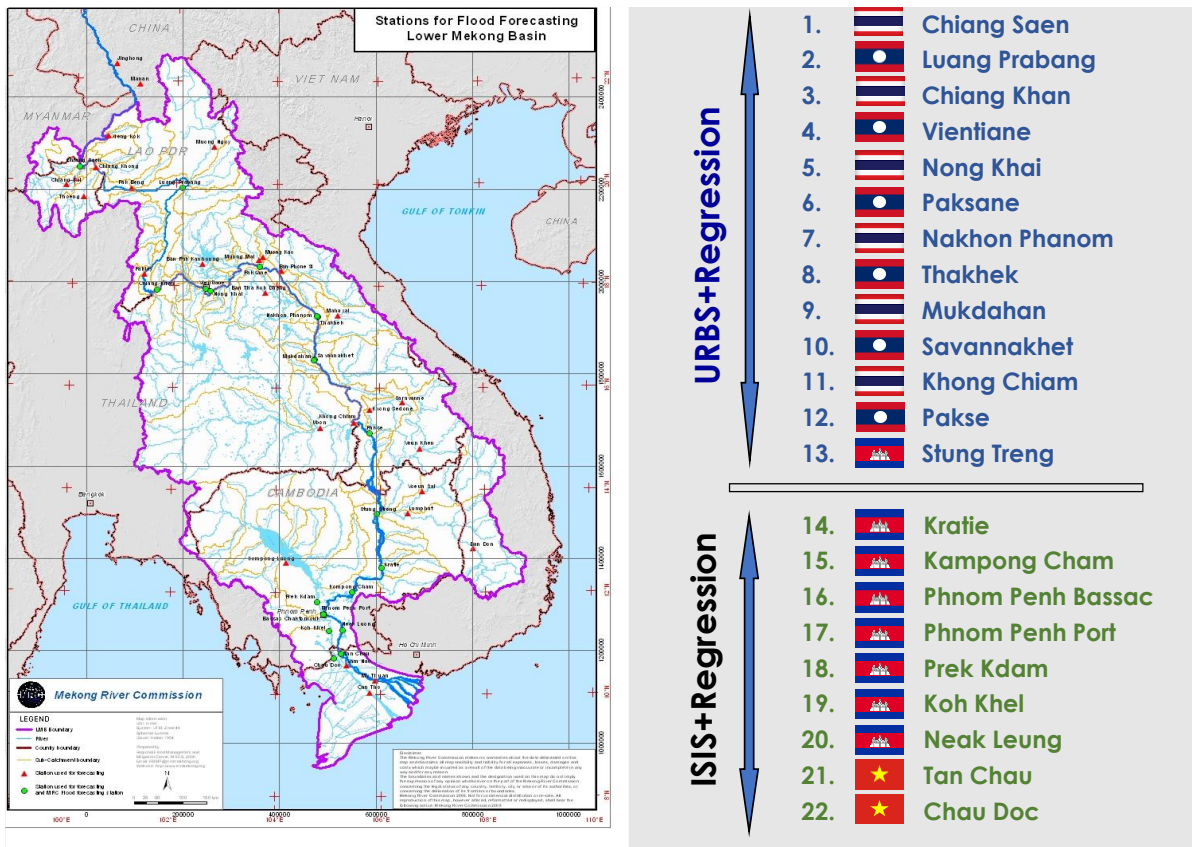


Figure 6: Key stations and model application for River Monitoring and Flood Forecasting.

According to MRC’s observed water level (WL) at Jinghong station, the WL still rapidly increased about 0.39 m from 537.23 m to 537.62 m during the weekly monitoring period from 8 to 14 Mar 2022 (recorded on 7:00 am), and stayed about 1.26 m higher than its two-year average (2020-2021) value. The sudden increased WL has been observed since 28 Feb till 14 Mar 2022, which increased by about 2.10 m from 535.52 m to 537.62 m. The Eyes on Earth (Mekong Dam Monitor) alerted that water flow continues releasing from China’s upstream dams which causes water level in downstream increase.

The outflow at Jinghong station increased from 2,246.26 m³/s to 2,536.81 m³/s from 8 to 14 March 2022. [Figure 7](#) below presents water level that increased at the Jinghong hydrological station¹, indicating the trend of fluctuating water level up to 7 March 2021.

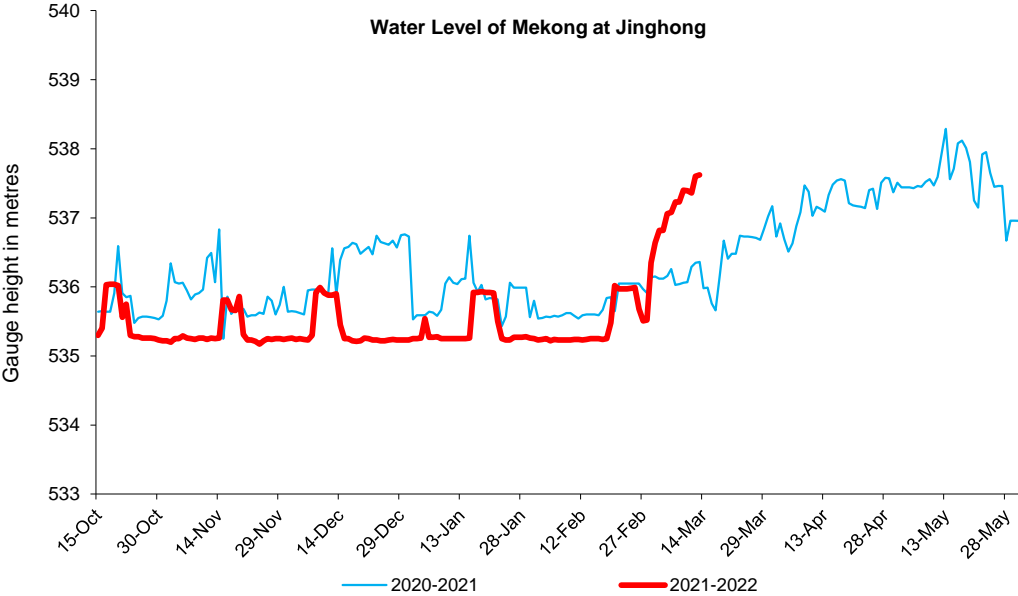


Figure 7. Water level at the Jinghong hydrological station during 15 Oct 2021 to 14 Mar 2022.

Along with the sudden increased outflow from Jinghong upstream, water level (WL) of monitoring station at Chiang Saen in Thailand also increased about 0.36 m and stayed 1.92 m higher than its long-term average (LTA), considered as abnormal. Water level at Lao PDR’s Luang Prabang increased about 0.51 m compared with last week and stayed 0.17 m higher than its historical maximum value. WL at the monitoring stations at Vientiane of Lao PDR significantly increased up to 1.13 m and rose about 0.55 m higher than its historical maximum value, considered abnormal. Water levels at Nong Khai in Thailand was up about 1.25 m, while at Paksane in Lao PDR it was up about 0.82 m, rising higher than their LTA level and considered normal. WL at Nong Khai in Thailand also increased about 1.22 m while at Paksane in Lao PDR WL increased about 0.82 m and was higher than their LTA value. WLs at Thailand’s Nakhon Phanom to Pakse in Lao PDR increased about 0.25 m, which rose higher than their LTA level. The current WL at Savannakhet in Lao PDR is also higher than its LTA level, **which considered normal**. WLs from Cambodia’s Stung Treng to Kratie increased 0.03 m and stayed about 0.57 m and 1.03 m higher than their LTA value. From Kompong Cham to Neak Luong on the Mekong River, Koh Khel on the Bassac River, increased 0.05 m, but at Chaktomuk and Prekdam on the

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>.

Tonle Sap River it decreased about 0.03 m. WLs at these stations are staying close to their LTAs. For the tidal stations at Viet Nam’s Tan Chau and Chau Doc, WLs fluctuated between their Maximum and Minimum levels due to daily tidal effects from the sea and considered as critical.

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

Chiang Saen and Luang Prabang

Water level during Mar 8-14 at Thailand’s Chiang Saen increased from 3.05 m to 3.41 m and rose about 1.92 m higher than its Long-Term-Average (LTA), which was considered abnormal. When compared to last week, this week’s water level is higher.

Water level at the Luang Prabang station in Lao PDR was up about 0.51 m during the reporting period. Compared to last week, the figure shows that water level this week is still higher. The water level at this station was 0.17 m higher than its Maximum Value. The water levels at Chiang Saen and Luang Prabang are shown in [Figure 8](#) below.

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

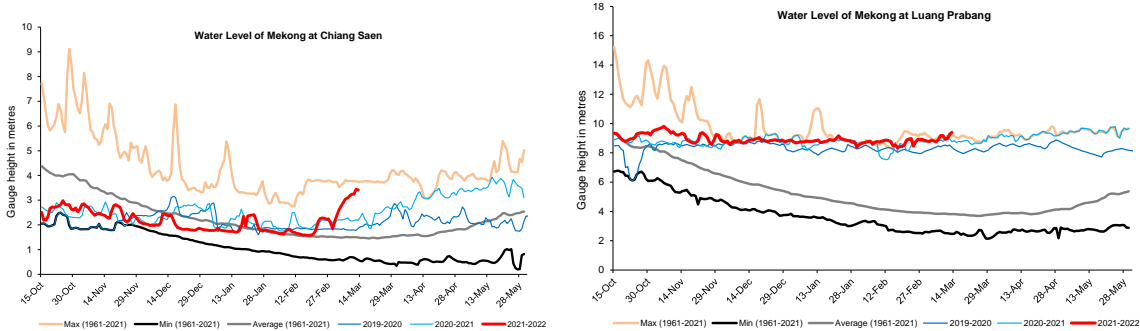


Figure 8. Water levels at Chiang Saen in Thailand and Luang Prabang in Lao PDR.

Chiang Khan, Vientiane-Nong Khai and Paksane

The water level at Chiang Khan in Thailand (downstream of the Xayaburi dam) significantly increased about 0.70 m during the reporting week. It went up to about 2.37 m higher than its LTA. Moreover, water level downstream at Vientiane in Lao PDR also significantly increased from 2.13 m to 3.26 m and rose about 0.55 m higher than its maximum level during Mar 8-14, which **considered abnormal**. At Nong Khai station in Thailand, the water level was also significantly up during the reporting period. It increased from 1.43 m to 2.64 m moving higher

than its LTA value about 1.25 m. At Paksane in Lao PDR, water levels increased about 0.82 m from 2.56 m to 3.38 m. **The current water level at Paksane in Lao PDR is about 0.09 m higher than its LTA level, which considered normal.** The recently increased water levels from Chiang Khan to Nong Khai and Paksane were obviously fluctuating due to hydropower operation and water released from upstream. The water levels at Vientiane and Paksane are shown in [Figure 9](#) below.

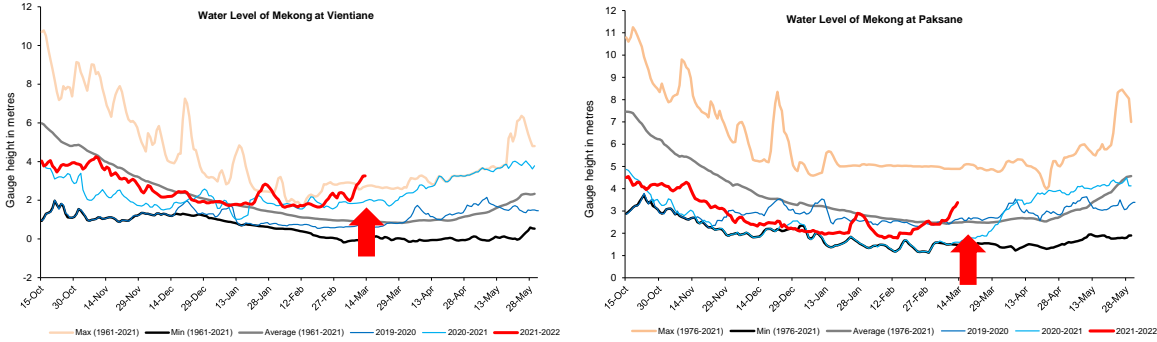


Figure 9. Water levels Nong Khai and Paksane in Thailand and Lao PDR.

Nakhon Phanom to Pakse

Water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR increased about 0.30 m, during the reporting period. **Water levels at these stations went up to above their LTA level.** The current WL at Savannakhet in Lao PDR is **higher than its LTA level, which considered normal.** [Figure 10](#) shows the water levels at Nakhon Phanom and Pakse stations.

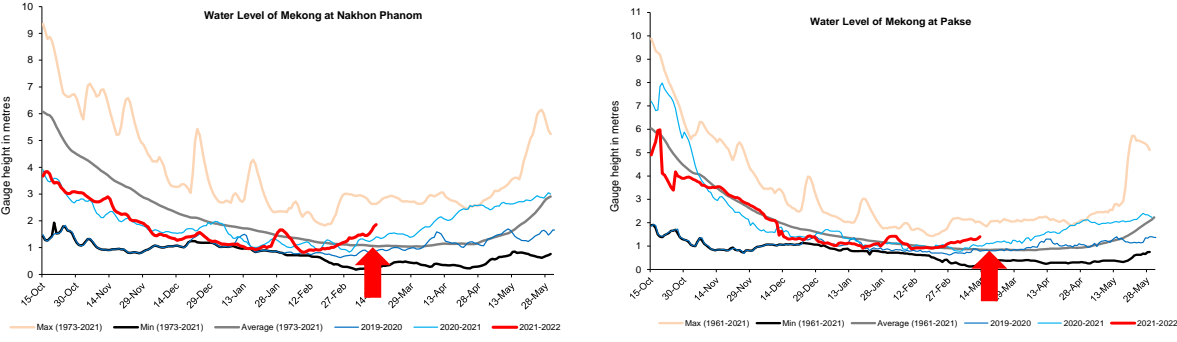


Figure 10: Water levels at Nakhon Phanom and Pakse of Thailand and Lao PDR.

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

With some contributed inflow from the upstream part of the Mekong River and the 3S river (Sekong, Se San, and Sre Pok), the water levels from Stung Treng, Kratie to Kompong Cham in Cambodia were slightly increasing during 8-14 March 2022. This week water level from Stung Treng to Kratie increased about 0.02 m and 0.05 m, respectively. The current water levels at Stung Treng and Kratie are staying about 0.57 m and 1.03 m higher than their LTA value, respectively. Water level at Kompong Cham was about 0.08 m higher than its LTA.

This week, the water levels at Stung Treng and Kratie were still higher than their LTA, which considered normal (as showed in [Figure 11](#)).

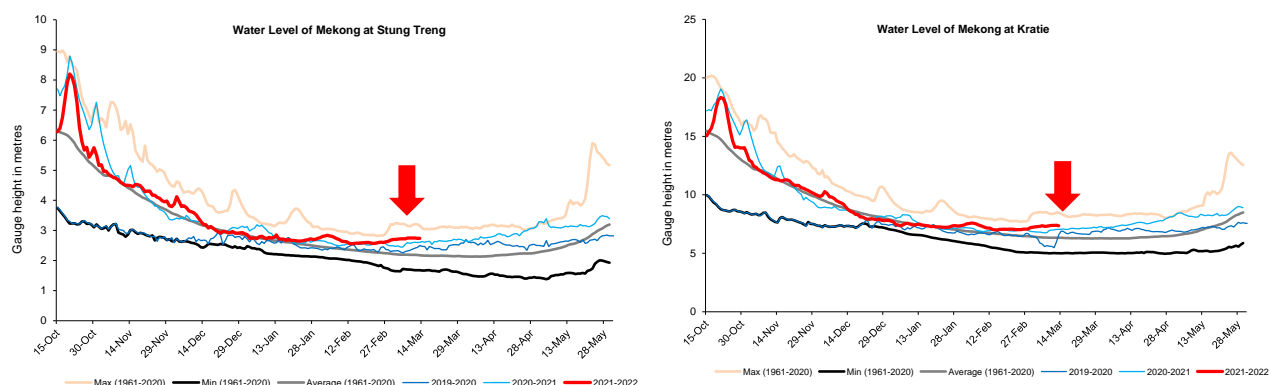


Figure 11: Water levels at Stung Treng and Kratie on the Mekong River.

At Chaktomuk on the Bassac River, due to some rainfall and inflows from upstream catchment, the water level was up about 0.02 m and stayed 0.06 m lower than its LTA value; while at Koh Khel, water level decreased about 0.02 m but was still 0.01 m higher than its LTA value. The water level at Prek Kdam on the Tonle Sap Lake increased about 0.03 m and was about 0.03 m lower than its LTA value. The water level at the Tonle Sap Lake (observed at Kompong Luong) was similar to Prek Kdam station’s water level. The recently increased water level was due to some 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 Kompong Luong) followed the same trend of Prek Kdam station’s water level. **Water levels at these stations were staying close to their LTA level, which still considered normal.**

Tidal stations at Tan Chau and Chau Doc

This week, the water levels from 8 to 14 March 2022 at Viet Nam’s Tan Chau and Chau Doc were fluctuating in between their Minimum and Maximum values due to daily tidal effects from the sea. The fluctuation was between 0.05 m and 0.56 m. The current water levels at **Tan Chau and Chau Doc were lower than their LTA level, which considered critical.**

The Tonle Sap Flow

At the end of the wet season, when water levels along the Mekong River subside, the outflows of the Tonle Sap Lake return into the Mekong River and then to the Delta. This phenomenon normally takes place from end of September to October. Based on flow observation at Prek Kdam, the outflow of the Tonle Sap Lake was taking place since 10 October 2021.

[Figure 12](#) shows the seasonal changes of the inflow/reverse flow and the outflow of the TSL at Prek Kdam in comparison with the flows of 2019 and 2020, and their LTA level (1997-2020). Up to March 14 of this reporting period, **it was observed that the main outflow to Tonle Sap Lake decreased due to less rainfall and inflows from upstream.** This decreased outflow of Tonle Sap Lake was most likely caused by less inflows and no rainfall from the catchment area. Up to present, the outflow from the Tonle Sap Lake condition in 2022 is higher than 2019,

2020 and 2021 outflow conditions. However, the outflow of 2022 is still lower than its LTA (1997–2020). For next week, less rainfall is forecasted for the Tonle Sap area; thus, the outflow into the Tonle Sap Lake is likely continuing to decrease from the current level.

[Figure 13](#) shows seasonal changes in monthly flow volumes up to 14 March 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 March 14, **the water volume of the Tonle Sap Lake was lower than its LTA but higher than 2019, 2020, 2021 during the same period**. The figure is displayed in [Table 1](#), which indicates that the Tonle Sap Lake has been affected by water levels from the Mekong River, the tributaries, and rainfall in the surrounding sub-catchments and ***considered critical***.

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

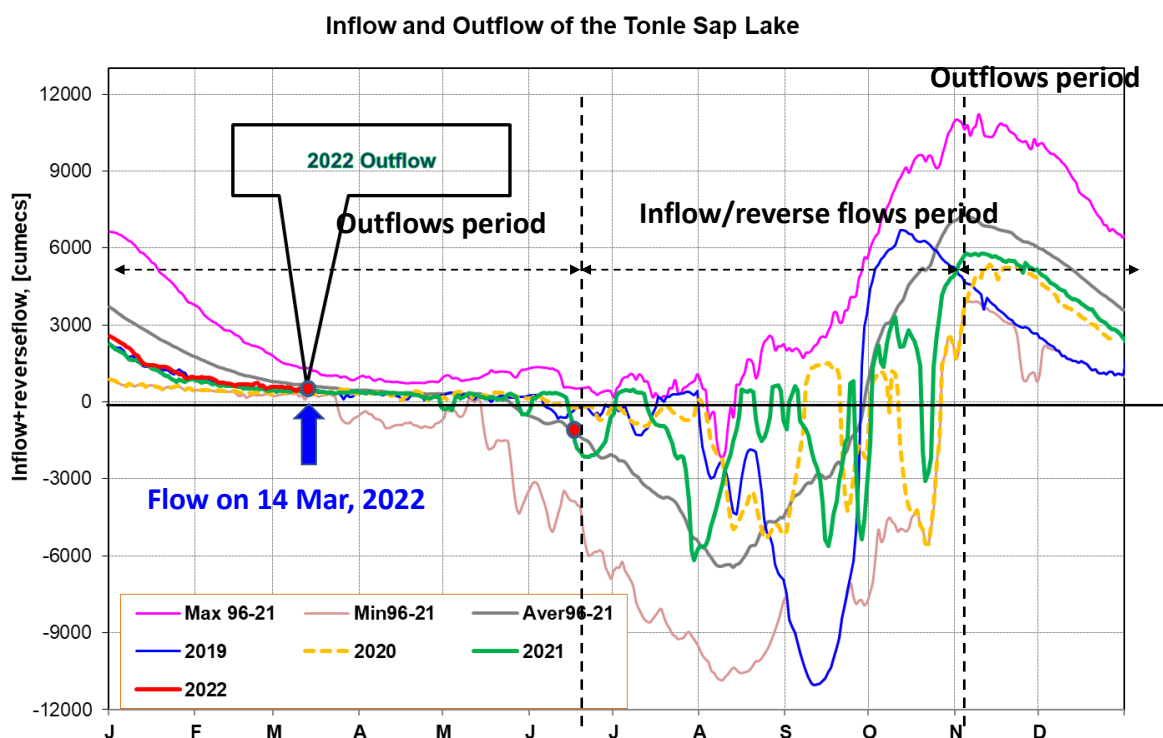


Figure 12: Seasonal change of inflows and outflows of Tonle Sap Lake.

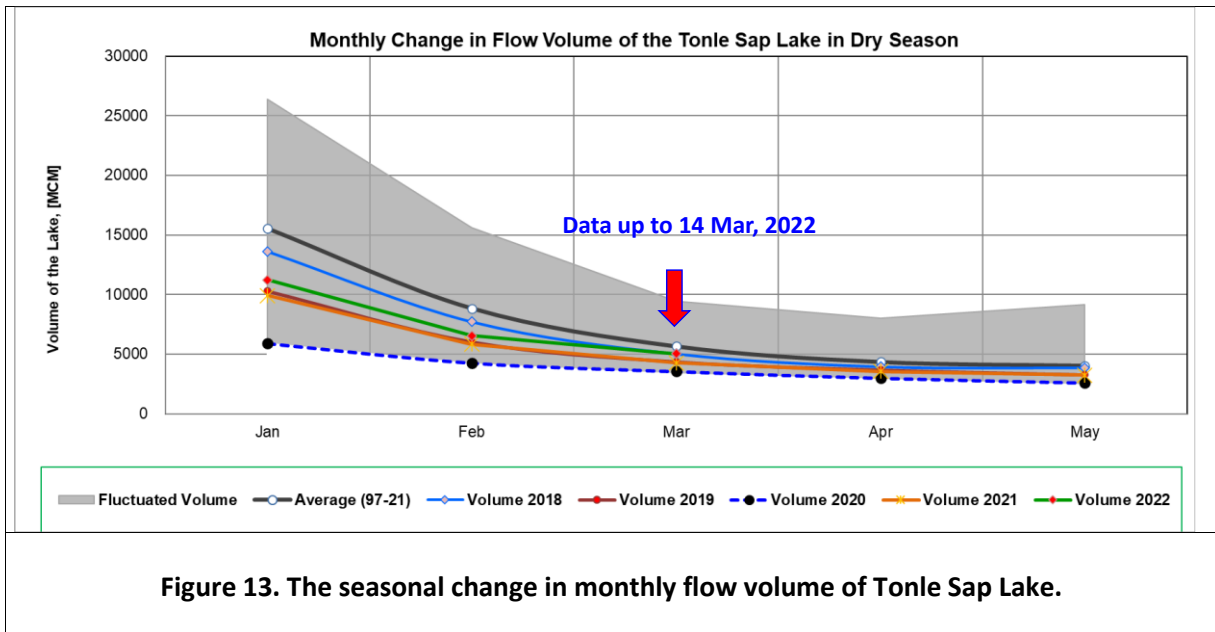


Table 1. The monthly change in the flow volume of Tonle Sap Lake.

Month	Average Volume (97-21) [MCM]	Max Volume [MCM]	Min Volume [MCM]	Volume 2018 [MCM]	Volume 2019 [MCM]	Volume 2020 [MCM]	Volume 2021 [MCM]	Volume 2022 [MCM]
Jan	15523.23	26357.53	5906.80	13633.41	10285.31	5906.80	9923.80	11214.32
Feb	8837.89	15596.22	4198.60	7729.72	6019.30	4264.19	5832.97	6558.79
Mar	5654.18	9438.24	3347.07	5037.06	4354.62	3553.99	4264.88	5045.25
Apr	4346.65	8009.14	2866.91	3956.47	3667.47	2992.61	3556.68	
May	4030.23	9176.93	2417.81	3864.00	3266.43	2594.92	3240.78	
Jun	5708.30	13635.01	2468.70	5919.18	3517.06	2641.88	3798.29	
Jul	11493.25	28599.56	2925.86	12024.96	4001.99	2925.86	5346.73	
Aug	24666.69	39015.12	4433.46	22399.65	7622.71	5941.07	10547.80	
Sep	39634.03	65632.35	12105.31	53639.54	24194.19	12105.31	16382.34	
Oct	46873.44	73757.23	19705.50	48193.08	30358.38	20799.13	27318.21	
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 ³)								

4 Flash Flood in the Lower Mekong Basin

During March 8-14, the LMB was affected by two main weather factors. These include (i) the heat high-pressure cell covered the upper together with the moderate high pressure area from China extended its ridge to cover the upper part almost the entire week and (ii) the south-easterly wind prevailed over the Gulf of Thailand.

According to the MRC-Flash Flood Guidance System (MRC-FFGS) and analysis, flash flood events were not detected during the reporting period over the LMB.

5 Drought Monitoring in the Lower Mekong Basin

Weekly drought monitoring from 27 Feb to 05 Mar 2022

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

Meteorological drought conditions of the LMB from March 6 to 12, as shown in [Figure 11](#), were normal and wet all over the region. Weekly SPI map shows that the LMB received from average to above average rainfall in most parts of the region.

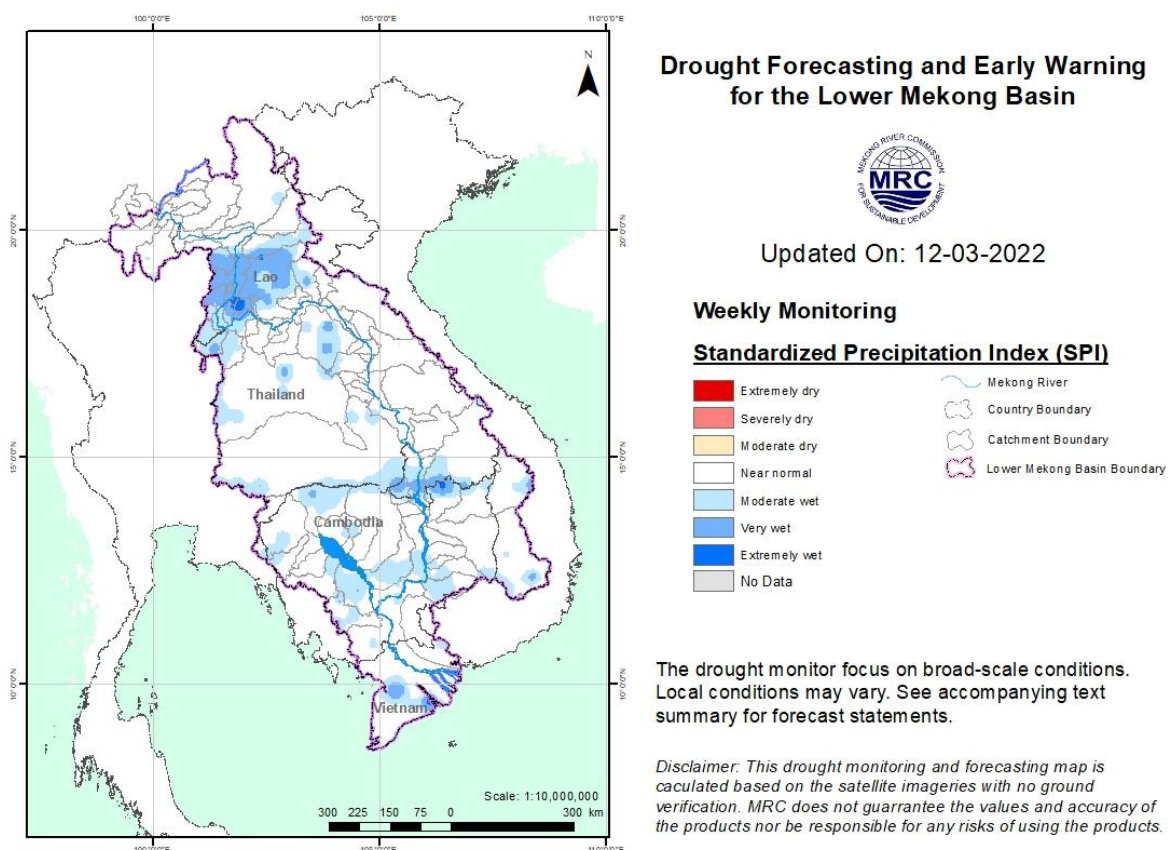


Figure 14: Weekly standardised precipitation index from Mar 6 to 12.

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

ISWF shows that from Mar 6 to 12, as displayed in [Figure 12](#), the LMB was much similar to the conditions last week (Feb 27-Mar 5) which was wetter in the upper part and drier in the central and south-eastern areas due to the absence of rain during dry season. The conditions were not preferable for crop growing. However, this does not mean the region were facing any serious agricultural drought as it is a normal phenomenon the LMB receives very little or no rain during dry season.

Note: The index of soil water fraction presents the current soil water fraction conditions compared with normal month; therefore, it normally shows extremely dry during dry season which is completely different from SPI that is standardized to its specific month of the years. However, this does not mean that the areas are threatened by agricultural drought as generally during transition period of wet and dry seasons and dry season only the irrigated areas are used for agricultural plantation.

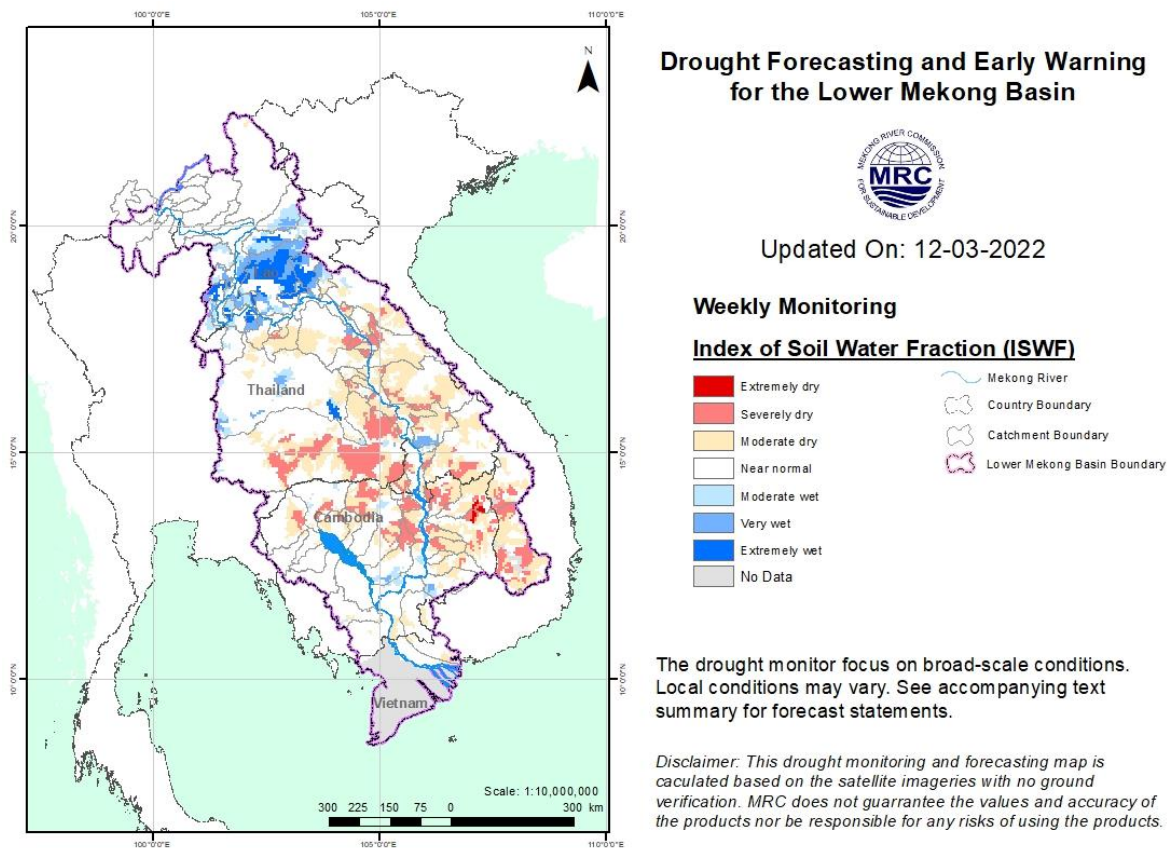


Figure 15: Weekly Index of Soil Water Fraction from Mar 6 to 12.

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

With a better condition, the combined drought indicator, as displayed in [Figure 13](#), reveals that during March 6-12 the LMB was at normal condition in most parts of the region. Moderate and severe droughts in the previous weeks disappeared due to some rain caused by low pressures.

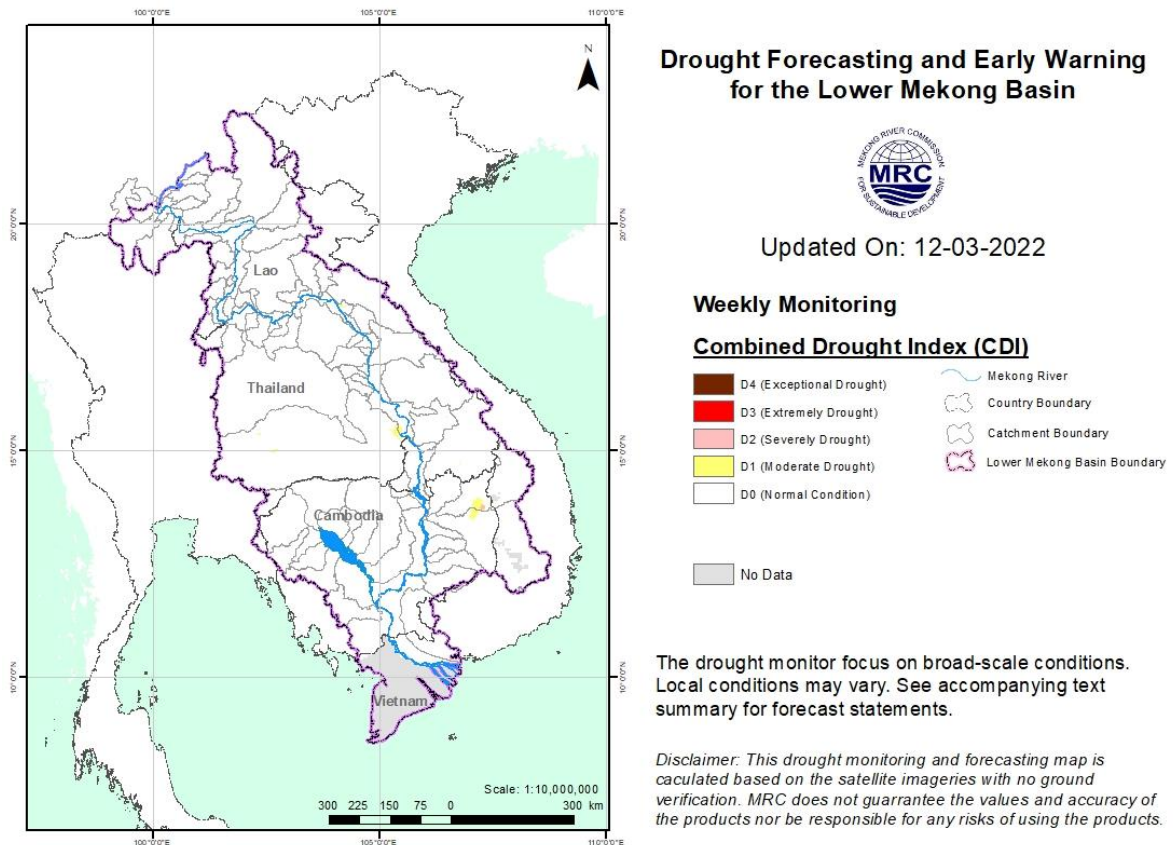


Figure 16: Weekly Combined Drought Index during Mar 6-12.

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.

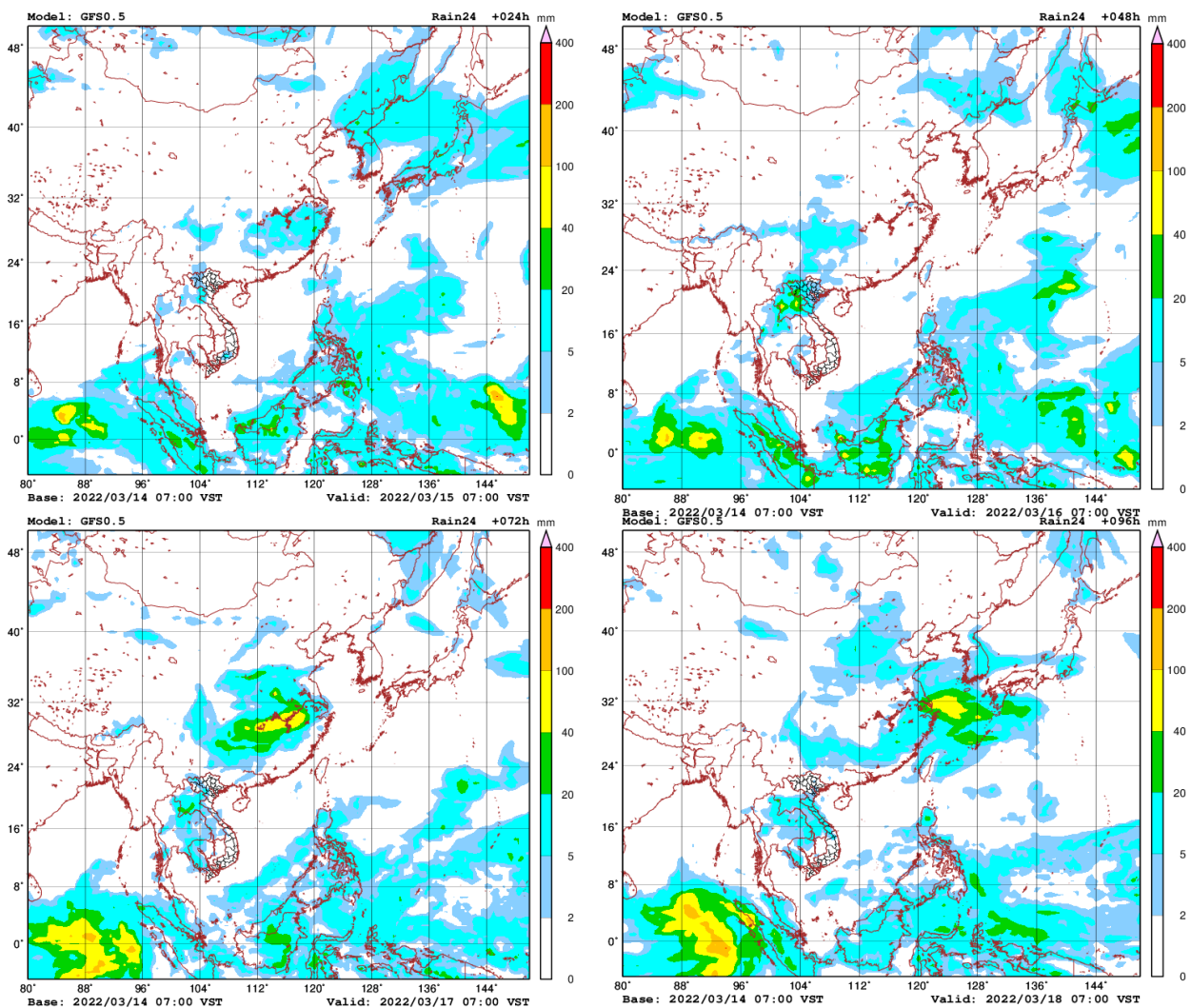
6 Weather and Water Level Forecast and Flash Flood Information

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, two main factors might affect the LMB. They include (i) high pressure from China in the upper part and (ii) the prevailing weak Southwest Monsoon from the Gulf of Thailand to the lower part of the LMB.

During March 15-21, small rainfall (5-20 mm/24h) or no rain may occur in some areas of the LMB.

[Figure 14](#) shows accumulated rainfall forecast (24hrs) of the GFS model during March 8-14.



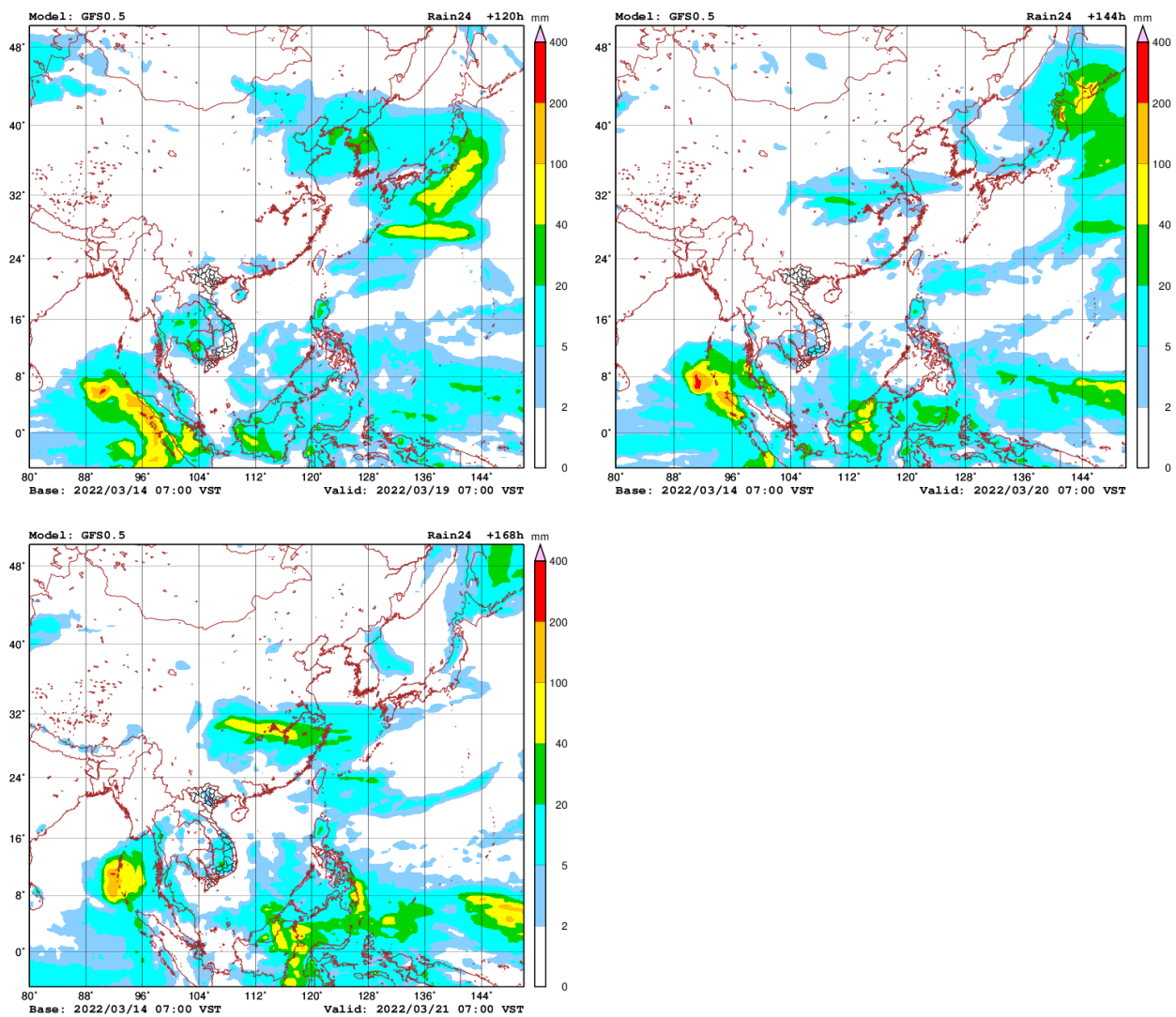


Figure 17: Accumulated rainfall forecast (24 hrs) of model GFS.

6.2 Water level forecast

Chiang Saen and Luang Prabang

Based on March 14's weekly river monitoring bulletin, the weekly forecast water level at Chiang Saen in Thailand is expected to slightly increase from 3.41 m to 3.42 m in the next seven days. The trend of water level at these stations will continue staying higher than its LTA. Rainfall is forecasted in the area in the next seven days.

For Luang Prabang in Lao PDR, the water level is likely to increase about 0.20 m in the next seven days. The current water level is close to its maximum value. Rainfall is forecasted in the area in the next seven days.

Chiang Khan, Vientiane-Nong Khai and Paksane

Water level at Chiang Khan station in Thailand is forecasted to go up about 0.29 m for the next seven days. From Vientiane in Lao PDR and Nong Khai in Thailand, WLS will increase about

0.25 m in the next seven days. At Paksane in Lao PDR, water level will increase about 0.20 m due to some inflow from the upper catchments and hydropower dam operation. Rainfall is forecasted in this area in the next seven days. The water levels at Nong Khai and Paksane will remain close to their LTA level.

Nakhon Phanom to Pakse

Water levels from Nakhon Phanom to Mukdahan in Thailand will increase between 0.15 m and 0.35 m in the next seven days. The water levels from Khong Chiam in Thailand to Pakse in Lao PDR will increase about 0.35 m. Water levels at these stations will stay higher than their LTA level. Next week rainfall is forecasted in the area.

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

From Stung Treng to Kratie on the Mekong River in Cambodia, the water levels will go up about 0.20 m over the next seven days. WLs from Kompong Cham to downstream at Neak Luong will be up about 0.15 m. Rainfall 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 decrease about 0.10 m over the next seven days.

Water levels at most of the stations will continue to stay close to their LTA value, particularly in the lower part of the region from the Bassac at Phnom Penh to Koh Khel as well as from Tonle Sap at Prek Kdam to Phnom Penh Port, including the Tonle Sap Lake. No rainfall is forecasted for the low-lying area of Cambodia next week.

Tidal stations at Tan Chau and Chau Doc

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

[Table 3](#) shows the weekly River Monitoring Bulletin issued on March 14. Results of the started weekly river monitoring bulletin are also available at http://ffw.mrcmekong.org/bulletin_wet.php.

6.3 Flash Flood Information

Flash flood events are not likely to happen in the LMB. However, local heavy rain in a short period of time might still be possible with unexpected short flash floods. During the dry season if extreme weather occurs, the information on flash flood guidance for the next one, three, and six hours is updated at <http://ffw.mrcmekong.org/ffg.php>.

Further detailed information on Flash Flood Information Warning, as well as on its explanation, is available for download [here](#).

6.4 Drought forecast

There are several climate-prediction models with different scenarios on the upcoming months until March 2022. The MRC's DFEWS adopts an ensemble model called the North America Multi-Model Ensemble (NMME), which averages all scenarios.

The global scale of rainfall prediction is used to see how the rain distribution looks like for the coming months. [Figure 15](#) shows the ensemble mean of daily average precipitation (mm/day) each month from February to April 2022 produced by the NMME.

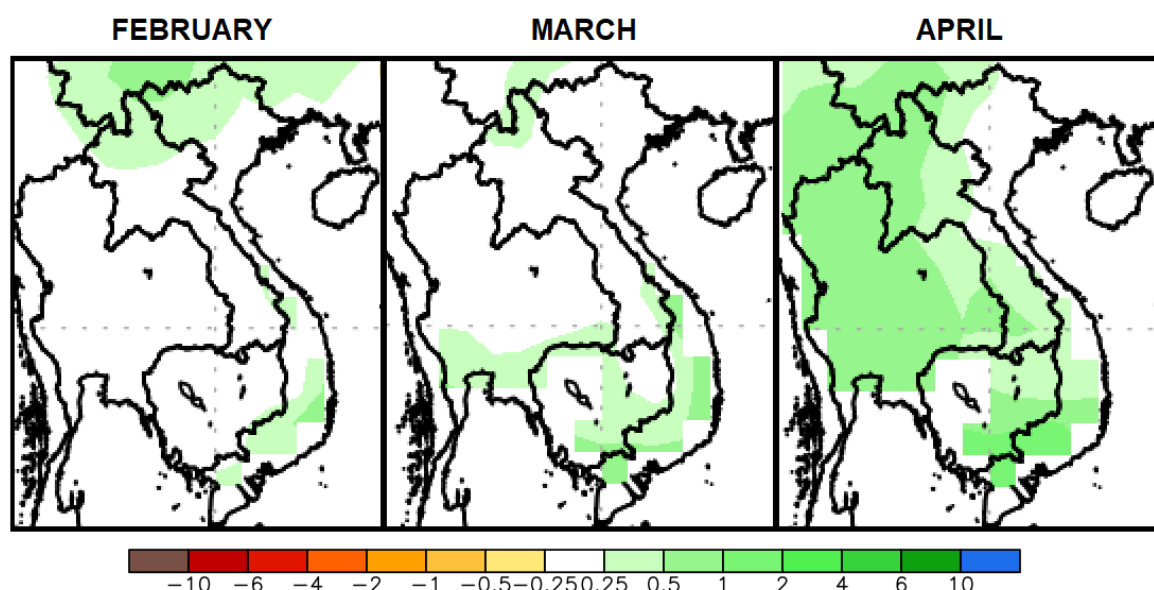


Figure 18. Daily average of monthly rainfall anomaly forecast from February to April 2022.

The ensemble prediction model based on the initial conditions in January 2022 reveals that the LMB is likely to receive average rainfall and under normal conditions in March while receive relatively high amount of rainfall in April 2022. Based on the rainfall forecasts, April is likely to be much wetter than normal year especially in the north and central parts of the LMB.

The 2021 dry season is relatively wetter than that of 2020 and the monsoon rain in the 2021 wet season has arrived earlier than it did in 2019 and 2020 especially over the upper and central parts of the LMB.

Table 2. Weekly River Monitoring Bulletin.



Mekong Bulletin

Mekong River Commission Secretariat (MRCS)

Regional Flood and Drought Management Centre (RFDMC)

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

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

Forecast period from: 15 March to 21 March 2022

Date: 14 March 2022

LOCATION	Country	Observed Rainfall (mm)	Zero gauge above M.S.L (m)	Min water level against zero gauge (m)	Observed W. level against zero gauge (m)		Forecasted Water Levels (m)						
					13-Mar	14-Mar	15-Mar	16-Mar	17-Mar	18-Mar	19-Mar	20-Mar	21-Mar
Jinhong		0.0	-	-	537.70	537.62							
Chiang Saen		0.0	357.110	0.00	3.44	3.41	3.51	3.55	3.60	3.55	3.50	3.46	3.42
Luang Prabang		0.0	267.195	2.53	9.27	9.40	9.57	9.53	9.62	9.67	9.70	9.65	9.60
Chiang Khan		0.0	194.118	1.91	5.78	5.61	5.68	5.77	5.80	5.87	5.90	5.94	5.90
Vientiane		0.0	158.040	-0.28	3.25	3.26	3.16	3.20	3.26	3.28	3.34	3.37	3.40
Nongkhai		0.0	153.648	0.33	2.56	2.64	2.58	2.63	2.70	2.73	2.80	2.84	2.88
Paksane		0.0	142.125	0.10	3.21	3.38	3.44	3.40	3.43	3.47	3.50	3.55	3.59
Nakhon Phanom		0.0	130.961	0.18	1.79	1.86	2.01	2.06	2.04	2.06	2.09	2.11	2.14
Thakhek		0.0	129.629	1.38	3.02	3.07	3.21	3.26	3.24	3.27	3.31	3.34	3.38
Mukdahan		0.0	124.219	0.72	2.06	2.15	2.18	2.29	2.32	2.31	2.34	2.37	2.40
Savannakhet		0.0	125.410	-0.65	0.42	0.50	0.52	0.61	0.63	0.62	0.63	0.65	0.66
Khong Chiam		0.0	89.030	1.02	2.29	2.36	2.46	2.50	2.62	2.66	2.68	2.72	2.77
Pakse		0.0	86.490	0.03	1.32	1.40	1.50	1.54	1.64	1.67	1.69	1.72	1.74
Stung Treng		nr	36.790	0.32	2.74	2.74	2.78	2.83	2.85	2.91	2.92	2.92	2.94
Kratie		nr	-1.080	3.06	7.40	7.36	7.32	7.35	7.39	7.42	7.49	7.51	7.53
Kompong Cham		nr	-0.930	0.65	2.76	2.80	2.76	2.70	2.73	2.76	2.80	2.88	2.91
Phnom Penh (Bassac)		nr	-1.020	1.58	2.14	2.14	2.13	2.11	2.13	2.15	2.17	2.21	2.23
Phnom Penh Port		-	0.000	0.14	1.16	1.16	1.16	1.15	1.17	1.19	1.21	1.24	1.26
Koh Khel		nr	-1.000	1.52	2.10	2.12	2.14	2.16	2.19	2.20	2.17	2.13	2.07
Neak Luong		nr	-0.330	0.81	1.52	1.62	1.73	1.76	1.80	1.78	1.72	1.66	1.60
Prek Kdam		nr	0.080	0.58	1.18	1.18	1.18	1.16	1.13	1.12	1.11	1.10	1.08
Tan Chau		0.0	0.000	-0.37	0.24	0.42	0.58	0.82	1.05	1.15	1.25	1.34	1.38
Chau Doc		nr	0.000	-0.60	0.40	0.56	0.70	0.91	1.13	1.25	1.35	1.45	1.50

REMARKS:

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

River Flood Forecaster

KHEM Sothea

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

7 Summary and Possible Implications

7.1 Rainfall and its forecast

This week, rainfall was observed in the lower part of the Mekong region at Tan Chau and Chau Doc in Viet Nam, varied from 2.40 mm to 29.10 mm. Compared with last week's amount, the rainfall this week was considered higher in the upper part of the LMB.

Based on the forecasted rainfall from satellite using GFS data, rainfall is likely to take place in the areas from the upper part of the Mekong region including the 3S area and Mekong Delta of Viet Nam during March 15-21, varying from 0.05 mm to 30 mm. This indicates that the wet and warm weather has started over the LMB.

7.2 Water level and its forecast

According to MRC's observed water level (WL) at Jinghong station, the WL still rapidly increased 0.39 m from 537.23 m to 537.62 m during the weekly monitoring period from 8 to 14 Mar 2022 (recorded on 7:00 am), and stayed about 1.26 m higher than its two-year average (2020-2021) value. The outflow at Jinghong station increased from 2,246.26 m³/s to 2,536.81 m³/s from 8 to 14 March 2022.

Water levels in the lower part of the monitoring locations in the LMB during this reporting week were significantly increasing at Chaing Khan. At Vientiane/Nong Khai and Paksane, WLs were higher than their maximum value. The current water levels at Vientiane are about over 0.55 m higher than its maximum level. The water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR were increasing. Water levels at these stations were higher than their LTA value, including WL at Savannakhet which was moving up higher than its LTA, considered normal. In Cambodia, water levels at Stung Treng, Kratie and Kompong Cham were higher than their LTA value. Water levels at Neak Luong, Bassac at Phnom Penh, and Prek Kdam in Cambodia still remained lower than their LTA level. The high level in some specific stations was due to inflows from abnormal upstream and some rainfall in the region from 8 to 14 March 2022. Generally, this week's water levels were relatively higher than those of last week from the upper, middle and the lower parts in the LMB.

Water levels at most of the station along the Mekong mainstream from Chiang Saen to Kompong Cham stations were higher than their LTA levels, excepted some stations at Chaktomuk, Prek Kdam were lower than their LTA level.

The flow volume of the Tonle Sap Lake was lower than its LTA. From next week, the flow is expected to continue slightly decreasing due to less rainfall forecasted in the inflow catchments of the Tonle Sap Lake.

From Stung Treng to Kompong Cham water levels will go up and from Chaktomuk in Phnom Penh the water levels will also slightly increase. The water levels – at Neak Luong on the Mekong River, from Prek Kdam to Phnom Penh Port on the Tonle Sap, and Koh Khel on the Bassac – are forecasted to continue staying close to their LTA level.

The situation in Tan Chau on the Mekong River and Chau Doc on the Bassac River is expected to remain fluctuating. The current fluctuation of water level is in between their Minimum and Maximum levels, which considered very critical.

Since the fourth week of October 2021, water levels across most monitoring stations in the LMB have significantly dropped to the level lower than their LTA (from upper to lower stretches within the LMB). For a more complete preliminary analysis of the hydrological conditions in the LMB over July–December 2020, November 2020 to May 2021 and June to October 2021 see this [Situation Report](#).

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

7.3 Flash flood and its trends

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

7.4 Drought condition and its forecast

Drought conditions of the LMB from 6 to 12 March 2022 were normal in most parts of the LMB except some moderate and severe soil moistures in the middle and southeastern parts due to absence of rain but it is quite normal during dry season. The region showed no significant threat.

For the upcoming two months forecast, the LMB is likely to receive average rainfall and under normal conditions in March while receive relatively high amount of rain in April 2022. Based on the rainfall forecasts, April is likely to be much wetter than normal year especially in the north and central parts of the LMB.

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

Table A1: Weekly observed water levels

2022	Jinghong	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Mukdahan	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc
08-03-2022	537.23	3.05	8.89	4.91	2.13	1.43	2.56	1.51	1.96	1.26	2.72	7.31	2.76	2.16	2.10	1.44	1.15	0.05	0.10
09-03-2022	537.23	3.09	9.18	5.25	2.49	1.70	2.58	1.45	1.92	1.29	2.75	7.32	2.75	2.26	2.32	1.52	1.14	0.02	0.14
10-03-2022	537.40	3.18	9.18	5.36	2.78	2.02	2.70	1.46	1.90	1.32	2.75	7.36	2.70	2.19	2.31	1.52	1.23	0.04	0.17
11-03-2022	537.39	3.24	8.94	5.57	2.89	2.20	2.95	1.53	1.92	1.28	2.75	7.39	2.68	2.15	2.20	1.47	1.16	0.00	0.15
12-03-2022	537.36	3.24	8.98	5.80	3.06	2.32	3.13	1.64	1.97	1.28	2.75	7.39	2.70	2.17	2.16	1.40	1.17	0.10	0.26
13-03-2022	537.60	3.44	9.27	5.78	3.25	2.56	3.21	1.79	2.06	1.32	2.74	7.40	2.76	2.14	2.10	1.52	1.18	0.24	0.40
14-03-2022	537.62	3.41	9.40	5.61	3.26	2.64	3.38	1.86	2.15	1.40	2.74	7.36	2.80	2.14	2.12	1.62	1.18	0.42	0.56

Table A2: Weekly observed rainfall

2022	Jinghong	Chiang Saen	Luang Prabang	Chiang Khan	Vientiane	Nongkhai	Paksane	Nakhon Phanom	Mukdahan	Pakse	Stung Treng	Kratie	Kompong Cham	Phnom Penh (Bassac)	Koh Khel	Neak Luong	Prek Kdam	Tan Chau	Chau Doc
08-03-2022	0	2.4	0	29.1	0	12.2	0	10.9	19.8	0	0	0	0	0	0	0	0	0	0
09-03-2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10-03-2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-03-2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12-03-2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
13-03-2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
14-03-2022	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



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