



Mekong River Commission

**Weekly Dry Season Situation Report in
the Lower Mekong River Basin
10–16 November 2020**

Prepared by
The Regional Flood and Drought Management Centre
17 November 2020

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 10-16 November 2020

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 10-16 November 2020*. Vientiane: MRC Secretariat.

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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 **10–16 November 2020**. 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 a 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 (November, December and January) and the weather maps issued by the Thai Meteorological Department (TMD) were used to verify weather conditions in the LMB.

At the end of October 2020, moderate to above normal rainfall has been observed in the LMB, with the amount gradually increasing from the second week of October. The data from the TMD predict that instances of low pressure and tropical cyclones may decrease their chances moving closer to the Mekong region from November which will meet the reducing rainfall with cool weather in the region. The TMD also predicts that scattered thundershowers throughout November will continue in the Mekong region.

[Figure 1](#) presents the weather map of 16 November 2020, showing a line of low pressure of the Monsoon Trough crossing the lower Mekong region which can bring rainfall over the next few days.

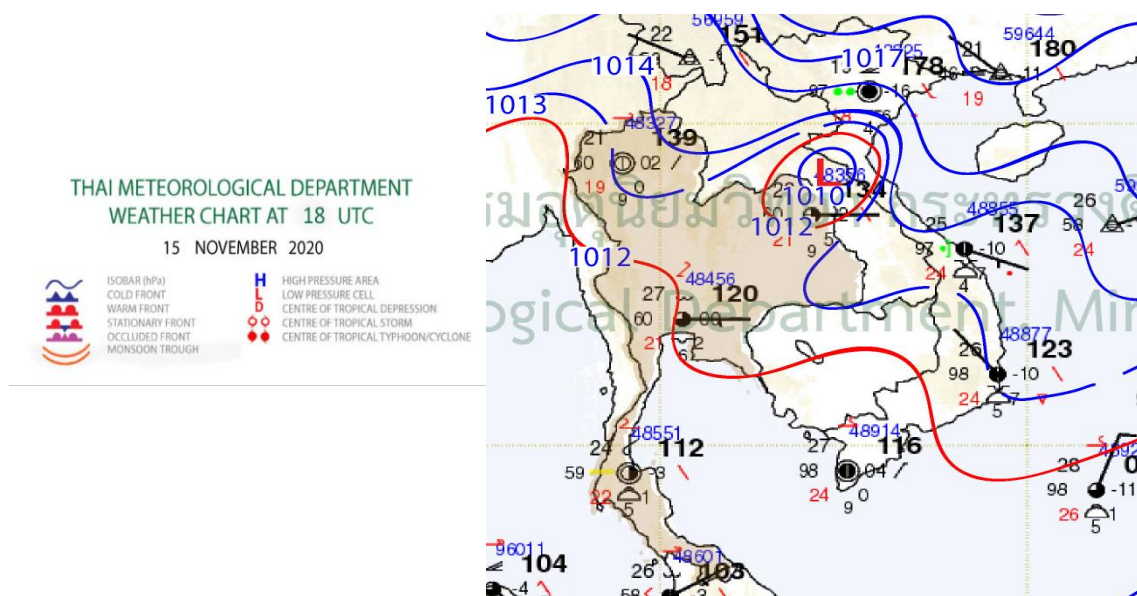


Figure 1: Summary of weather conditions over the LMB.

According to the ASEAN Specialised Meteorological Centre (ASMC), wetter conditions are predicted over the eastern half of Southeast Asia for November 16 through 29, which can increase showers over the Mekong sub-region of Lao PDR and Viet Nam. During this time, the ASMC confirms that the wetter conditions in the eastern mainland Southeast Asia (Cambodia, Lao PDR, Viet Nam, and parts of Thailand) will depend on tropical cyclone evolution.

Subsequently, from November to December, there is a decreasing chance of above average rainfall for most Asian countries, especially in the Mekong region. [Figure 2](#) shows the outlook of rainfall of November 16–29 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

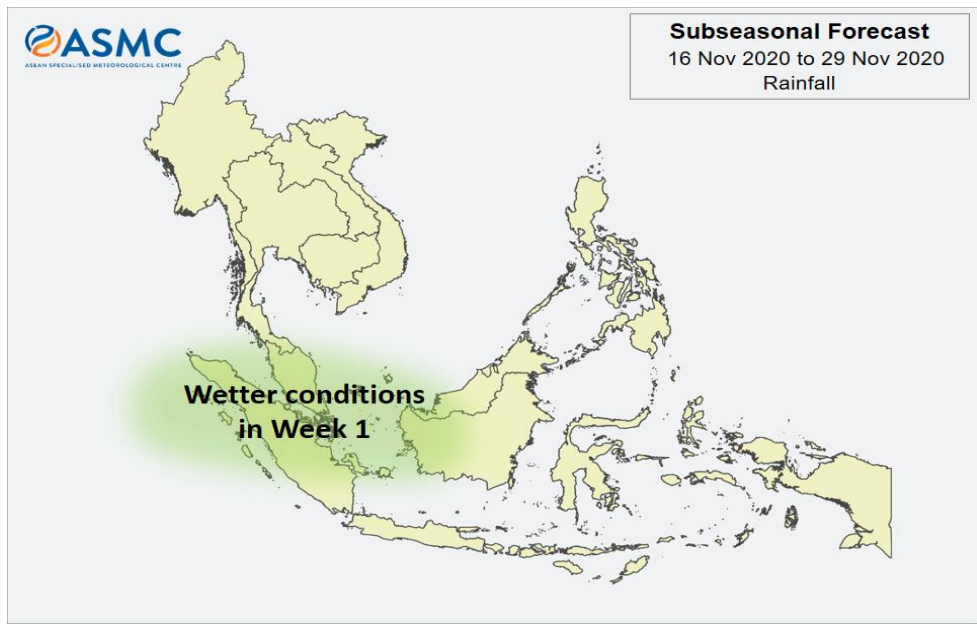


Figure 2: Outlook of rainfall over the Asian countries by ASMC.

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

Based on the Tropical Storm Risk's (TSR) website, Tropical Depression *Vamco* (Figure 3) is continuing to hit Viet Nam and is expected to middle part of the Mekong region but with less strength on November 17.

This might cause normal rainfall in the lower part of the basin from Lao PDR's Paksane in the upper part to Thailand's Nakhon Phanom.

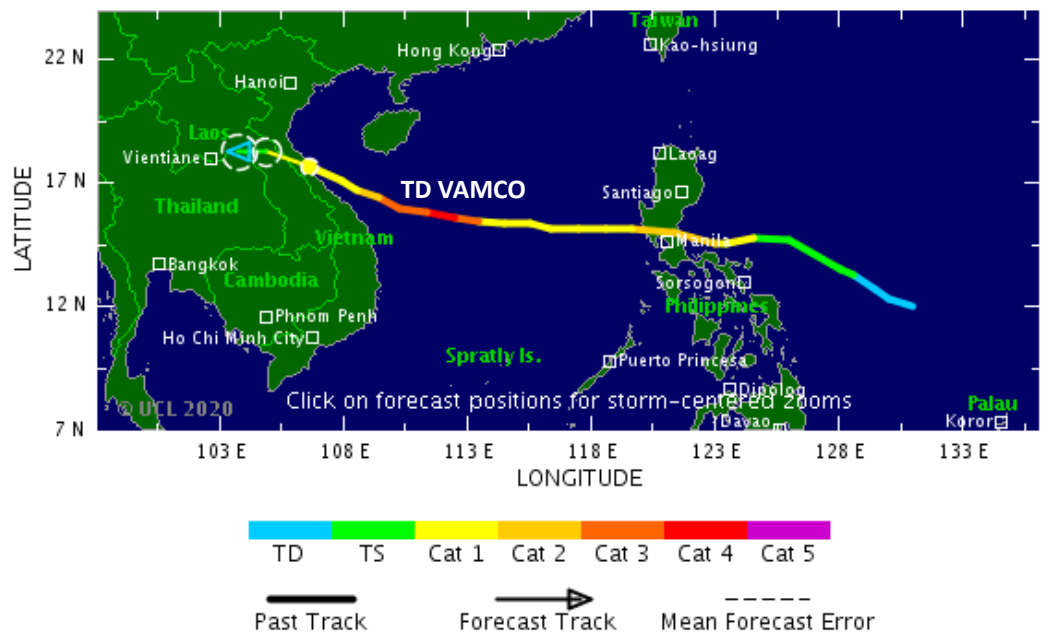


Figure 3: Tropical Depression *Vamco* movement towards the Mekong region, observed on 16 Nov.

Rainfall patterns over the LMB

This week's rainfall is considered above average, varying from 1.1 mm to 90.5 mm at different stations along the Mekong mainstream from Stung Treng in Cambodia to Tan Chau and Chau Doc in Viet Nam. Unlike the situation last week, rainfall during this reporting week concentrated in the lower part of the basin from Cambodia's Stung Treng to Viet Nam's Tan Chau and Chau Doc, ranging from 7.3 mm to 90.5 mm. No rainfall was observed at the upper and middle parts of the basin.

The total observed rainfall of the week at those selected stations, compared with average rainfall in October, are shown in [Figure 4](#).

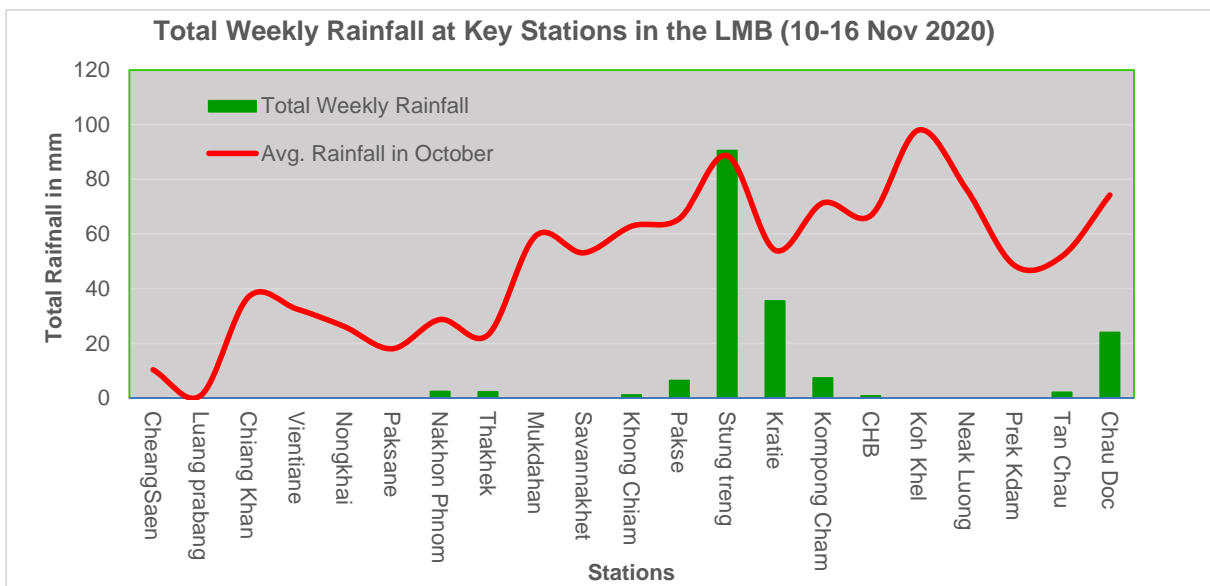


Figure 4: Weekly total rainfall at key stations in the LMB.

To verify area rainfall distribution, [Figure 5](#) shows a map of the weekly accumulated rainfall based on observed data provided by the MRC Member Countries – Cambodia, Lao PDR, Thailand, and Viet Nam – from 10 to 16 November 2020.

The amount of rainfall this week – from 1.1 mm to 90.5 mm – is considered lower than average in the upper and middle parts in the Mekong region, but above average in the lower reaches.

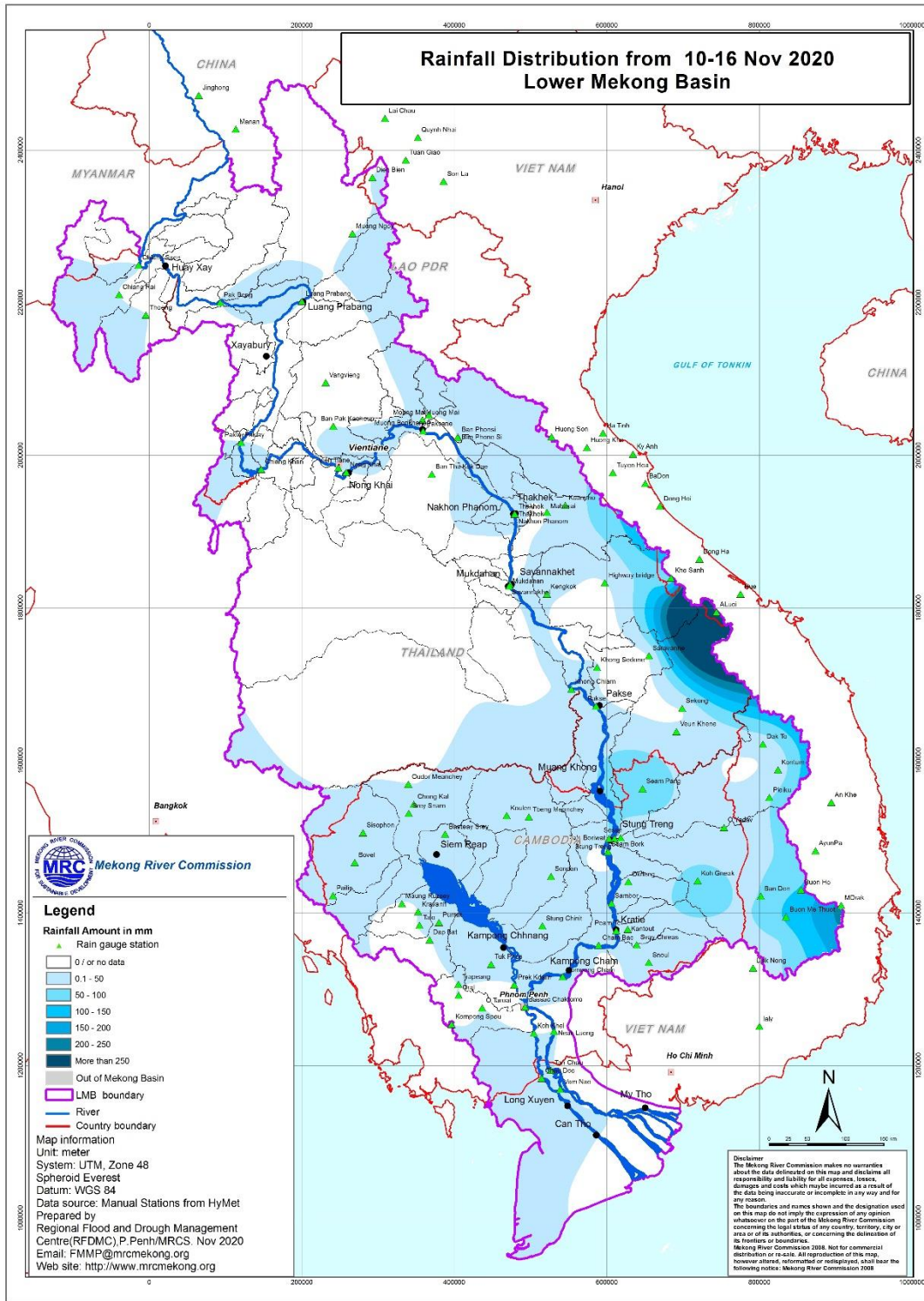


Figure 5: Weekly rainfall distribution over the LMB.

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.

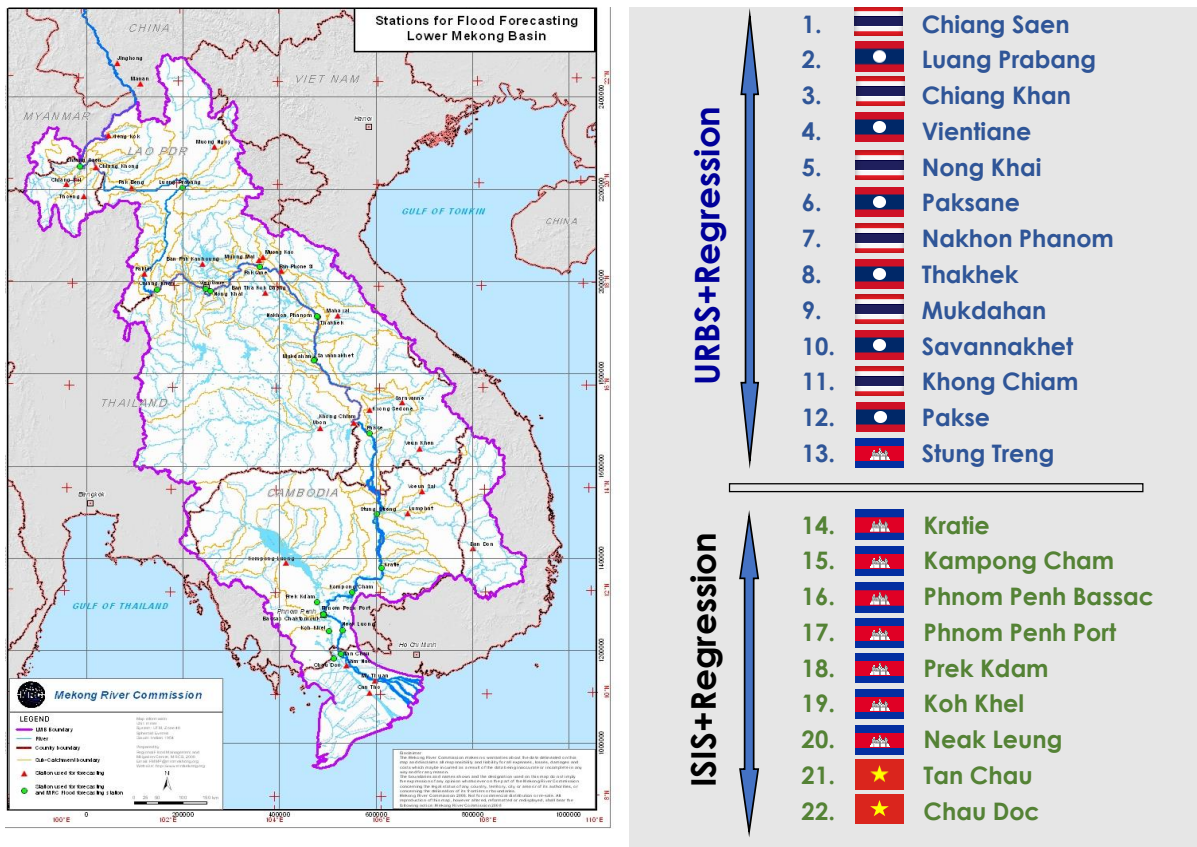


Figure 6: Key stations and model application for River Monitoring and Flood Forecasting.

Chiang Saen and Luang Prabang

Water level during November 10–16 at Thailand’s Chiang Saen slightly increased from 2.51 metres to 2.72 metres. When comparing to last week, this week’s water level is relatively higher.

Water level at the Luang Prabang station in Lao PDR slightly increased from 8.70 metres to 8.92 metres, during the reporting period. Compared to last week, the figure shows a increased amount of about 0.28 metres. This level is higher than its long-term average (LTA).

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 dry season.**

Chiang Khan, Vientiane-Nong Khai and Paksane

Water level at Chiang Khan in Thailand slightly decreased from 5.95 metres to 5.42 metres during this week, showing 1.59 metres below its LTA value. Downstream water levels from Vientiane to Paksane in Lao PDR followed the same direction of the Chiang Khan’s ones. The decreased values varied between -0.07 metres and -0.23 metres. Less water contribution from upstream inflows and rainfall from sub-catchments are likely the main reason. Compared to this time last year, the current water levels at these stations are about 1 metre higher. **However, the water level at Paksane is close to the historical minimum levels. Water levels at these stations are considered as critical.**

Nakhon Phanom to Pakse

Similarly, water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR slightly decreased by about 0.15 metres, during the reporting period. Below-average rainfall in upstream and its adjacent catchments are likely the cause of these decreasing water levels. However, water levels at Nakhon Phanom to Mukdahan in Thailand are about 1.57 metres lower than their LTAs, but about 1.15 meters higher than the 2019’s level, as shown in [Figure 7](#). **The figures are considered as critical.**

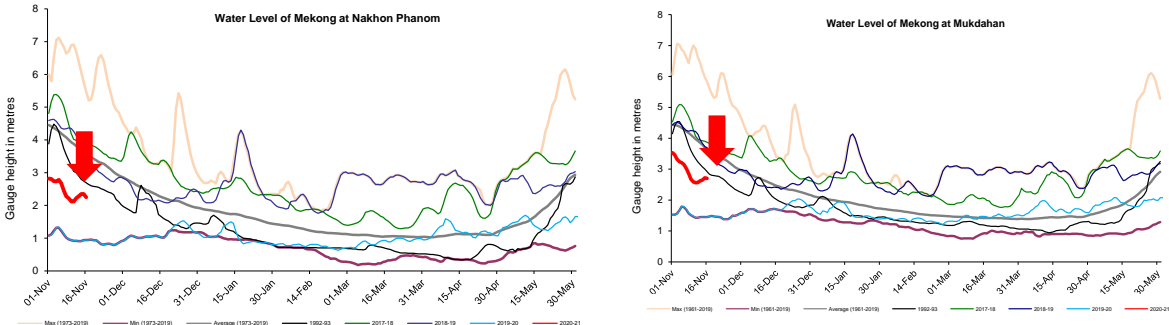


Figure 7: Water levels at Nakhon Phanom and Mukdahan of Thailand.

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

Following the same trend from the upstream and due to below-average rainfall in the upstream part of the Mekong River and the 3S river (Sekong, Se San and Sre Pok), the water levels at Stung Treng and Kratie decreased. However, the water levels at these stations are still higher than their LTA levels as shown in [Figure 8](#).

Similarly, water levels at Kompong Cham, Chaktomuk, Koh Khel, Phnom Penh Port, and Prek Kdam stations in Cambodia were also affected by upstream flows. They gradually decreased by about 0.57 metres during this reporting week.

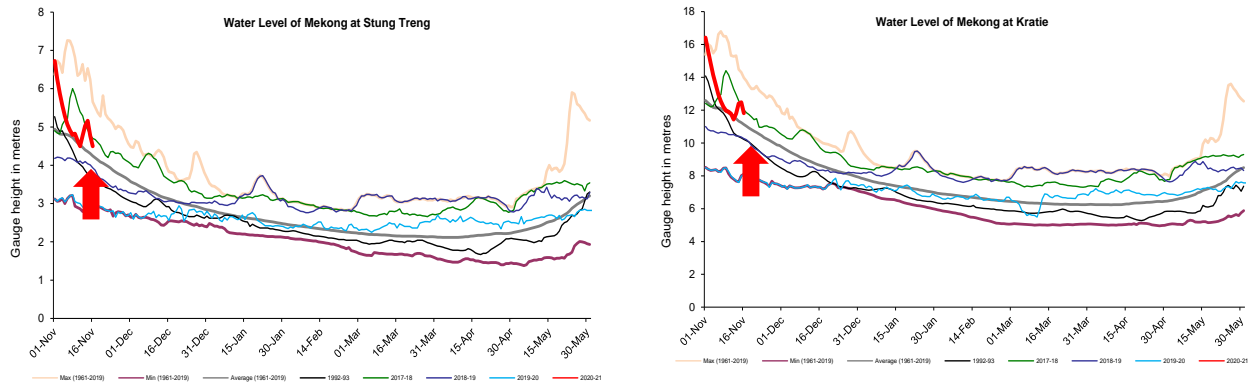


Figure 8: Water levels at Stung Treng and Kratie on the Mekong River.

Tidal stations at Tan Chau and Chau Doc

Like last week, this week from November 10 to 16, the two tidal stations of Viet Nam’s Tan Chau and Chau Doc were fluctuating around their LTAs due to daily tidal effects from the sea.

The Tonle Sap Flow

At the end of the dry season, when water levels along the Mekong River increase, flows of the Mekong River reverse into the Tonle Sap Lake (TSL). This phenomenon normally takes place from mid-May to mid-October.

[Figure 9](#) shows the seasonal changes of the inflow/reverse flow and the outflow of the TSL at Prek Kdam in comparison with the flows of 2018 and 2019, and their LTA level (1997-2019). Up to November 16 of this reporting period, **it is observed that the main reverse flow into the TSL has started since August 4. There were also two extremely small instances of the reverse flow in July, but they were not significant.** The recorded incident matches the record on reverse flow into TSL by the PMFM’s (Procedures for the Maintenance of Flows on the Mainstream) tool on Article 6B (monitoring area). The delay of the reverse flow was due to the low water levels on the Mekong mainstream which were caused by deficit rainfall in upper sub-catchment areas, among other factors. Due to the heavy rain from last week in some of the provinces around the Tonle Sap Lake, the inflows to TSL this week showed a significant increase.

Although the reverse flows have started since August 4, water volume of the Lake up to this point has been considered critical as it is still lower than its long-term average level. [Figure 10](#) shows seasonal changes in monthly flow volumes up to November 16 for the TSL compared with the volumes in 2018 and 2019 and their LTA and the fluctuating levels (1997-2019). It

shows that in July, August, October and November (up to November 16) water volumes of the Lake were higher than those of 2019 and even higher than those of 2018 during the same period. This is clearly evidenced in [Table 1, which indicates that](#) the TSL has been affected by high inflows from the Mekong River and sufficient rainfall at the end of October in the surrounding sub-catchments since October 2020.

The increased inflows (inflows from the Mekong River and from tributaries) of the TSL at the end of the 2020 wet season have resulted in a higher flow in 2020 than in 2019. This demonstrates the influence of the relationships between the reverse flows, water levels of the Mekong River, and the flow direction in the complex hydraulic environment of the TSL during this wet season. The data show that more than half of the annual inflow volume into the lake originate from the Mekong mainstream. Thus, flow alterations in the mainstream could have direct impacts on the Tonle Sap Lake water levels and on hydrology.

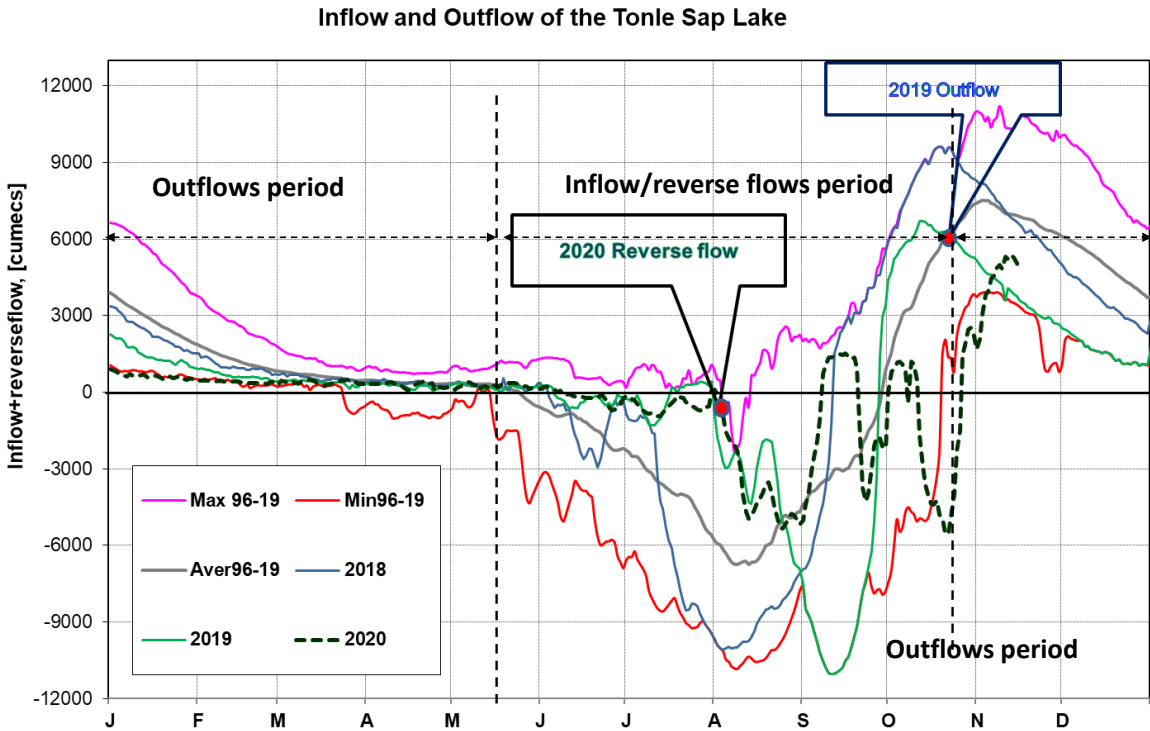


Figure 9: Seasonal change of inflows and outflows of Tonle Sap Lake.

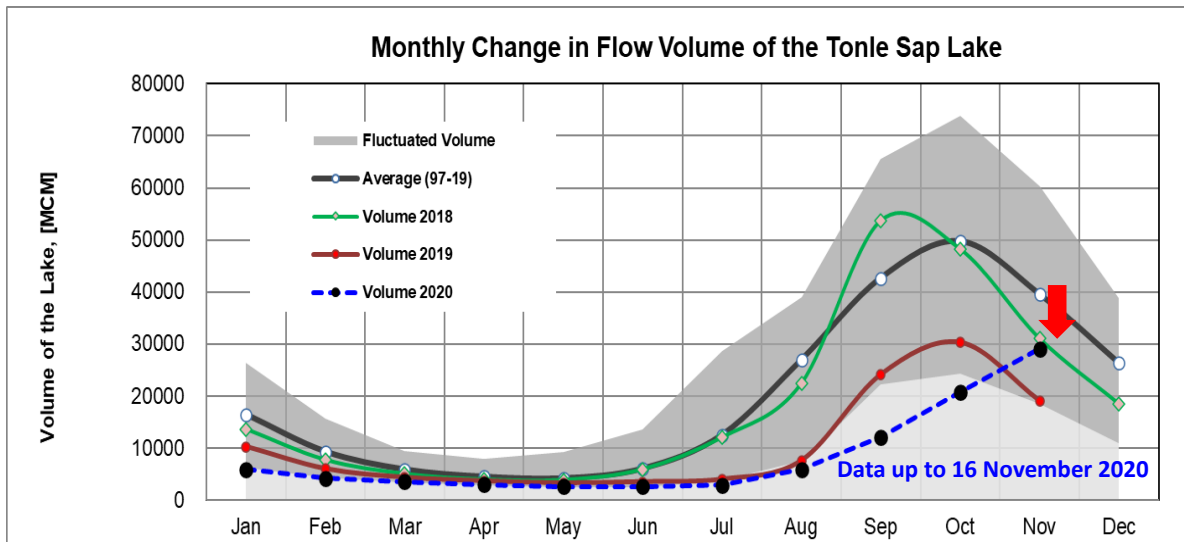


Figure 10: The seasonal change in monthly flow volume of Tonle Sap Lake.

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]	Percentage of Volume in 2020 [%]
Jan	16452.95	26357.53	6272.01	13633.41	10285.31	5906.80	35.90
Feb	9312.36	15596.22	4281.41	7729.72	6019.30	4264.19	45.79
Mar	5868.92	9438.24	3350.92	5037.06	4354.62	3553.99	60.56
Apr	4474.98	8009.14	2875.42	3956.47	3667.47	2992.61	66.87
May	4166.07	9176.93	2417.81	3864.00	3266.43	2594.92	62.29
Jun	6034.10	13635.01	2470.54	5919.18	3517.06	2641.88	43.78
Jul	12502.58	28599.56	3832.51	12024.96	4001.99	2925.86	23.40
Aug	26934.35	39015.12	7554.93	22399.65	7622.71	5941.07	22.06
Sep	42644.05	65632.35	22180.73	53639.54	24194.19	12105.31	28.39
Oct	49698.19	73757.23	24276.79	48193.08	30358.38	20799.13	41.85
Nov	39542.58	60367.33	18576.01	31036.07	19112.65	29119.84	
Dec	26325.13	38888.95	10869.43	18469.21	10577.29		
	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 November 10–16, the LMB was affected by three main weather factors. These include (i) a high pressure from China (which extended its ridge to cover the upper northern and north-eastern parts of the LMB), (ii) influences of Typhoon *Etou* (which caused landfall in Nha Trang of Viet Nam at 11:30 on 15 November and downgraded into a tropical storm and tropical depression over parts of Viet Nam and Lao PDR), and (iii) the Northeast Monsoon (which prevailed over the Gulf of Thailand). According to the MRC-Flash Flood Guidance System (FFGS) and analysis, flash flood events were detected in some areas of Viet Nam with the impact ranging from low to moderate levels, as shown in [Figure 11](#) and [Table 2](#).

The figure and table also show Flash Flood Guidance (FFG) results for the next one, three, and six hours produced on November 11 at 06:00 UTC (13:00 local time).

Table 2. Detected flash flood in Viet Nam on Nov 11.

01-Hour Flash Flood Risk and location				3-Hour Flash Flood Risk and location				6-Hour Flash Flood Risk and location			
Provinces	Districts	Region	Level Risks	Provinces	Districts	Region	Level Risks	Provinces	Districts	Region	Level Risks
Phu Yen	Tuy Hoa	South Central Coast	Low-Risk	Phu Yen	Tuy Hoa	South Central Coast	Moderate-Risk	Quang Nam	Que Son	South Central Coast	Low-Risk
Khanh Hoa	Van Ninh	South Central Coast	Low-Risk	Khanh Hoa	Van Ninh	South Central Coast	Moderate-Risk	Phu Yen	Tuy Hoa	South Central Coast	Moderate-Risk
Khanh Hoa	Ninh Hoa	South Central Coast	Low-Risk	Khanh Hoa	Ninh Hoa	South Central Coast	Moderate-Risk	Khanh Hoa	Van Ninh	South Central Coast	Moderate-Risk
Lam Dong	Lam Ha	Central Highlands	Low-Risk	Khanh Hoa	Khanh Vinh	South Central Coast	Low-Risk	Khanh Hoa	Ninh Hoa	South Central Coast	Moderate-Risk
Lam Dong	Lac Duong	Central Highlands	Low-Risk	Khanh Hoa	Khanh Son	South Central Coast	Low-Risk	Khanh Hoa	Khanh Vinh	South Central Coast	Low-Risk
				Ninh Thuan	Ninh Son	South Central Coast	Low-Risk	Khanh Hoa	Khanh Son	South Central Coast	Low-Risk
				Binh Thuan	Tuy Phong	South Central Coast	Low-Risk	Ninh Thuan	Ninh Son	South Central Coast	Low-Risk
				Dak Lak	Lak	Central Highlands	Low-Risk	Binh Thuan	Tuy Phong	South Central Coast	Low-Risk
				Lam Dong	Lam Ha	Central Highlands	Moderate-Risk	Dak Lak	Lak	Central Highlands	Low-Risk
				Lam Dong	Lac Duong	Central Highlands	Moderate-Risk	Lam Dong	Lam Ha	Central Highlands	Moderate-Risk
								Lam Dong	Lac Duong	Central Highlands	Moderate-Risk

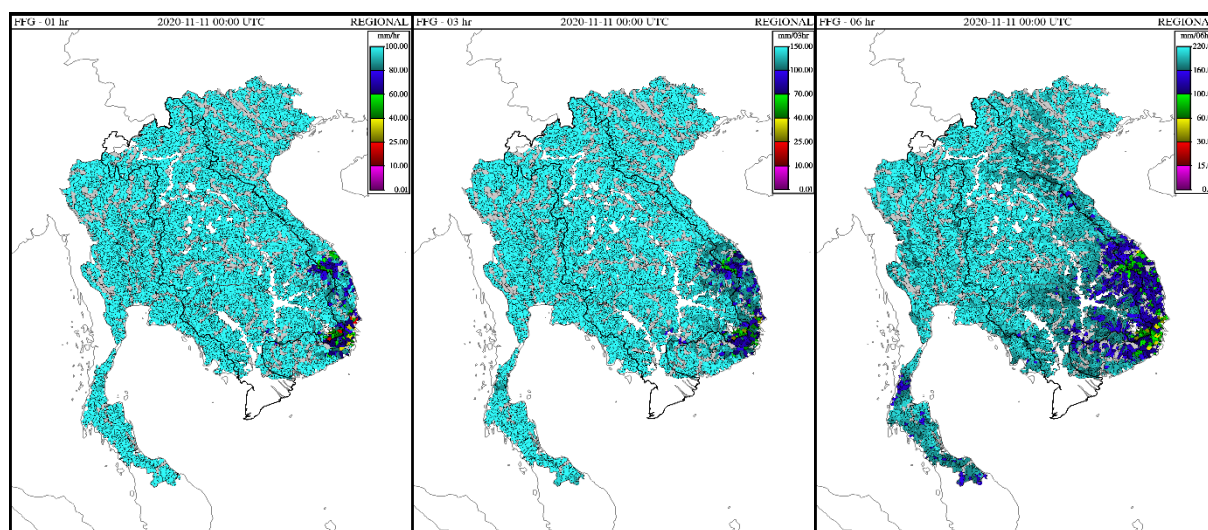


Figure 11: Flash Flood Guidance for the next 1 hour, 3 hours and 6 hours on Nov 6.

5 Drought Monitoring in the Lower Mekong Basin

Weekly drought monitoring from November 5 to 11

Drought monitoring data are available from Thursday to Wednesday every week; thus, the reporting period is normally delayed for one week compared to Flood and Flash Flood reports.

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

Drought condition of the LMB from November 5–11, as shown in [Figure 12](#), was relatively wet in the east and normal in other parts. Meteorological indicator of SPI shows that the LMB received average rainfall in most parts of the region during the monitoring week. The condition was drier than it was last week (October 29 to November 4).

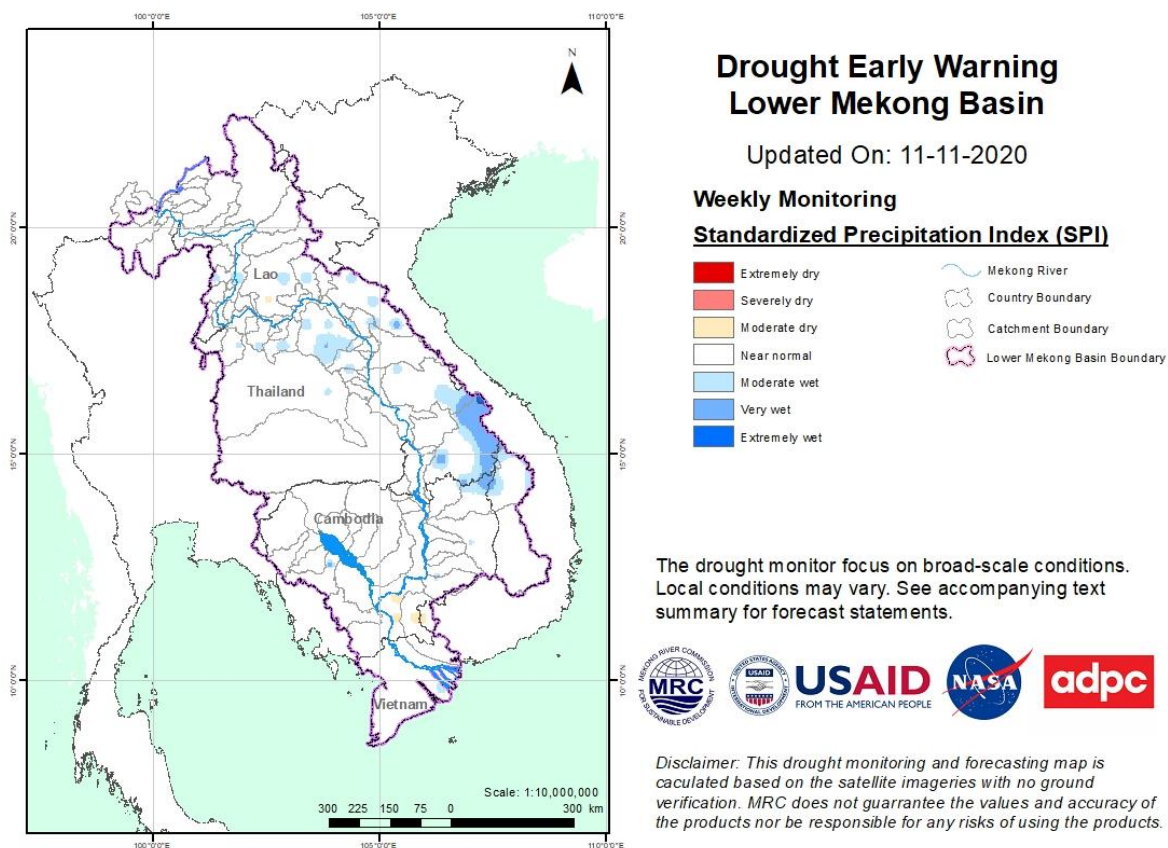


Figure 12: Weekly standardised precipitation index from Nov 5–11.

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

Soil moisture condition from November 5 to 11, as displayed in [Figure 13](#), was still relatively wet in the middle and southern parts of Lao PDR and the 3S area but was severely dry in the upper part of the LMB. The driest area was in the north covering Chiang Mai, Chiang Rai, and Payao of Thailand; and Bokeo, Luang Namtha, Xayaburi, Phongsaly, Luang Prabang, Xieng Khuang, and Vientiane of Lao PDR. Other areas were at a normal condition during the monitoring week. The condition was very much similar to that of last week (October 29 to November 4).

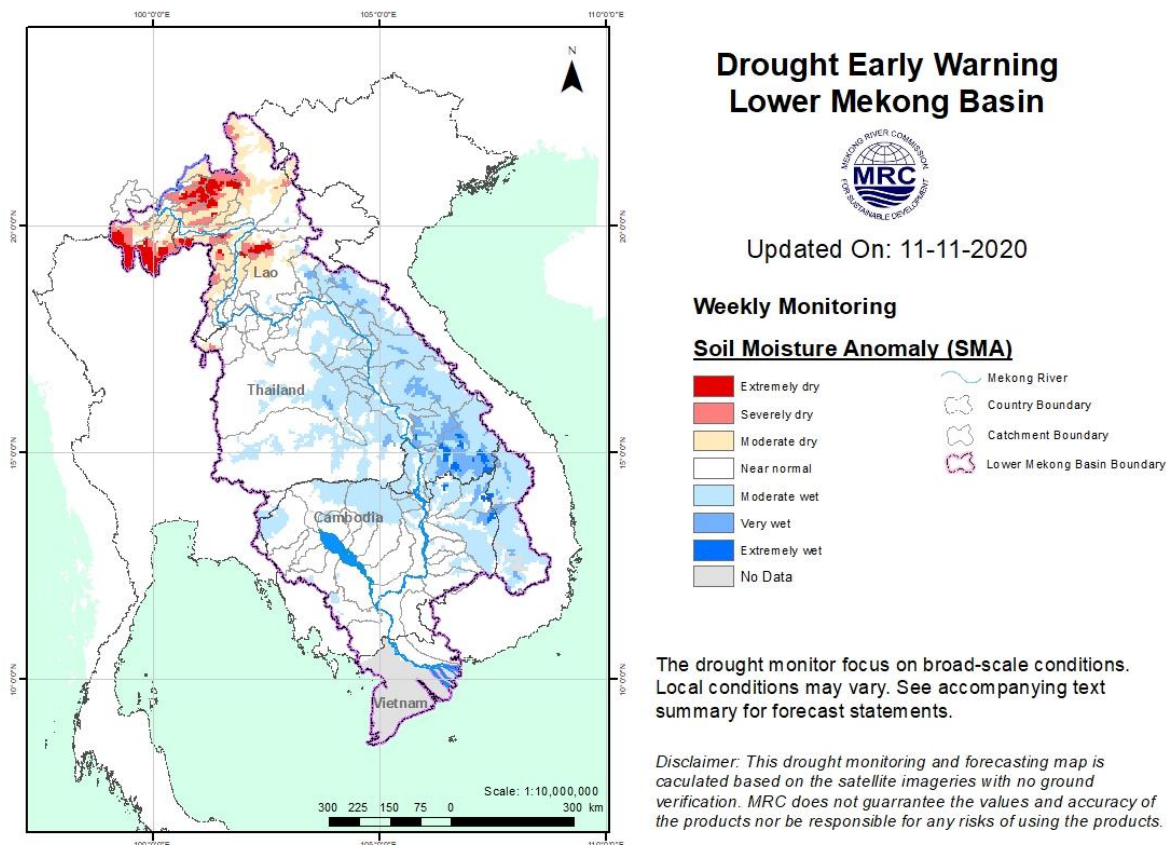
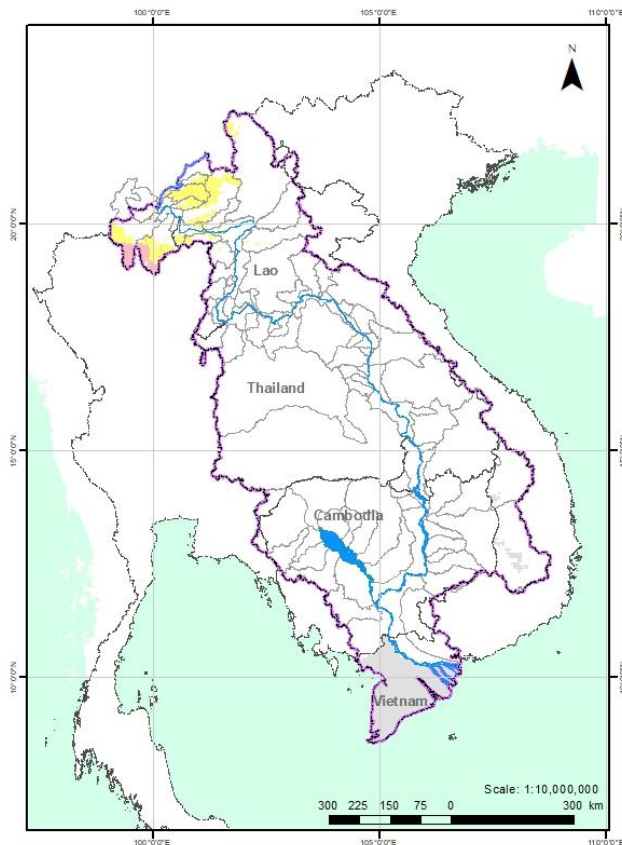


Figure 13: Weekly Soil Moisture Anomaly from Nov 5 to 11.

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

Even though soil moisture condition presented a bit drier in the northern part of the LMB, the overall drought condition through combined drought index from November 5 to 11, as displayed in [Figure 14](#), shows no drought threat over the region. The only moderate and little severe dry condition is found in the northern part of the region which covers small areas of Thailand’s Chiang Mai, Chiang Rai, and Phayao, and Lao PDR’s Bokeo and Luang Namtha.





Drought Early Warning Lower Mekong Basin



Updated On: 11-11-2020

Weekly Monitoring

Combined Drought Index (CDI)

	D4 (Exceptional Drought)		Mekong River
	D3 (Extremely Drought)		Country Boundary
	D2 (Severely Drought)		Catchment Boundary
	D1 (Moderate Drought)		Lower Mekong Basin Boundary
	D0 (Normal Condition)		
	No Data		

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

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

Figure 14: Weekly Combined Drought Index during Nov 5-11.

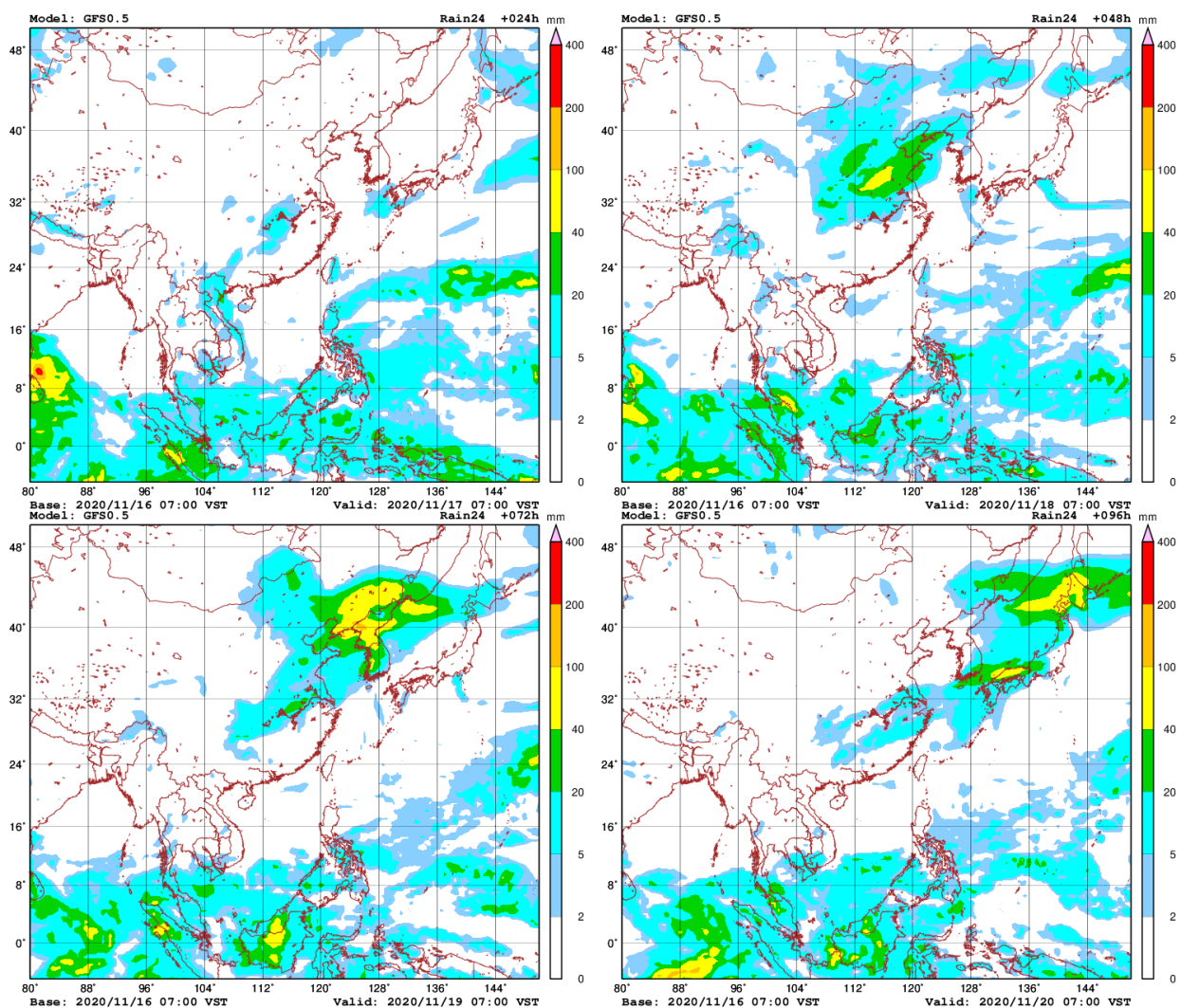
More information on Drought Early Warning and Forecasting as well as the explanation is available here: <http://droughtforecast.mrcmekong.org/templates/view/our-product>.

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 factors affecting the LMB. They include (i) Typhoon's circulation, (ii) Monsoon *Trough* moving from the upstream part, and (iii) the on-going prevailing Southwest Monsoon from the Gulf of Thailand to the lower part of the LMB. During that period, small (5-20 mm/24hrs) may occur in some areas from the middle to lower part of the LMB.

[Figure 15](#) shows accumulated rainfall forecast (24hrs) of the GFS model from November 17 to 23.



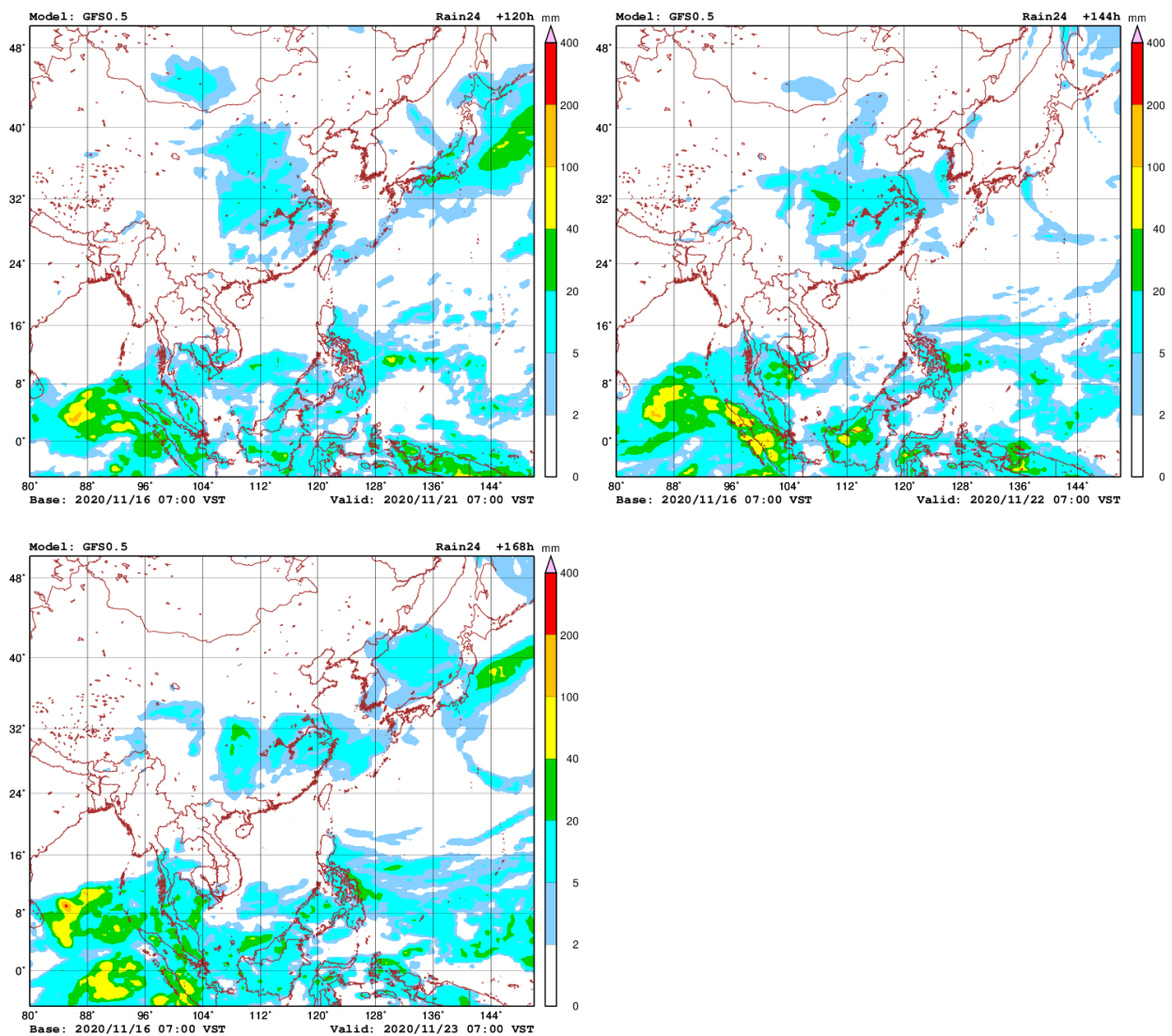


Figure 15: Accumulated rainfall forecast (24 hrs) of model GFS.

6.2 Water level forecast

Chiang Saen and Luang Prabang

Based on November 16's weekly river monitoring bulletin, the weekly forecast water level at Chiang Saen in Thailand is expected to slightly increase from 2.47 metres to 2.63 metres in the next seven days. Even so, the trend of water levels at these stations will continue staying below their LTAs.

For Luang Prabang in Lao PDR, the water level will decrease from 8.92 metres to about 8.67 metres during the same period. The current water levels are higher than their LTAs.

Chiang Khan, Vientiane-Nong Khai and Paksane

Water level at Vientiane station in Lao PDR is forecasted to go up slightly from 2.14 metres to 2.22 metres. At Paksane in Lao PDR, the level will also increase slightly from 2.54 metres to

2.63 metres in the next seven days. Low-average quantity of precipitation is forecasted in the area. The water levels here will remain lower than their LTAs, nevertheless.

Nakhon Phanom to Pakse

Water levels from Nakhon Phanom in Thailand and Thakhek in Lao PDR will slightly decrease by about 0.03 metres in the next seven days. From Khong Chiam in Thailand to Pakse in Lao PDR the water will decrease by about 0.06 metres.

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

From Stung Treng to Neak Luong along the Mekong River in Cambodia, water levels will decrease by about 0.26 meters in the next seven days as no heavy rain is forecasted in the surrounding areas.

Water levels of the Tonle Sap Lake at Prek Kdam and Phnom Penh Port, as well as at Phnom Penh, Chaktomuk, and Koh Khel on the Bassac River, will decrease by about 0.13 metres over the next seven days.

With the trend, water levels at these stations will continue staying below their LTA levels, particularly from the Bassac at Phnom Penh to Neak Luong.

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 below their LTAs, following daily tidal effects from the sea.

[Table 3](#) shows the weekly River Monitoring Bulletin issued on November 16. 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 December 2020. The MRC's Drought Forecasting and Early Warning System (DFEWS) adopts an ensemble model, which averages all scenarios called the North America Multi-Model Ensemble (NMME).

Temporarily, the global scale of rainfall prediction is used to see how the rain distribution looks like for the coming months. [Figure 17](#) of the monthly anomaly maps shows daily average of each month in mm/day from October to December 2020 produced by the NMME.

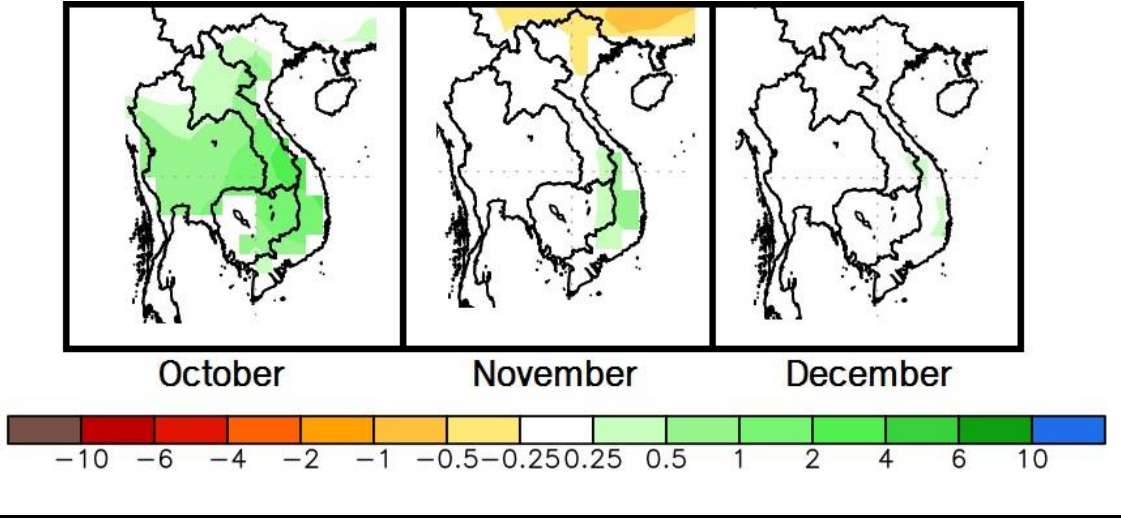


Figure 16: Daily average of monthly rainfall anomaly forecast from Oct to Dec 2020.

From the ensemble prediction model, the LMB is likely to receive average rainfall in November and the least rainfall amount in December 2020. Among the upcoming two months, November is likely wet in the southeast and a bit dry in the upper north.

Table 3. 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: 17 November to 23 November 2020

Date: 16 November 2020

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)						
					15-Nov	16-Nov	17-Nov	18-Nov	19-Nov	20-Nov	21-Nov	22-Nov	23-Nov
Jinhong		-	-	-	-	-							
Chiang Saen		0.0	357.110	0.00	2.72	2.47	2.37	2.32	2.30	2.35	2.45	2.55	2.63
Luang Prabang		0.0	267.195	2.53	8.84	8.92	8.83	8.68	8.60	8.55	8.52	8.58	8.67
Chiang Khan		0.0	194.118	1.91	5.20	5.42	5.50	5.55	5.45	5.40	5.35	5.30	5.35
Vientiane		0.0	158.040	-0.28	2.14	2.14	2.30	2.35	2.39	2.32	2.30	2.26	2.22
Nongkhai		0.0	153.648	0.33	2.32	2.22	2.35	2.41	2.45	2.40	2.37	2.32	2.30
Paksane		0.0	142.125	0.10	2.77	2.54	2.50	2.61	2.67	2.71	2.67	2.65	2.63
Nakhon Phanom		2.4	130.961	0.18	2.35	2.25	2.15	2.12	2.18	2.22	2.24	2.22	2.21
Thakhek		2.3	129.629	1.38	3.62	3.51	3.40	3.36	3.29	3.35	3.38	3.35	3.36
Mukdahan		0.0	124.219	0.72	2.72	2.70	2.63	2.60	2.58	2.64	2.69	2.71	2.72
Savannakhet		0.0	125.410	-0.65	1.95	1.92	1.88	1.85	1.84	1.86	1.88	1.89	1.89
Khong Chiam		0.0	89.030	1.02	4.48	4.44	4.37	4.30	4.26	4.22	4.29	4.36	4.40
Pakse		0.0	86.490	0.03	3.10	3.12	3.07	3.02	3.00	2.97	3.02	3.07	3.10
Stung Treng		0.0	36.790	0.32	4.77	4.50	4.33	4.21	4.13	4.10	4.07	4.10	4.14
Kratie		0.0	-1.080	3.06	12.47	11.82	11.41	11.17	11.02	10.91	10.87	10.82	10.85
Kompong Cham		0.0	-0.930	0.65	7.71	7.51	7.16	6.90	6.73	6.62	6.54	6.50	6.45
Phnom Penh (Bassac)		0.0	-1.020	1.58	5.85	5.85	5.70	5.57	5.48	5.43	5.38	5.36	5.34
Phnom Penh Port		nr	0.000	0.14	4.86	4.96	4.80	4.65	4.55	4.50	4.45	4.42	4.40
Koh Khel		0.0	-1.000	1.52	5.29	5.28	5.18	5.08	5.02	5.00	4.97	4.95	4.93
Neak Luong		0.0	-0.330	0.81	4.28	4.28	4.18	4.05	3.98	3.92	3.88	3.84	3.82
Prek Kdam		0.0	0.080	0.58	5.46	5.45	5.33	5.22	5.15	5.09	5.04	5.00	4.97
Tan Chau		nr	0.000	-0.37	2.52	2.50	2.46	2.42	2.38	2.35	2.37	2.36	2.33
Chau Doc		nr	0.000	-0.60	2.55	2.52	2.47	2.42	2.38	2.34	2.34	2.32	2.28

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

Rainfall during this reporting week was considered above average in the lower parts of the LMB (1.1–90.5 mm). However, rainfall in the **upper and middle parts** were considered very low, varying from 0.1 mm to 2.4 mm at different stations along the LMB from Chiang Saen to Khong Chiam in Thailand. The highest concentration was at Cambodia's Stung Treng to Viet Nam's Tan Chau-Chau Doc (up to 90.5 mm). Compared with last week's amount, the rainfall this week was considered lower in the whole Mekong region.

Based on the forecasted rainfall from satellite using GFS data, rainfall is likely to take place in the areas from Pakse in Lao PDR to the low area of Cambodia and the Central Highland of Viet Nam, varying from 10 mm to 50 mm during November 17–23. This indicated the start of the dry season from November over the LMB.

7.2 Water level and its forecast

Water levels in the lower part of the monitoring locations in the LMB during this reporting week were decreasing from Khong Chiam in Thailand to Stung Treng, Kratie and Kompong Cham in Cambodia, after the end of heavy rainfall at the end of October. Water levels at Neak Luong, Bassac at Phnom Penh, and Prek Kdam in Cambodia were still lower than their LTA levels. The low level was due to little rainfall in the region from November 6 to 10. Generally, this week's water levels were relatively lower than those of last week from the upper to the lower part of the LMB.

The starting date of the reverse flow from the Mekong River into the Tonle Sap Lake took place on August 4, slightly late compared to a normal event. However, two extremely small and brief instances happened in July. Due to heavy rainfall in late October 2020, the water volume of the Lake at this reporting point is higher than 2019 and higher than those of 2018. However, it is lower than its LTA which is considered critical a level.

Over the next few days, water levels across most monitoring stations in the LMB are expected to continue slightly decreasing, ranging between 0.02 and 0.27 metres. Such a situation will continue to put most stations' water levels below their LTAs, except at Stung Treng and Kratie where water levels will stay higher than their LTA levels.

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

Below average precipitation during the past months (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 this year (2020), water levels in the LMB have been lower than their LTAs for all monitoring stations (from upper to lower stretches within the LMB). Like many

parts of the world, the Mekong region has been 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. Therefore, the main cause of low water levels in the Mekong mainstream from June to July 2020 could be the unusual low rainfall as results of the climate change affecting the Lower Mekong Region.

For a more complete preliminary analysis of the hydrological conditions in the LMB over January–July 2020, please refer to this [Situation Report](#).

The contribution to the Mekong River’s flow from the Upper Mekong Basin 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 moderate amounts of rainfall for the coming week as mentioned earlier in [section 6.1](#), major flash floods are likely not to happen in the region.

7.4 Drought condition and its forecast

Drought condition of the LMB from November 5 to 11 was very much similar to last week (October 29 to Nov 4). The region only showed some little moderate and severe dry soil moisture in the northern part and no meteorological drought in the whole LMB. In general, drought condition was getting much better - with no potential threat - over the region.

For the upcoming two-month forecast, the LMB is likely to receive average rainfall in November, and the least rainfall amount in December 2020. November is likely wet in the southeast and a bit dry in the upper north.

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

Table A1: Weekly observed water levels

2020	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
10-11-2020	535.96	2.51	8.70	5.95	2.30	2.74	2.79	2.12	2.59	3.34	4.64	11.90	7.42	5.97	5.36	4.38	5.54	2.13	2.07
11-11-2020	536.42	2.50	8.72	6.00	2.42	2.85	2.87	2.12	2.56	3.30	4.50	11.78	7.28	5.88	5.24	4.32	5.48	2.18	2.15
12-11-2020	536.49	2.49	8.44	5.82	2.55	2.93	2.96	2.22	2.57	3.10	4.77	11.44	7.10	5.79	5.12	4.27	5.37	2.35	2.30
13-11-2020	536.07	2.71	8.36	5.56	2.40	2.84	3.04	2.28	2.62	3.00	5.03	11.80	7.10	5.68	5.08	4.22	5.33	2.49	2.49
14-11-2020	536.83	2.93	8.79	5.16	2.23	2.73	2.98	2.35	2.65	2.95	5.16	12.40	7.35	5.71	5.14	4.18	5.37	2.49	2.50
15-11-2020	535.25	2.72	8.84	5.20	2.14	2.32	2.77	2.35	2.72	3.10	4.77	12.47	7.71	5.85	5.29	4.28	5.46	2.52	2.55
16-11-2020	535.86	2.47	8.92	5.42	2.14	2.22	2.54	2.25	2.70	3.12	4.50	11.82	7.51	5.85	5.28	4.28	5.45	2.50	2.52

Table A2: Weekly observed rainfall

2020	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
10-11-2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
11-11-2020	0	0	0	0	0	0	0	0	0	0	5	27.8	6.2	0.8	0	0	0	0	0
12-11-2020	0	8.3	0	0	0	0	0	0	0	0	72.5	7.7	1.1	0	0	0	0	0	0
13-11-2020	0	0	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	2	24
14-11-2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15-11-2020	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16-11-2020	0	0	0	0	0	0	0	2.4	0	0	0	0	0	0	0	0	0	0	0



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