



Mekong River Commission

Weekly Dry Season Situation Report in the Lower Mekong River Basin 18–24 May 2021

Prepared by
The Regional Flood and Drought Management Centre
25 May 2021

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1 Introduction

This Weekly Dry 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 **18 to 24 May 2021**. 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. All water level indicated in this report refers to an above zero gauge of each station.

The report covers the following topics that are updated weekly:

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

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

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

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

2 General Weather Patterns

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

The TMD stated that May is the transitional period from the dry to rainy season. During this time, there will be more thunder rainstorms, dry-season thunderstorms, and low-pressure air mass prevailing over the Mekong region. The TMD also predicted that an influential Southwest Monsoon is likely to occur and may cause average rainfall in the Mekong region between May and June.

[Figure 1](#) presents the weather map of 24 May 2021, showing that a low pressure is dominating Northern Thailand and the southern part of Lao PDR including the 3S area (Sesan, Sre Pok and Sekong) in Cambodia and Viet Nam of the LMB.

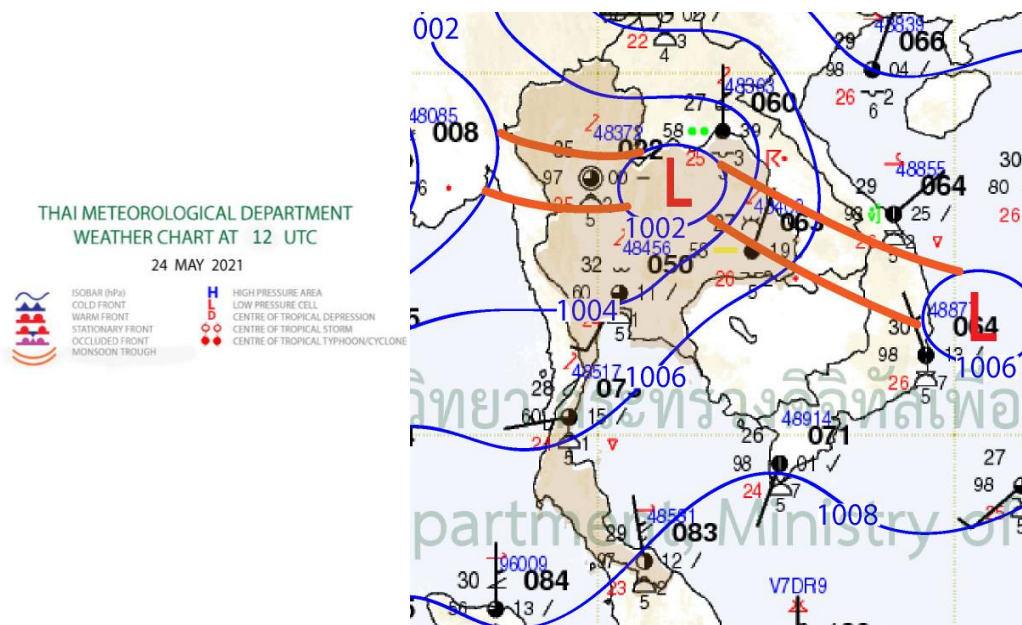


Figure 1. Summary of weather conditions over the LMB.

According to the ASEAN Specialised Meteorological Centre (ASMC), a highest probability of warmer conditions is predicted over of the Mekong region covering northern Lao PDR, Thailand, Cambodia, and Viet Nam during 17–30 May 2021. Nonetheless, a wet condition may still influence the region.

[Figure 2](#) shows the outlook of comparative warm conditions from 17 to 30 May 2021 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

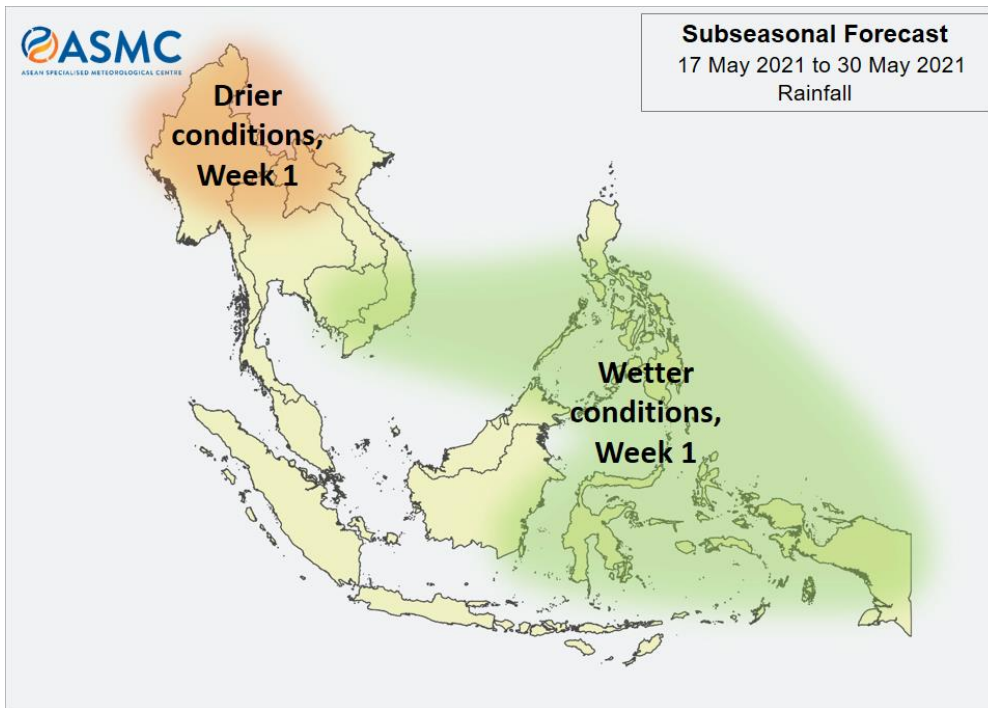


Figure 2. Outlook of wet and dry conditions over the Asian countries by ASMC.

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

There are low-pressure lines taking place in the lower part of the LMB during 24 May 2021, as shown in [Figure 1](#), which will attract rainfall to some areas of the LMB. But based on Tropical Storm Risk (TSR), as displayed in [Figure 3](#), there was no sign of tropical depression (TD), tropic storm (TS) or typhoon (TY) in the Mekong region up to 25 May 2021.

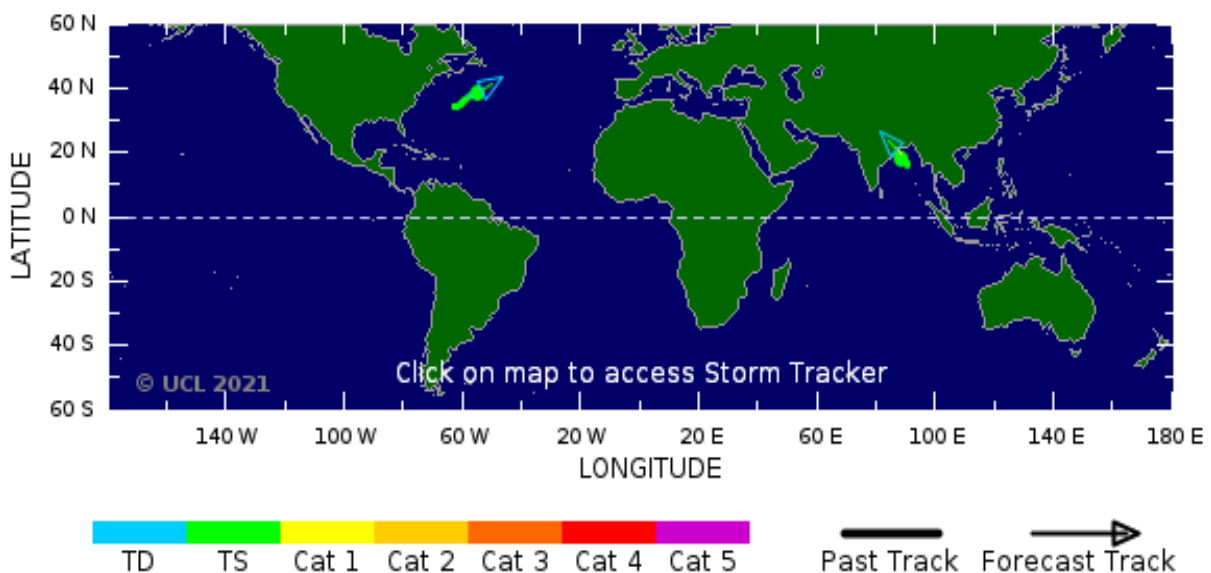


Figure 3. A Tropical Depression risk observed on 25 May 2021.

2.2 Rainfall patterns over the LMB

This week, the rainfall concentrated from Thakhek in Lao PDR to Phnom Penh in Cambodia including the lower part at Tan Chau and Chau Doc in Viet Nam, varying from 1.20 millimetres (mm) to 104 mm. The highest rainfall was observed at Khong Chiam station in Thailand (104 mm). The total rainfall this week is considered higher than that of last week from Thakhek to Phnom Penh at Chaktomuk (see [Figure 4](#)).

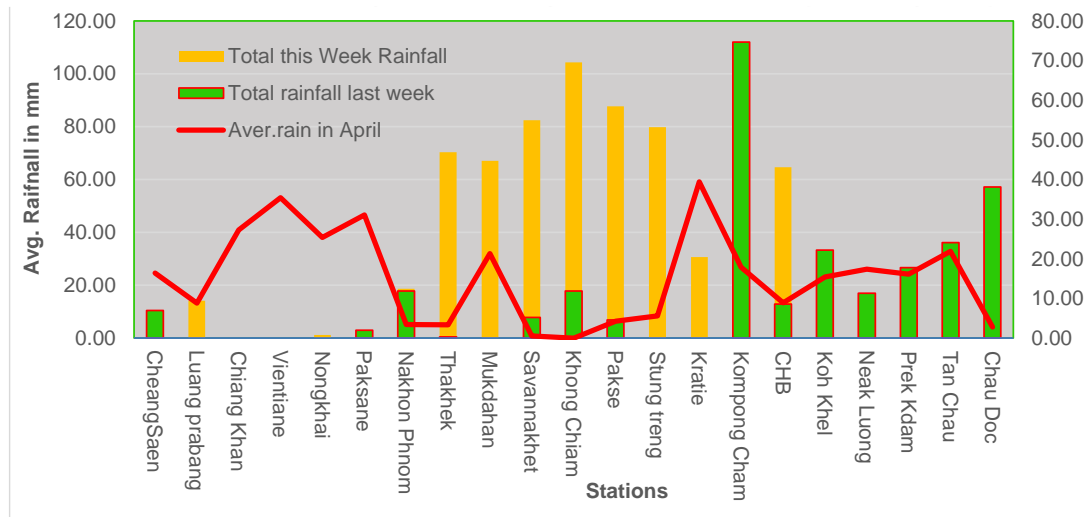


Figure 4. Weekly total rainfall at key stations in the LMB during 18–24 May 2021.

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 18 to 24 May 2021.

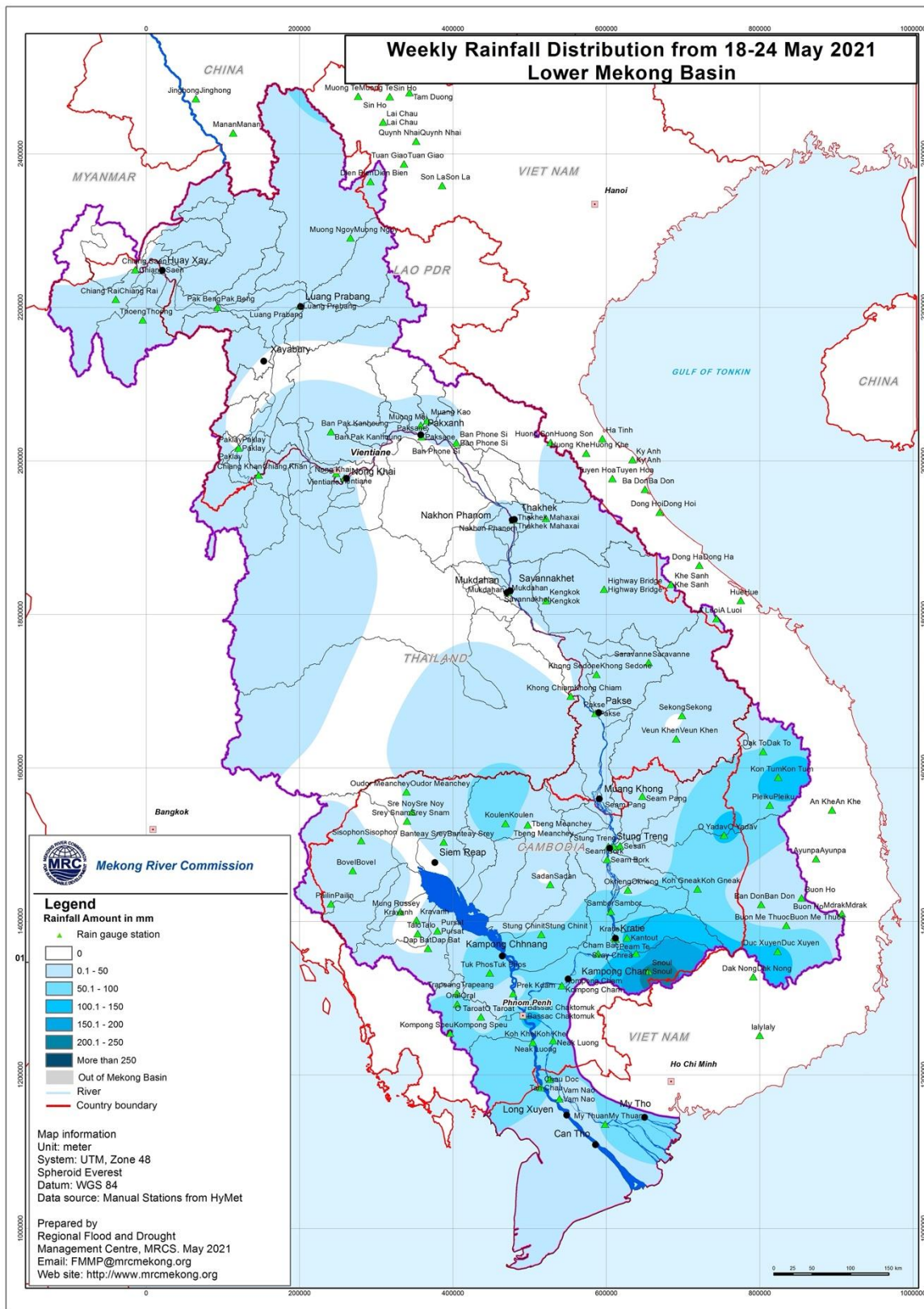


Figure 5. Weekly rainfall distribution over the LMB during 18–24 May 2021.

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 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](#).

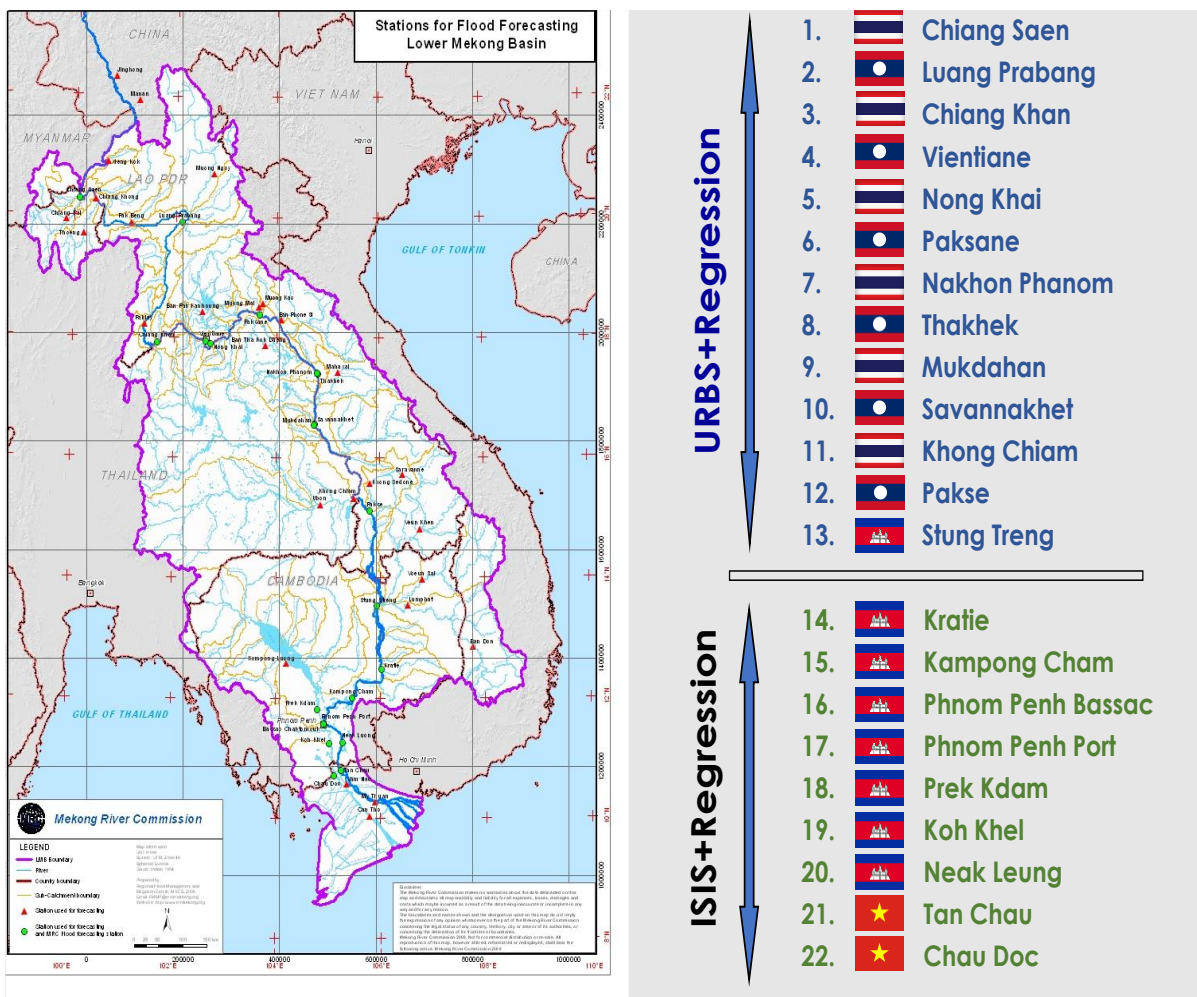


Figure 6. Key stations and model application for River Monitoring and Flood Forecasting.

According to MRC’s observed water level data, the outflow at Jinghong hydrological station rapidly decreased and fluctuated from 3,085 cubic metres per second (m³/s) on May 17 to 2,964 m³/s on May 24. During the same period, water level at Chaing Sean dropped about 0.43 metres (m) based on its telemetry data.

Water levels across most monitoring stations from Chiang Saen in Thailand to Pakse in Lao PDR, and from the stretches of the river between Stung Treng and Kompong Cham in Cambodia were higher than their LTAs up to 24 May 2021.

[Figure 7](#) below presents water level fluctuation at the Jinghong hydrological station during 1 April – 24 May 2021.

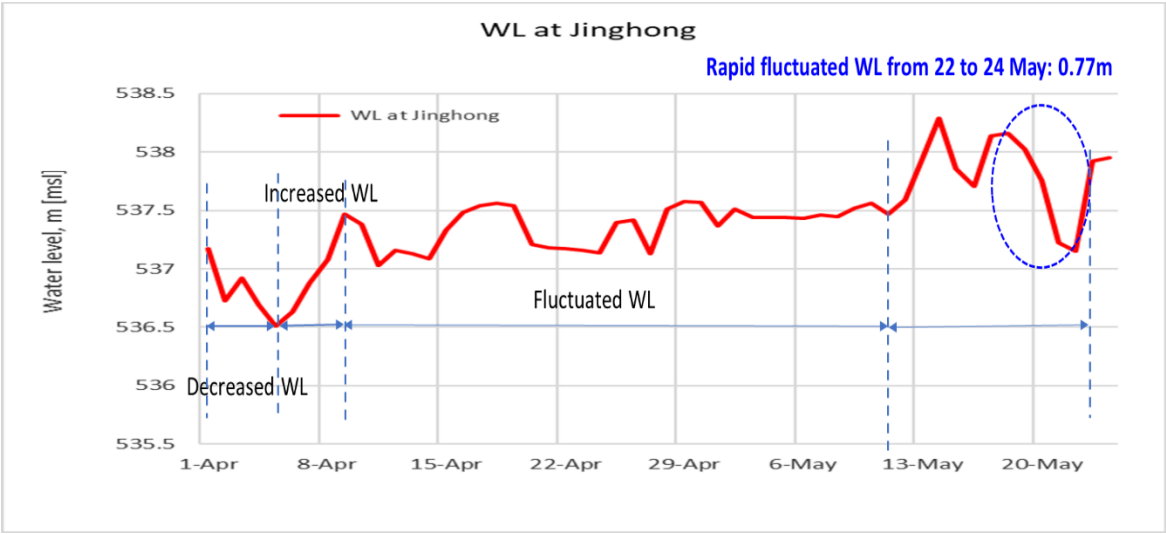


Figure 7. Water level at Jinghong hydrological station during 1 Apr–24 May 2021.

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

Based on a hydrological phenomenon, the contribution of inflow water from the upstream of Lancang-Mekong in China to the Mekong mainstream is about 25% in total during the dry season from November to May. The whole inflow of water into the LMB is influenced not only by the Mekong-Lancang upstream but also by downstream dam operations at the Mekong mainstream and its tributaries during the dry season.

Chiang Saen and Luang Prabang

The water level from 18 to 24 May 2021 at Thailand’s Chiang Saen decreased from 3.66 m to 3.13 m, representing a drop of 0.53 m over the week. The level was still about 0.75 m higher than its long-term-average (LTA), and was slightly higher than last week’s level.

However, the water level at Luang Prabang station in Lao PDR increased from 9.56 m to 9.75 m, during the reporting period. This level shows 0.20 m above its historical maximum value. This phenomenon was caused by rainfall in the surrounding areas and potentially due to dam operations located upstream, and Xayaburi dam downstream.

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 wet and dry seasons.**

Chiang Khan, Vientiane-Nong Khai and Paksane

The water level at Chiang Khan in Thailand (downstream of the Xayaburi dam) slightly increased from 6.28 m to 6.38 m during this week, representing about 1.41 m higher than its LTA value. This situation may probably be influenced by rainfall and Xayaburi dam operation upstream.

The water level downstream at Vientiane in Lao PDR followed the same trend of the upstream. It increased from 3.82 m to 3.86 m, showing about 1.74 metres higher than its LTA. At Nong Khai in Thailand, the water level increased about 0.07 m compared to last week's level and was about 0.65 m higher than its LTA. The water level at Paksane in Lao PDR increased by about 0.18 m, and was about 0.22 m higher than its LTA. **The increased water levels at Vientiane and Paksane are shown in [Figure 8](#).**

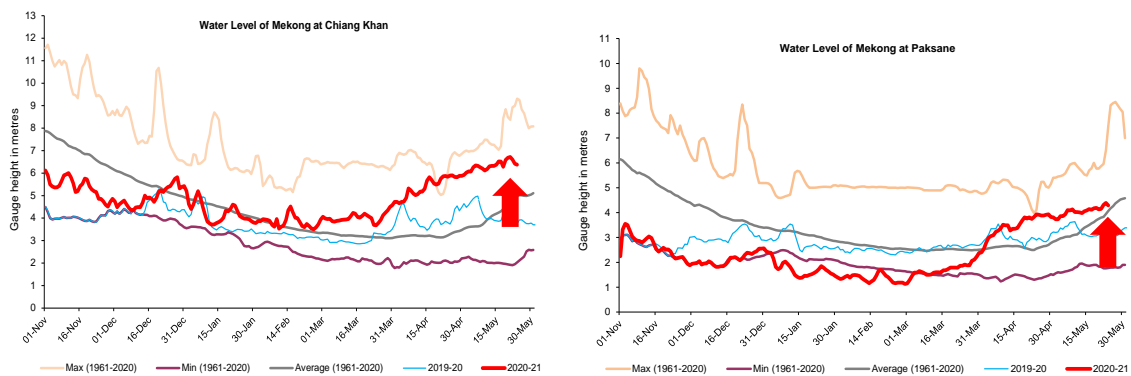


Figure 8. Water levels at Chiang Khan and Paksane in Lao PDR.

Nakhon Phanom to Pakse

Water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR increased by about 0.10 m and were about 0.50 m above their LTAs. The weekly water levels at Nakhon Phanom and Pakse are shown in [Figure 9](#).

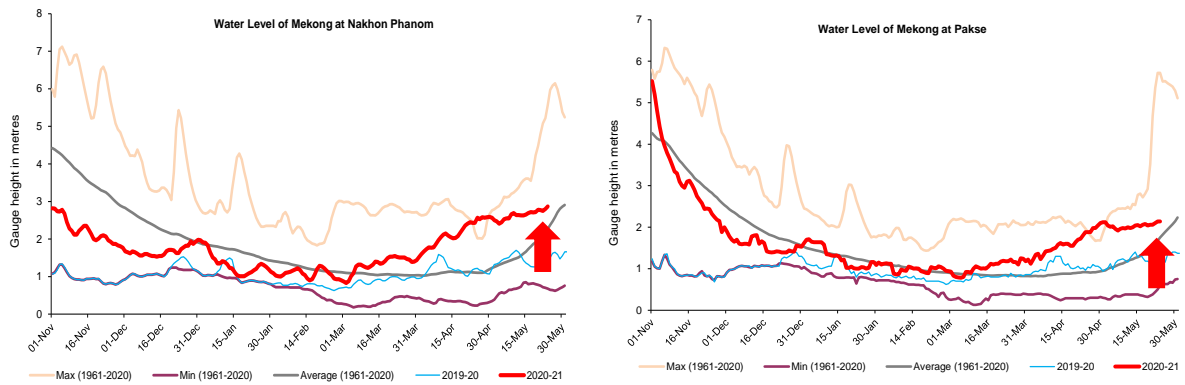


Figure 9. Weekly water levels at Nakhon Phanom in Thailand and Pakse in Lao PDR.

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

Though contribution of flows 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 slightly increased. This week water levels were about 0.43 m above their LTAs at these stations. See [Figure 10](#) for the levels in Stung Treng and Kratie. Water level at Kompong Cham decreased about 0.10 metres and stayed about 0.13 m below its LTA.

At Neak Luong on the Mekong River and Koh Khel on the Bassac River, the water levels were influenced by the tidal effect extending from the Mekong Delta, causing their levels to fluctuate by about 0.10 m from May 18 to 24 and stayed close to their LTAs. At Chaktomuk on the Bassac River, water levels decreased 0.29 metres and stay about 0.45 m below its LTA. For water level at Prek Kdam on the Tonle Sap (TLS) decreased about 0.17 metres and stayed about 0.30 metres below its LTA. The TLS Lake (observed at Kompong Luong) was expressing the same trend as at Prek Kdam station. The decreased water level was likely due to low rainfall contributed from upstream of the TLS area. The water level at the TSL (observed at Kompong Luong) followed the same trend of Prek Kdam station's one.

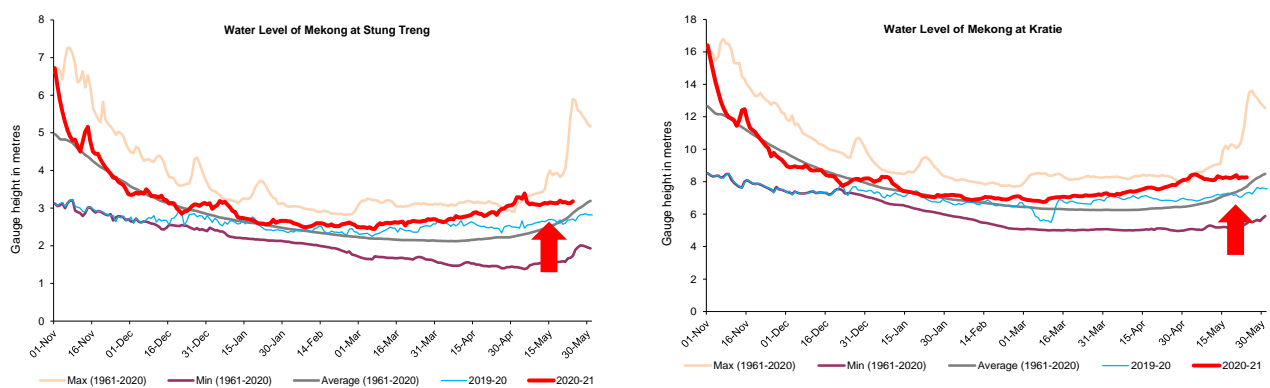


Figure 10. Water levels at Stung Treng and Kratie on the Mekong River.

Tidal stations at Tan Chau and Chau Doc

Like last week, from 18 to 24 May 2021, the current water levels at Viet Nam’s Tan Chau and Chau Doc fluctuated due to daily tidal effects from the sea. The fluctuation levels were between -0.38 m and 1.01 m which were out of the historical range between maximum and minimum levels for almost 6 months and **considered very critical**.

The Tonle Sap Flow

At the end of the wet season, when water levels along the Mekong River decrease, flows of the Tonle Sap Lake (TSL) return to the Mekong mainstream and then to the Delta. This phenomenon normally takes place from mid-October to early November.

[Figure 11](#) shows the seasonal changes of the outflow of the TSL at Prek Kdam in comparison with the flows of 2018 and 2019, and their LTA levels (1997–2019). Up to 24 May of this reporting period, **it is observed that the main outflow from the TSL has started since 15 November 2020**. The outflow condition in late 2020 was lower than its average flow but was similar to the 2020’s flow and higher than the 2019 condition. Since the water level at Prek Kdam on the Tonle Sap River rapidly increased and moved closer to its LTA value, it could be inferred that the flows at the TSL also increased during this reporting period. However, the outflow of the TSL is expected to slightly increase starting from next week due to some rainfall from inflow catchments.

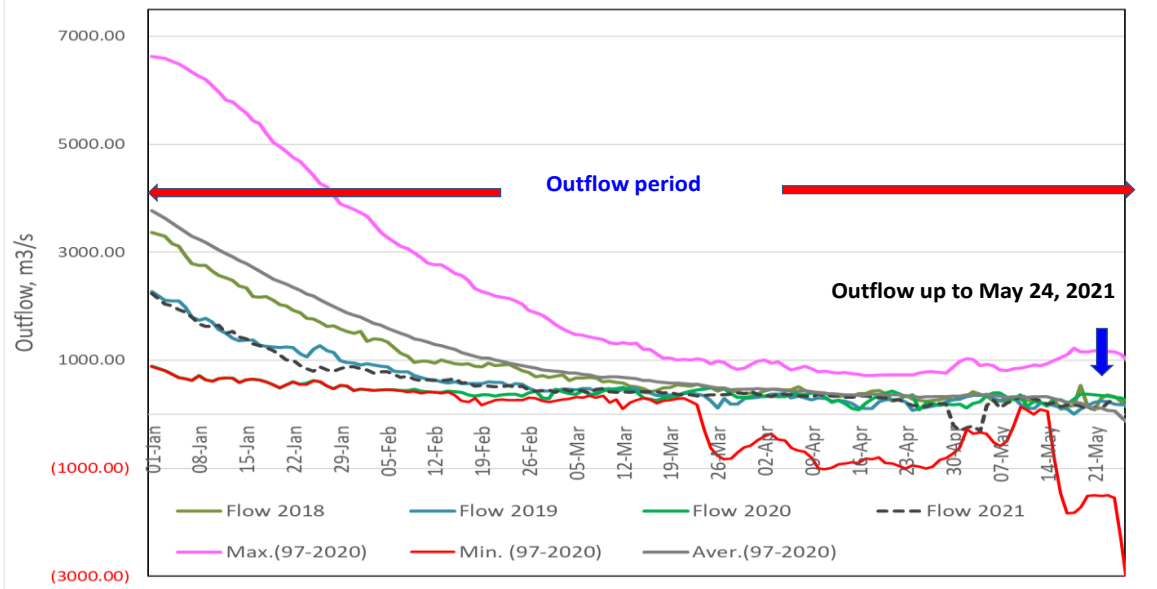


Figure 11. Seasonal change of inflows and outflows of Tonle Sap Lake.

The water volume of the Lake up to this point has been considered low in comparison with its LTA level. [Figure 12](#) shows seasonal changes in monthly flow volumes up to May 24 for the TSL compared with the volumes in 2018 and 2019, their LTAs, and the fluctuation levels (1997–2019). **It shows that up to May 24, the water volumes of the Lake remained constant and was higher than the level in 2020 and close to that of 2019 during the same period.** This is

clearly displayed in [Table 1](#), which indicates that the TSL has been affected by water levels from the Mekong River, the tributaries, and rainfall in the surrounding sub-catchments.

The increased inflows from the Mekong River and tributaries of the TSL in October of the 2020 wet season have resulted in a higher flow in 2021 than in 2019. 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 TSL during the wet season. The data show that about half of the annual inflow volume into the Lake has originated from the Mekong mainstream. Thus, flow alterations in the mainstream could have direct impacts on the TSL water levels and on its hydrology.

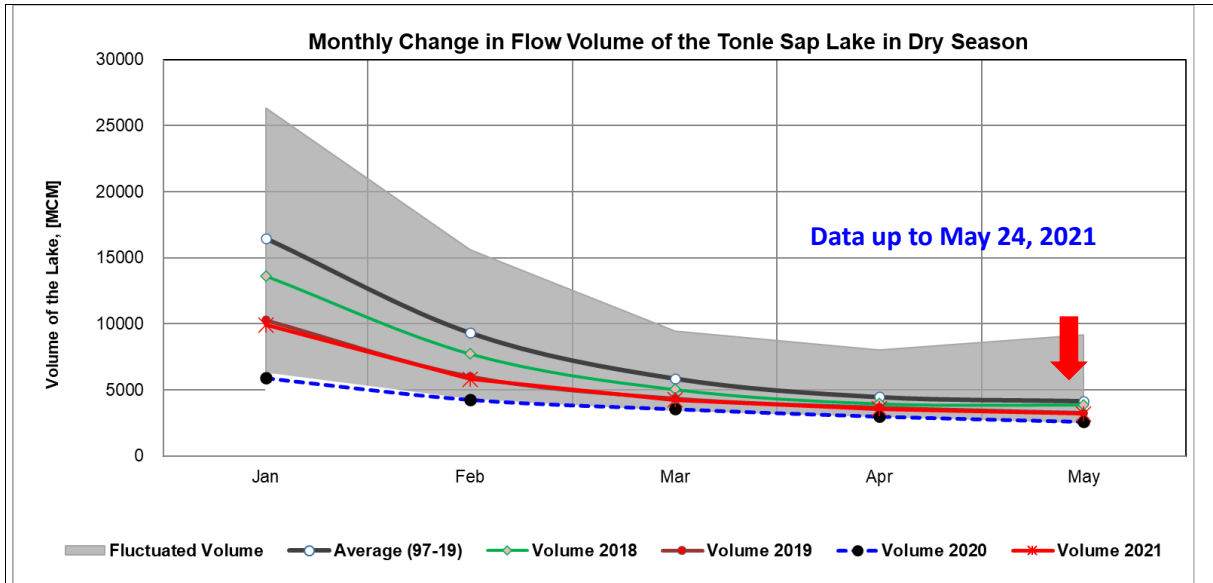


Figure 12. The seasonal change in monthly flow volume of Tonle Sap Lake.

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

Month	Average Volume (97-19) [MCM]	Max Volume [MCM]	Min Volume [MCM]	Volume 2018 [MCM]	Volume 2019 [MCM]	Volume 2020 [MCM]	Volume 2021 [MCM]
Jan	16452.95	26357.53	6272.01	13633.41	10285.31	5906.80	9923.80
Feb	9312.36	15596.22	4281.41	7729.72	6019.30	4264.19	5832.97
Mar	5868.92	9438.24	3350.92	5037.06	4354.62	3553.99	4264.88
Apr	4474.98	8009.14	2875.42	3956.47	3667.47	2992.61	3556.68
May	4166.07	9176.93	2417.81	3864.00	3266.43	2594.92	3190.51
Jun	6034.10	13635.01	2470.54	5919.18	3517.06	2641.88	
Jul	12502.58	28599.56	3832.51	12024.96	4001.99	2925.86	
Aug	26934.35	39015.12	7554.93	22399.65	7622.71	5941.07	
Sep	42644.05	65632.35	22180.73	53639.54	24194.19	12105.31	
Oct	49698.19	73757.23	24276.79	48193.08	30358.38	20799.13	
Nov	39542.58	60367.33	18576.01	31036.07	19112.65	27546.80	
Dec	26325.13	38888.95	10869.43	18469.21	10577.29	18251.65	
	Critical situation, compared with historical Min values						
	Normal condition, compared with LTA (Long term average)						
	Low volume situation, compared with LTA values						
Unit: Million Cubic Meter (1 MCM= 0.001 Km ³)							

4 Flash Flood in the Lower Mekong Basin

From May 18 to 24, the LMB was affected by three main weather factors. They include (i) the southerly and south-easterly wind, which mainly prevailed over the central part of the LMB; (ii) the high-pressure area covering northern and north-eastern LMB, causing small rainfall and thunderstorms in several areas during last week; and (iii) the influence of the westerly and south-westerly wind which prevailed over the Andaman Sea and the southern part of Thailand, also causing small and moderate rain in some areas in the lower part of the LMB.

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

5 Drought Monitoring in the Lower Mekong Basin

Weekly drought monitoring from 15 to 21 May 2021

Drought monitoring data for 2021 are available from Saturday to Friday 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 during the wet season. The products are limited for the dry season. The RFDMC, therefore, temporarily uses the forecasted SMA products to replace the weekly soil moisture monitoring for the time being.

- **Weekly Standardised Precipitation Index (SPI1)**

Meteorological drought conditions from 15 to 21 May 2021, as shown in [Figure 13](#), were normal in most parts of the LMB but dry in some areas of the middle part of the region. These areas include parts of Xaysomboun and Vientiane of Lao PDR; and Nong Khai, Ubon Thani, Sakon Nakhon, Nakhon Phanom, Mukdahan, Kalasin, Yasothon, Roi Et, Maha Sarakham, Khon Kaen, and Ubon Ratchathani of Thailand. The dry conditions were in moderate and severe droughts. Some areas in Cambodia's Kampong Thom, and Viet Nam's Dak Lak, Lam Dong, and Ca Mau in the lower part of the LMB were also at moderate and severe droughts, meteorologically.

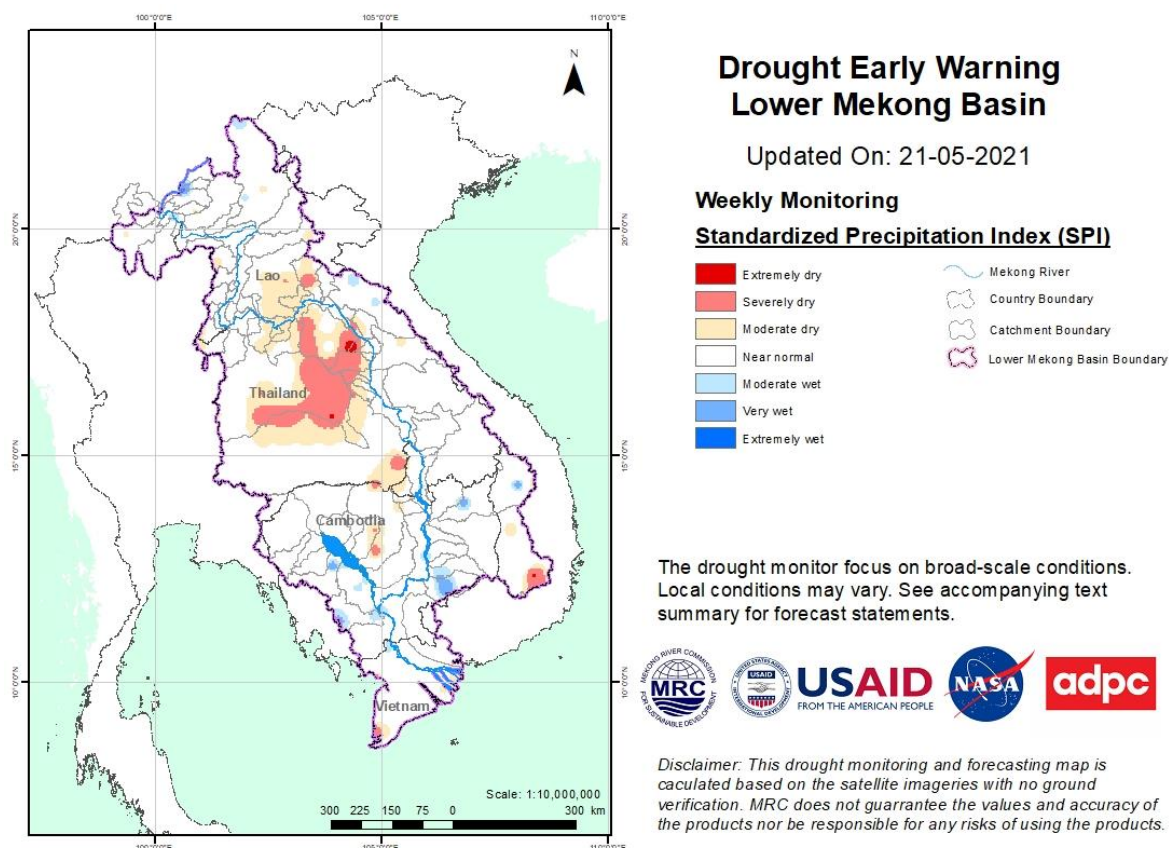


Figure 13. Weekly standardized precipitation index from 15 to 21 May 2021.

- **Weekly Soil Moisture Anomaly (SMA)**

As indicated above, soil moisture conditions from the flash flood system for monitoring work is not available. Therefore, the forecasted soil moisture is used instead. From May 15 to 21, soil moisture shows that the LMB was experiencing moderate and severe deficit soil moistures in eastern and south-eastern parts of the LMB. Moderate dry soil moistures were found in Lao PDR’s Khammouane and Savannakhet, and Thailand’s Nakhon Phanom and Sakon Nakhon. The severe dry soil moistures were in Cambodia’s Kratie and Mondul Kiri, and Viet Nam’s Dak Lak, Lam Dong, Gia Lai, and Kon Tum (see [Figure 14](#)).

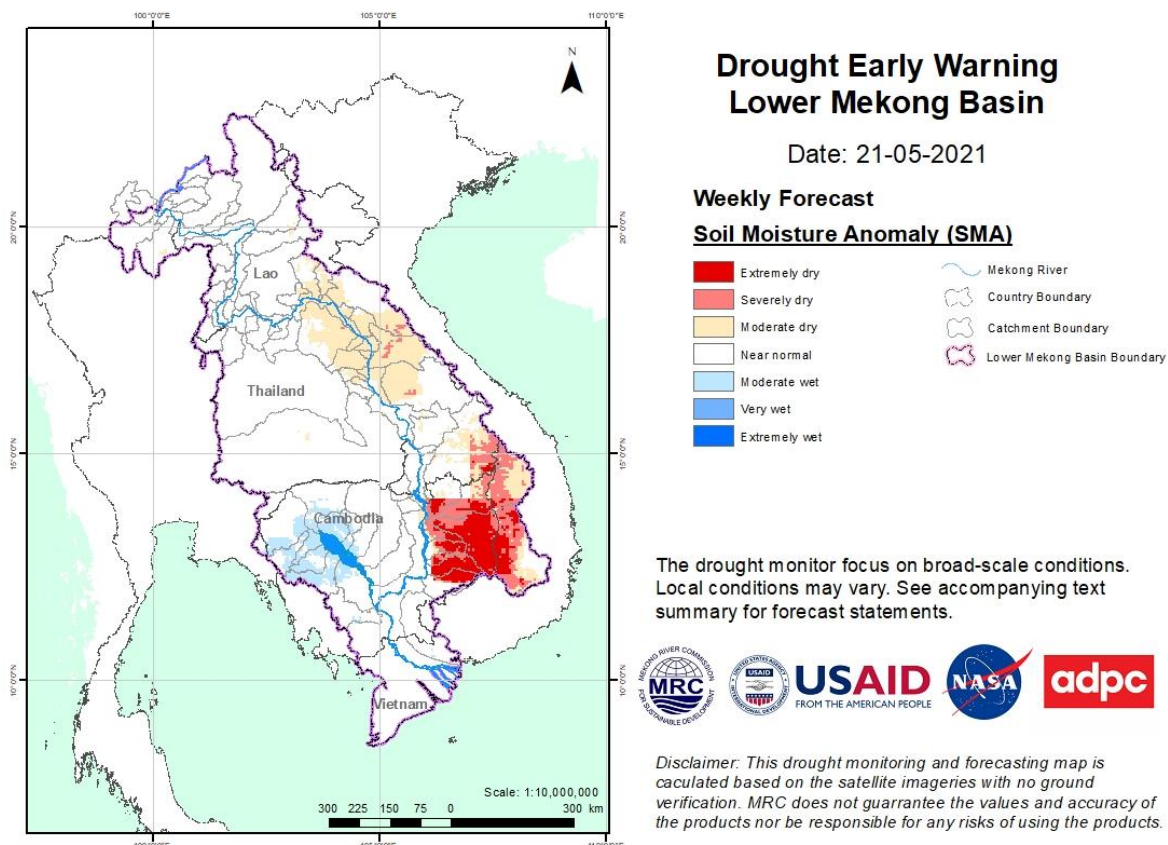


Figure 14. Weekly Soil Moisture Anomaly from 15 to 21 May 2021.

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

The overall drought conditions through combined drought index from 15 to 21 May 2021, as displayed in [Figure 15](#), indicated normal in most parts of the LMB and from moderate to severe conditions in central Lao PDR, eastern Cambodia, and Central Highland of Viet Nam. Those moderate and severe droughts were caused by deficit soil moisture content which took place in some areas of Lao PDR’s Khammouane, Savannakhet and Attapeu; Thailand’s Nakhon Phanom and Sakon Nakhon; Cambodia’s Kratie and Mondul Kiri; and Viet Nam’s Dak Lak, Lam Dong, Gia Lai, and Kon Tum.

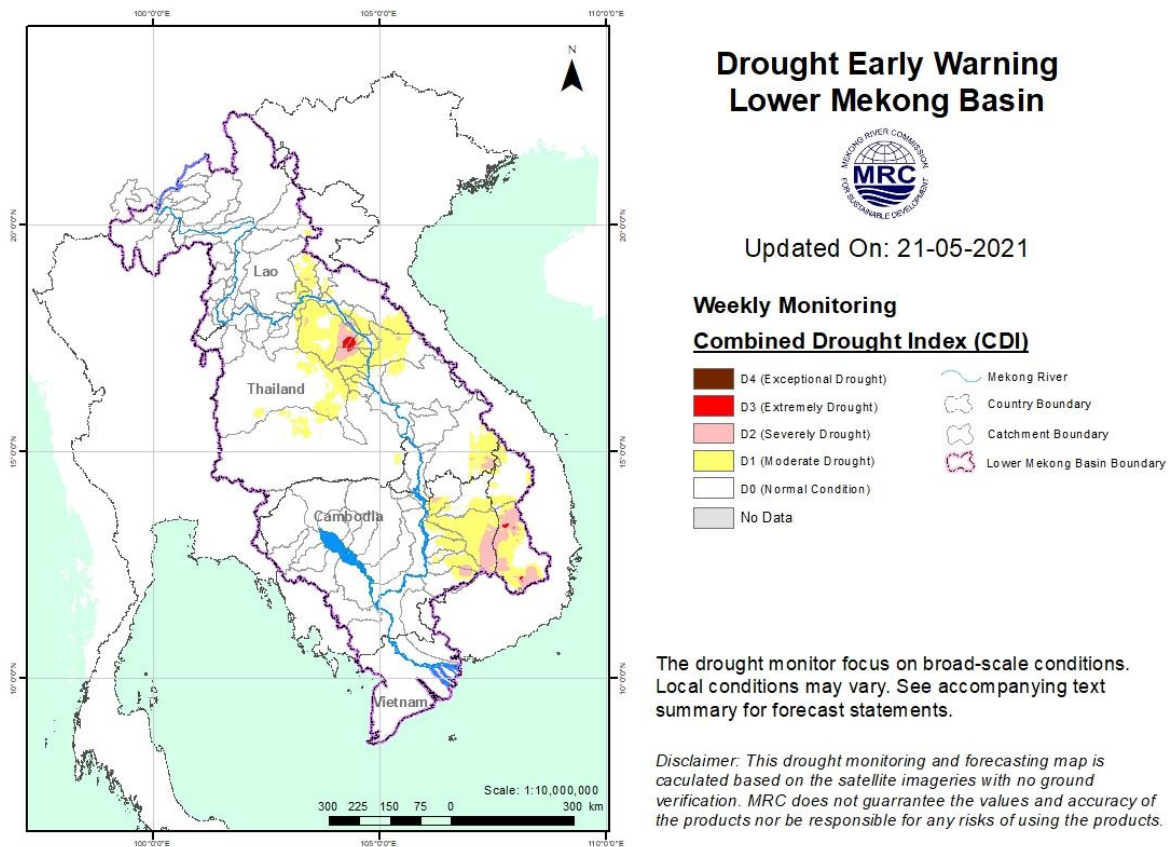


Figure 15. Weekly Combined Drought Index from 15 to 21 May 2021.

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.

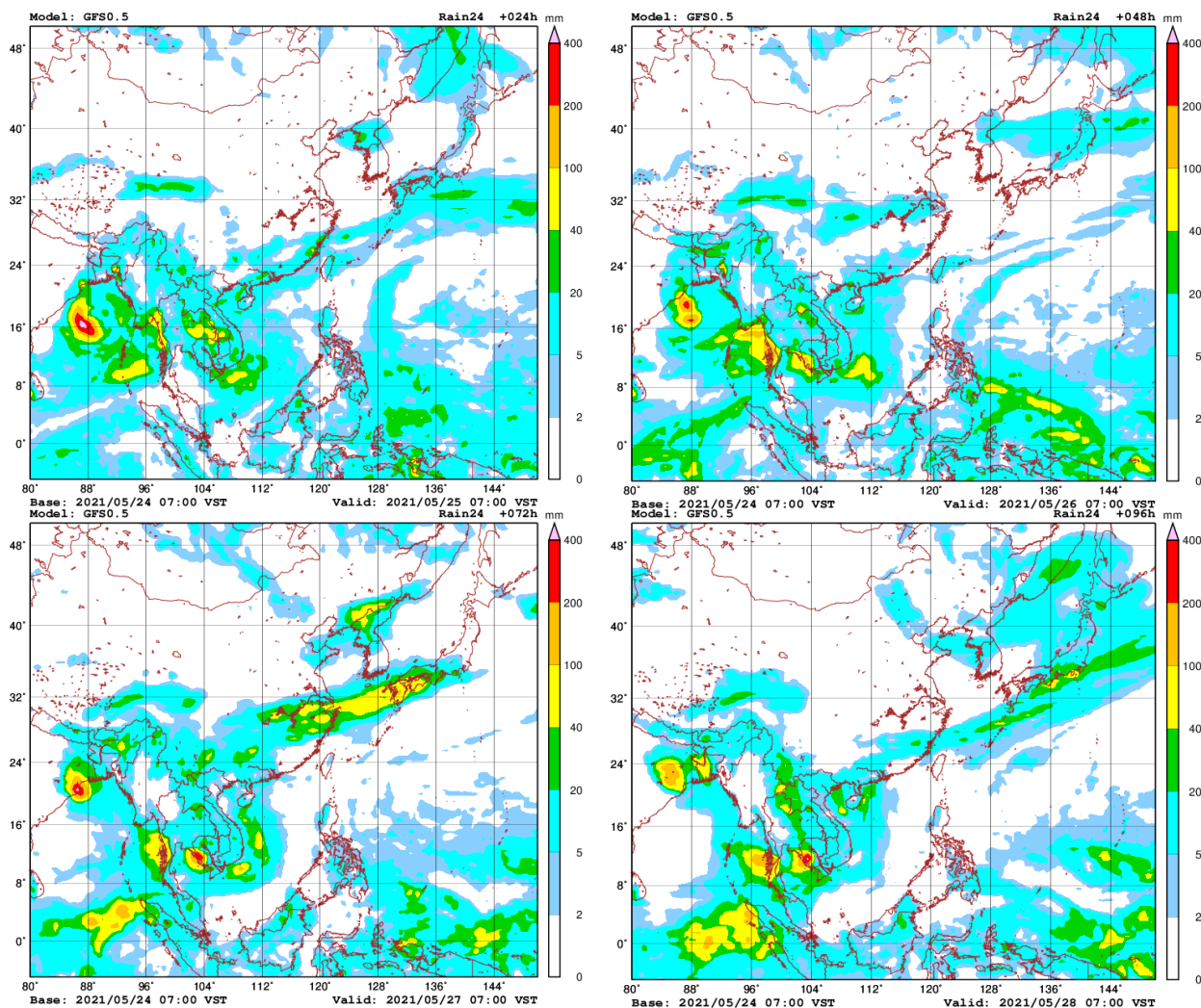
6 Weather and Water Level Forecast and Flash Flood Information

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, there might be three main factors affecting the LMB, as have been the case. They are (i) the southerly and south-easterly wind which have prevailed over the central part of the LMB; (ii) a high-pressure covering the northern and north-eastern parts of the LMB; and (iii) the westerly and south-westerly wind over the Andaman Sea and the southern part and the Gulf of Thailand.

From May 18 to 24, very small rainfall (2-5 mm/24 h) will likely occur over the LMB. Other smaller areas in the Southwest of Cambodia will experience heavy rainfall (50 - 100 mm/24 h) during 27–28 May.

[Figure 16](#) shows accumulated rainfall forecast (24 h) of the GFS model from 18 to 24 May 2021.



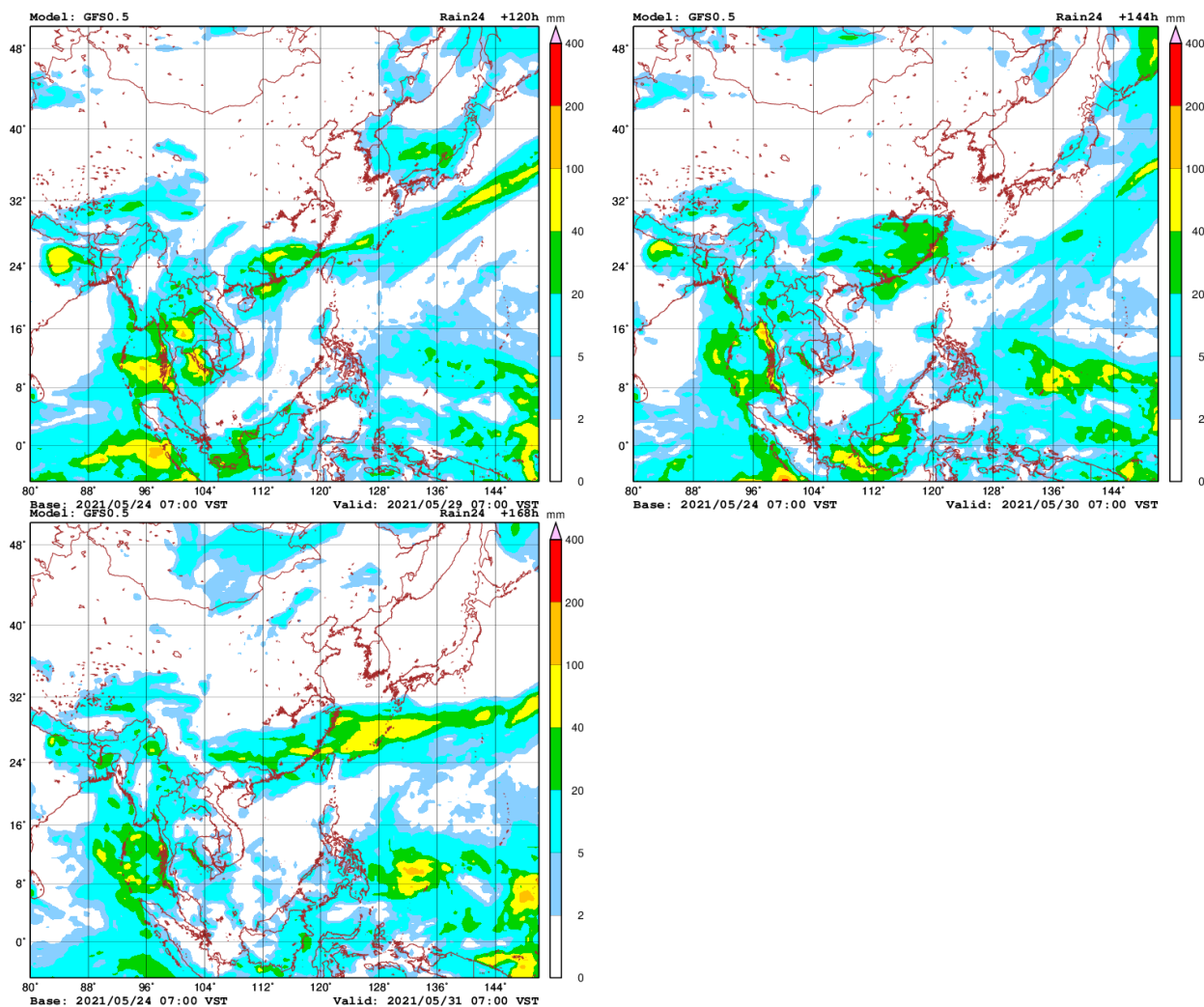


Figure 16. Accumulated rainfall forecast (24 h) of model GFS.

6.2 Water level forecast

Chiang Saen and Luang Prabang

Based on May 24's weekly river monitoring bulletin, the weekly forecasted water level at Chiang Saen in Thailand is expected to slightly increase from 3.13 m to 3.28 m in the next seven days. The trend will keep the water level at this station above its LTA.

For Luang Prabang in Lao PDR, the water level will decrease from 9.75 m to 9.50 m during next week. The current water level is slightly higher than its maximum value. For next week, some amount of precipitation is forecasted for the areas between Chiang Saen and Luang Prabang.

Chiang Khan, Vientiane-Nong Khai and Paksane

The water level at Chiang Khan in Thailand is forecasted to go down by about 0.02 m, and about 0.04 m at Vientiane in Lao PDR. From Nong Khai in Thailand to Paksane in Lao PDR, the water levels will decrease by about 0.15 m over the next seven days. Rainfall is forecasted for the areas between Chiang Khan and Paksane for next week.

The water levels will remain higher than their LTAs at Chiang Khan, Vientiane, Nong Khai, and Paksane.

Nakhon Phanom to Pakse

Water levels from Nakhon Phanom in Thailand to Savannakhet in Lao PDR may decrease by about 0.05 m in the next seven days. But from Khong Chaim in Thailand to Pakse in Lao PDR the stations will likely see an increase by about 0.06 m. Water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR will stay higher than their LTAs and precipitation is forecasted for these areas next week.

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

From Stung Treng to Kampong Cham along the Mekong River in Cambodia, water levels will increase by about 0.20 m in the next seven days. Precipitation is forecasted for the area between Stung Treng and Kratie during next week.

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 increase by about 0.15 m over the next seven days.

With the trend, water levels at these stations will be staying close to their LTA values, particularly 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. 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, water levels will be fluctuating below their LTAs, following daily tidal effects from the sea. Rainfall is forecasted for the Delta area for next week.

[Table 2](#) shows the weekly River Monitoring Bulletin issued on May 24. Results of the weekly river monitoring bulletin are also available at http://ffw.mrcmekong.org/bulletin_wet.php.

6.3 Flash Flood Information

Flash flood events are likely not to happen in the LMB within next week. 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>.

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 June 2021. The MRC's DFEWS adopts an ensemble model, which averages all scenarios called the North America Multi-Model Ensemble (NMME).

The global scale of rainfall prediction is used to see how the rain distribution looks like for the coming months. [Figure 17](#) shows the ensemble mean of daily average precipitation (mm/day) each month from May to August 2021 produced by the NMME.

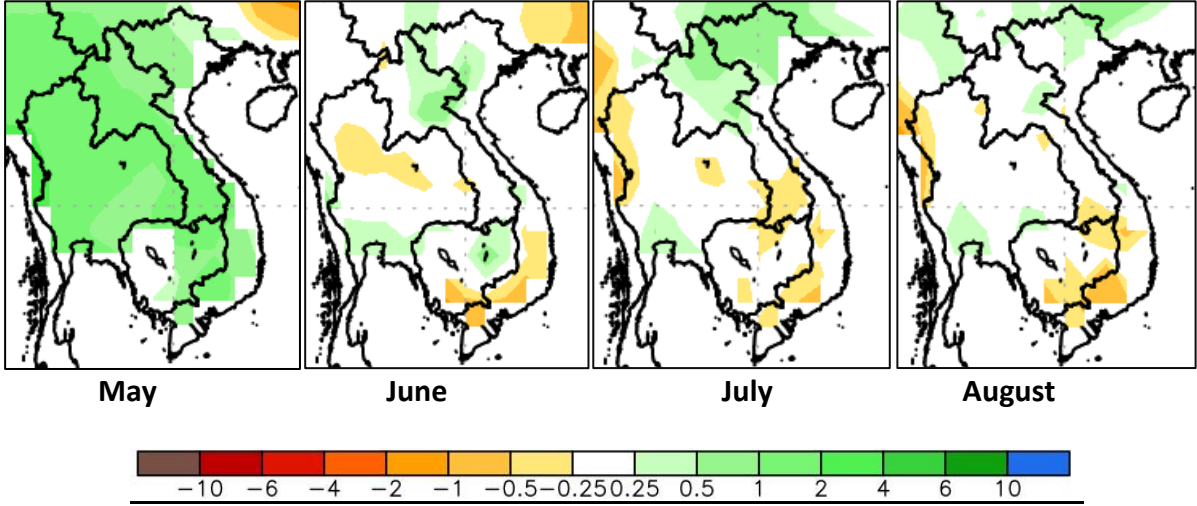


Figure 17. Daily average of monthly rainfall anomaly forecast from April to July 2021.

The ensemble prediction model forecasts that the LMB is likely to receive relatively high rainfall during May covering most parts of the LMB but below average rainfall during June, July, and August. In June, the model shows that below average rainfall is likely to take place mainly in Thailand, southern Cambodia, and Viet Nam. During July and August, it shows that below average rainfall is concentrated mainly in southern Lao PDR and the lower part of the LMB.

It seems that the 2021 dry season is slightly wetter than that of 2020 and that the monsoon rain may come earlier in the 2021 wet season than it did in 2019 and 2020.

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: 25 May to 31 May 2021

Date: 24 May 2021

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)						
					23-May	24-May	25-May	26-May	27-May	28-May	29-May	30-May	31-May
Jinhong		0.0	-	-	537.92	537.95							
Chiang Saen		0.0	357.110	0.00	3.33	3.13	3.48	3.50	3.40	3.17	3.10	3.18	3.28
Luang Prabang		8.8	267.195	2.53	9.76	9.75	9.70	9.53	9.77	9.80	9.72	9.60	9.50
Chiang Khan		0.0	194.118	1.91	6.42	6.38	6.47	6.40	6.55	6.55	6.50	6.40	6.36
Vientiane		0.0	158.040	-0.28	3.95	3.86	3.83	3.90	3.84	3.95	3.94	3.90	3.82
Nongkhai		1.2	153.648	0.33	3.60	3.45	3.38	3.45	3.37	3.48	3.45	3.40	3.30
Paksane		0.0	142.125	0.10	4.39	4.29	4.21	4.18	4.22	4.18	4.24	4.22	4.18
Nakhon Phanom		5.0	130.961	0.18	2.80	2.87	2.82	2.78	2.76	2.78	2.76	2.79	2.78
Thakhek		0.0	129.629	1.38	4.05	4.11	4.06	4.01	3.98	4.01	3.98	4.02	4.00
Mukdahan		0.0	124.219	0.72	2.90	2.95	2.99	2.96	2.93	2.91	2.93	2.91	2.94
Savannakhet		0.0	125.410	-0.65	1.26	1.26	1.28	1.27	1.26	1.26	1.27	1.26	1.28
Khong Chiam		0.0	89.030	1.02	3.22	3.21	3.28	3.35	3.28	3.23	3.28	3.23	3.27
Pakse		5.9	86.490	0.03	2.14	2.14	2.18	2.23	2.20	2.17	2.20	2.18	2.20
Stung Treng		10.0	36.790	0.32	3.13	3.18	3.2	3.23	3.26	3.24	3.22	3.25	3.23
Kratie		44.0	-1.080	3.06	8.25	8.27	8.36	8.40	8.45	8.50	8.47	8.43	8.47
Kompong Cham		21.3	-0.930	0.65	3.28	3.28	3.33	3.45	3.50	3.56	3.62	3.58	3.53
Phnom Penh (Bassac)		51.0	-1.020	1.58	1.98	1.83	1.86	1.93	1.97	2.00	2.03	2.01	2.00
Phnom Penh Port		nr	0.000	0.14	1.00	0.85	0.89	0.97	1.01	1.04	1.07	1.05	1.04
Koh Khel		32.5	-1.000	1.52	1.80	1.82	1.85	1.90	1.93	1.97	1.99	1.95	1.90
Neak Luong		47.2	-0.330	0.81	1.52	1.64	1.70	1.73	1.79	1.82	1.85	1.88	1.85
Prek Kdam		14.2	0.080	0.58	0.97	0.98	1.02	1.08	1.12	1.16	1.19	1.16	1.13
Tan Chau		nr	0.000	-0.37	0.35	0.90	1.18	1.35	1.47	1.33	1.11	0.80	0.43
Chau Doc		31.0	0.000	-0.60	0.40	1.01	1.30	1.47	1.66	1.49	1.25	0.94	0.56

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

During this reporting week, rainfall was taking place from Thakhek in Lao PDR to Phnom Penh in Cambodia including the lower part at Tan Chau and Chau Doc in Viet Nam, varying from 1.20 mm to 104.00 mm.

Based on the forecasted satellite data, rainfall is forecasted for some areas of the LMB, with value ranging from 20 to 80 mm for the next seven days. The forecasting model using GFS data, on the other hand, shows that no significant rainfall (>70mm) is likely to take place in the Mekong region from 25 to 31 May 2021.

7.2 Water level and its forecast

According to MRC's observed water level data, the outflow at Jinghong hydrological station rapidly decreased and fluctuated from 3,085 cubic metres per second (m³/s) on May 17 to 2,964 m³/s on May 24. Water level at Chaing Sean dropped about 0.43 m based on its telemetry data.

Water levels across most monitoring stations from Chiang Saen in Thailand to Pakse in Lao PDR, and from the stretches of the river between Stung Treng and Kompong Cham in Cambodia were higher than their LTAs up to 24 May 2021.

Water levels from Chiang Khan in Thailand to Vientiane in Lao PDR may likely be affected by Xayaburi dam in the next few weeks, potentially causing the stations' water level to increase during this report period.

Over the next few days, water levels from Chiang Khan to Vientiane are expected to decrease by about 0.15 m, and about 0.05 m from Nakhon Phanom to Pakse. Nonetheless, this situation will continue to put most stations' water levels higher than their LTAs.

The starting date of the outflow from the TSL into the Mekong mainstream took place on November 15, slightly late compared to the normal event. Due to heavy rainfall in late October 2020, the water volume of the Lake at this reporting point is higher than that in 2020. However, this volume is lower than its LTA. From next week, the flow might continue to slightly increase due to predicted rainfall in the inflow catchments and the increased water levels along the lower part of the Mekong and Bassac rivers.

From Stung Treng to Kompong Cham, the water levels will slightly decrease but remain higher than their LTAs. The water levels – at Neak Luong on the Mekong River, from Prek Kdam to Phnom Penh Port on the Tonle Sap, and from Chaktomuk to Koh Khel on the Bassac – are forecasted to remain close to their LTAs.

The situation in Tan Chau on the Mekong River and Chau Doc on the Bassac River is expected to remain unchanged but influenced by the tidal effects.

The low rainfall during the past months of 2020 (except in October) is believed to be one of the main factors causing low water levels at most of the stations along the Mekong mainstream.

Since the beginning of March 2021, water levels in the LMB have moved up above their LTAs across all the monitoring stations (from upper to lower stretches within the LMB). Like many parts of the world, the Mekong region was affected by the prolonged El Nino event, the phenomenon that usually causes extreme heat and insufficient rainfall. This climate change impact has been observed since 2019 and 2020. For a more complete preliminary analysis of the hydrological conditions in the LMB over January–July 2020, see this [Situation Report](#), and for July–December 2020, 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 small predicted amounts of rainfall for the upcoming week as mentioned earlier in [section 6.1](#), flash floods are likely not to happen in the region.

7.4 Drought condition and its forecast

From 15 to 21 May 2021, the LMB was experiencing moderate to severe droughts in the central Lao PDR, eastern Cambodia, and Central Highland of Viet Nam. Those moderate and severe droughts were caused by deficit soil moisture content which took place in some areas of Lao PDR’s Khammouane, Savannakhet and Attapeu; Thailand’s Nakhon Phanom and Sakon Nakhon; Cambodia’s Kratie and Mondul Kiri; and Viet Nam’s Dak Lak, Lam Dong, Gia Lai, and Kon Tum.

The ensemble prediction model forecasts that the LMB is likely to receive relatively high rainfall during May covering most parts of the LMB but below average rainfall during June, July, and August. In June, below average rainfall is likely to take place mainly in Thailand, southern Cambodia, and Viet Nam. During July and August, below average rainfall is concentrated mainly in southern Lao PDR and the lower part of the LMB.

Annex A: Tables for weekly updated water levels and rainfall at the Key Stations from 18 to 24 May 2021

Table A1: Weekly observed water levels in metres

2021	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
18-05-2021	538.12	3.66	9.56	6.28	3.86	3.46	4.17	2.71	2.83	2.08	3.13	8.22	3.36	2.10	2.14	1.36	1.13	-0.28	-0.28
19-05-2021	538.01	3.79	9.50	6.59	3.65	3.28	4.19	2.72	2.82	2.04	3.20	8.30	3.32	2.12	2.13	1.36	1.12	-0.25	-0.24
20-05-2021	537.81	3.88	9.48	6.68	3.80	3.38	4.13	2.78	2.86	2.06	3.15	8.41	3.40	2.12	2.14	1.38	1.08	-0.22	-0.18
21-05-2021	537.25	3.81	9.34	6.72	3.98	3.55	4.15	2.77	2.88	2.06	3.16	8.21	3.40	2.07	2.05	1.40	1.05	-0.12	-0.10
22-05-2021	537.15	3.68	9.48	6.60	4.02	3.65	4.31	2.75	2.88	2.10	3.13	8.27	3.34	2.12	1.90	1.48	1.03	0.07	0.10
23-05-2021	537.92	3.33	9.76	6.42	3.95	3.60	4.39	2.80	2.90	2.14	3.13	8.25	3.28	1.98	1.80	1.52	0.97	0.35	0.40
24-05-2021	537.95	3.13	9.75	6.38	3.86	3.45	4.29	2.87	2.95	2.14	3.18	8.27	3.28	1.83	1.82	1.64	0.98	0.90	1.01

Table A2: Weekly observed rainfall in mm

2021	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
18-05-2021	0	0	0	0	0	0	0	6.1	0	12.8	2.5	6.3	36.6	4.7	31.2	0	7.2	0	0
19-05-2021	0	0	0	0	0	0	0	0	0	0	29	0	6	0.5	2.9	0.3	0	0.9	24
20-05-2021	0.5	0	0	0	0	0	0	3	0	0	5.3	5.3	5.5	19.4	11.5	17.2	0	55	9
21-05-2021	0	0	0	0	0	0	0	0	0	0	0	0	0	28.7	0	0	0	0	0
22-05-2021	3	0	0	6.3	0	0	0	0	0	0	23.5	0	0	0	9.6	15.1	0	0	0
23-05-2021	0	0	0	0	0	0	0	0	0	0	0	11.5	13	0	0	0	9.3	0	0.6
24-05-2021	0	0	8.8		0	1.2	0	5	0	5.9	10	44	21.3	51	32.5	47.2	14.2	0	31



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