Mekong River Commission

Weekly Dry Season Situation Report in the Lower Mekong River Basin

2 – 8 February 2021

Prepared by
The Regional Flood and Drought Management Centre
9 February 2021

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

Title: Weekly dry season situation report in the Lower Mekong River Basin for 2-8 February 2021

ISSN: 1728-3248

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

For bibliographic purposes, this volume may be cited as:
Mekong River Commission. (2021). *Weekly dry season situation report in the Lower Mekong River Basin for 2-8 February 2021*. 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 the period from **2-8 February 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 (February, March, and April) and the weather maps issued by the Thai Meteorological Department (TMD) were used to verify weather conditions in the LMB.

The TMD states that February is the transitional period between winter and summer. The high-pressure air mass areas prevailing over the Mekong region will start to weaken in February. The TMD also predicts that rising air-temperature will occur from this month, prevailing hot season over the Mekong region in between February and April.

Figure 1 presents the weather map of 7 February 2021, showing a line of low pressure crossing the Mekong region which may bring some rainfall over the next few days.

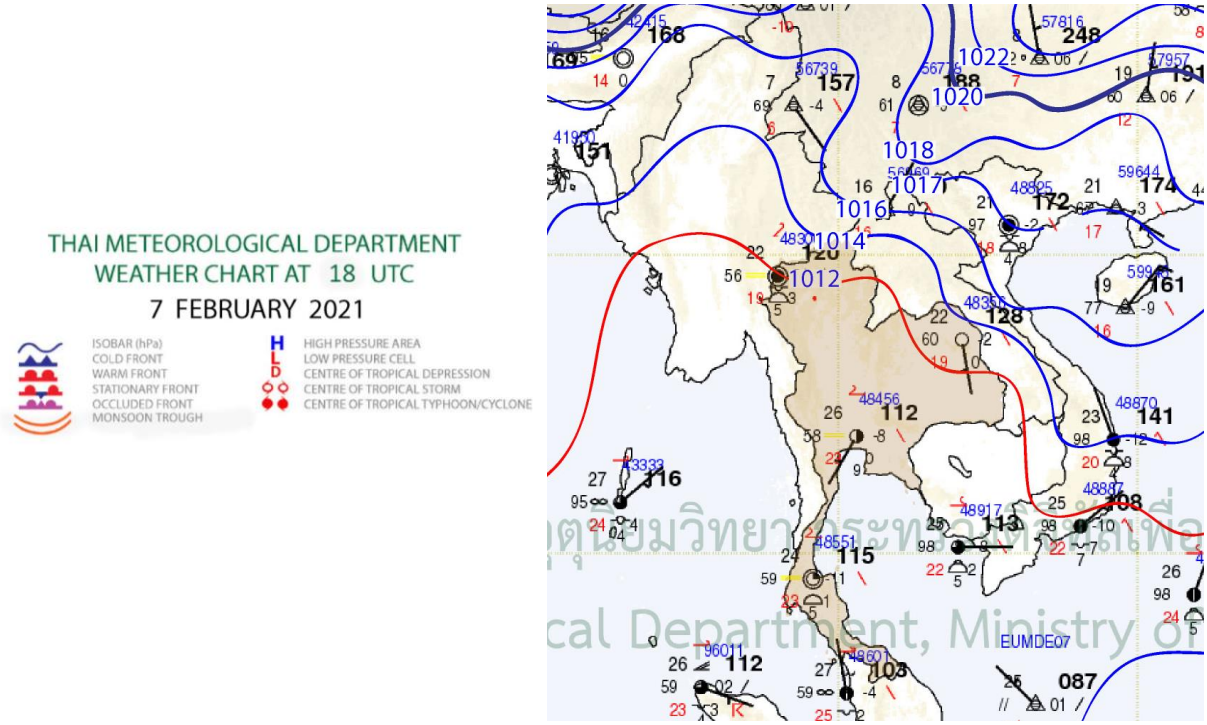


Figure 1: Summary of weather conditions over the LMB.

According to the ASEAN Specialised Meteorological Centre (ASMC), wetter conditions are predicted over the southern part of Southeast Asia and the upper part of the LMB covering Lao PDR and Viet Nam during 8-21 February 2021. However, during this time, the ASMC says that warmer condition may still influence the region.

Figure 2 shows the outlook of comparative warm conditions from 8 to 21 February 2021 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

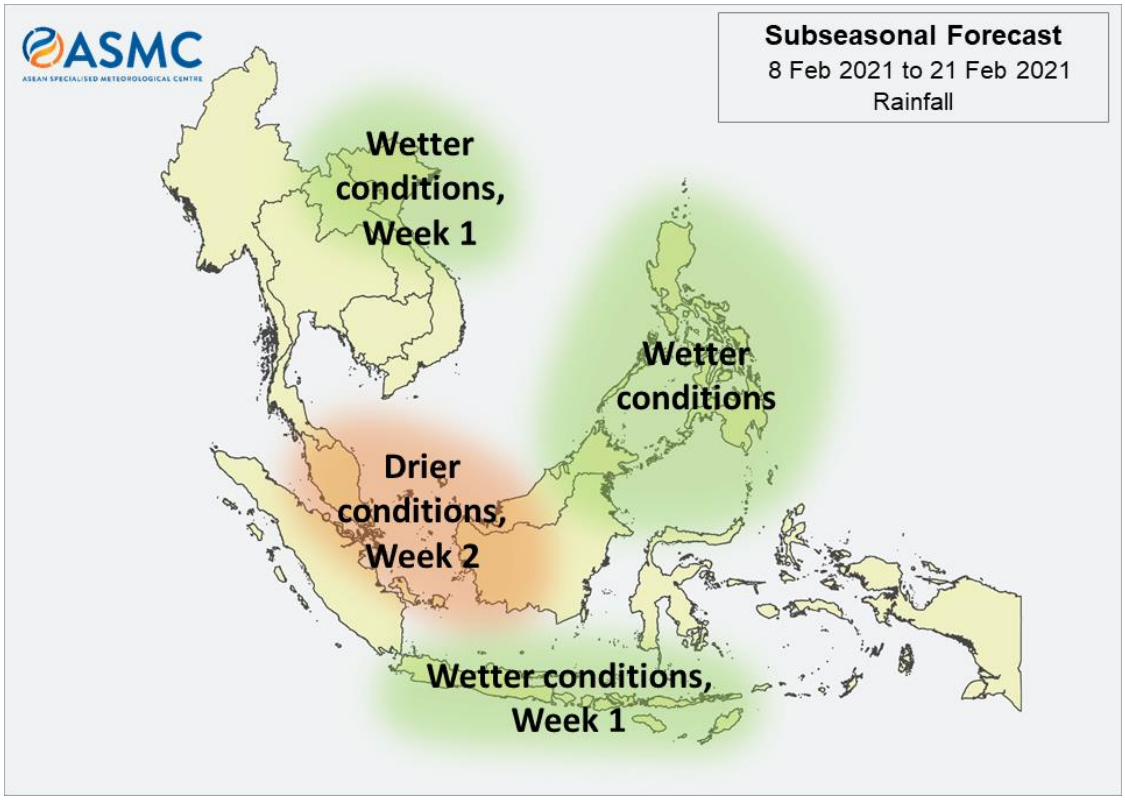


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

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

There was a low-pressure line taking place in the lower part of the LMB during 8 February 2021, as shown in Figure 1. This condition may bring some rain in the LMB. However, based on Tropical Strom 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 on 8 February 2021.

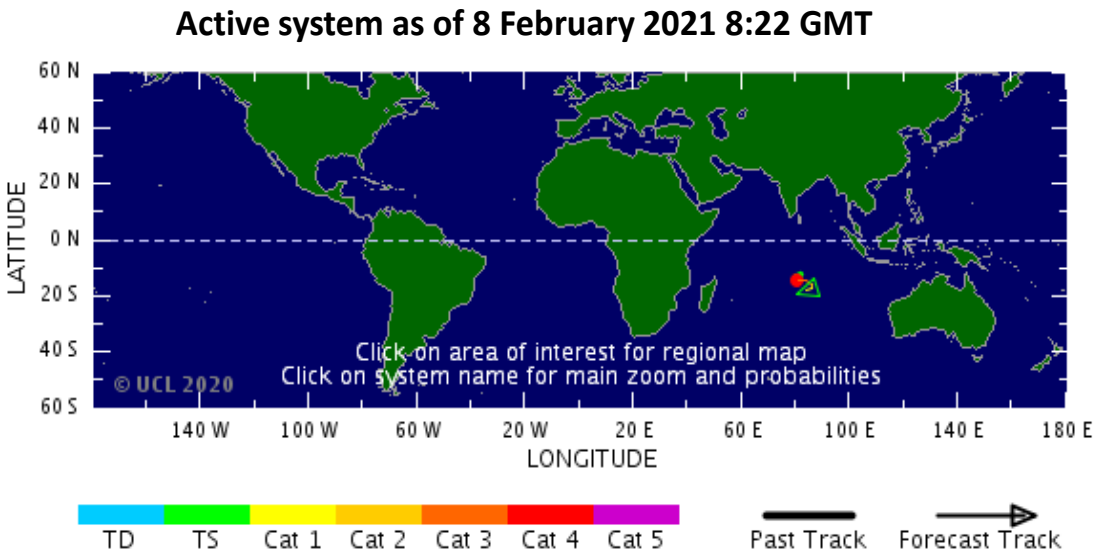


Figure 3: A Tropical Depression risk observed on 8 February 2021.

2.2 Rainfall patterns over the LMB

This week, no rainfall was recorded for most of the key stations along the Mekong mainstream, except at Thailand's Luang Prabang where rainfall was up to 35 mm. This value of rainfall is considered very small. The total observed rainfall of the week at key stations, compared with average rainfall in January is presented in Figure 4.

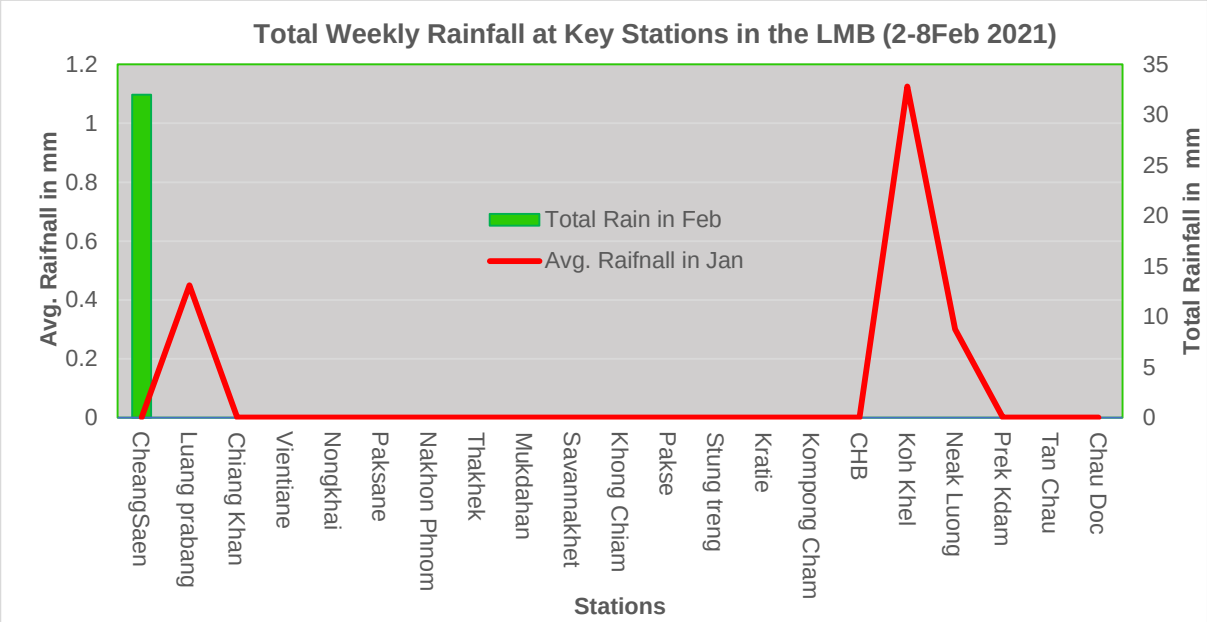


Figure 4: Weekly total rainfall at key stations in the LMB during 2-8 Feb 2021.

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 2 to 8 February 2021.

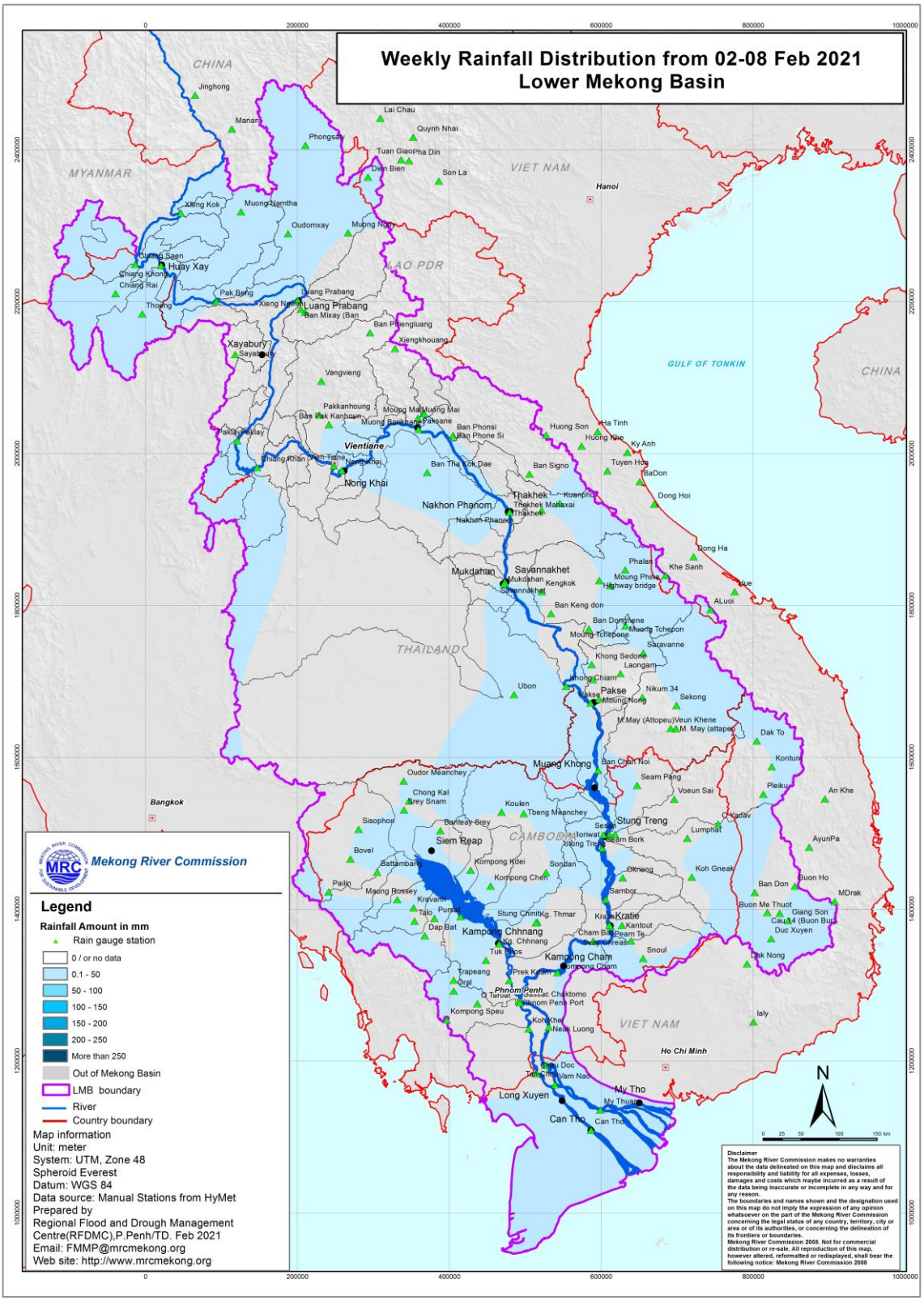


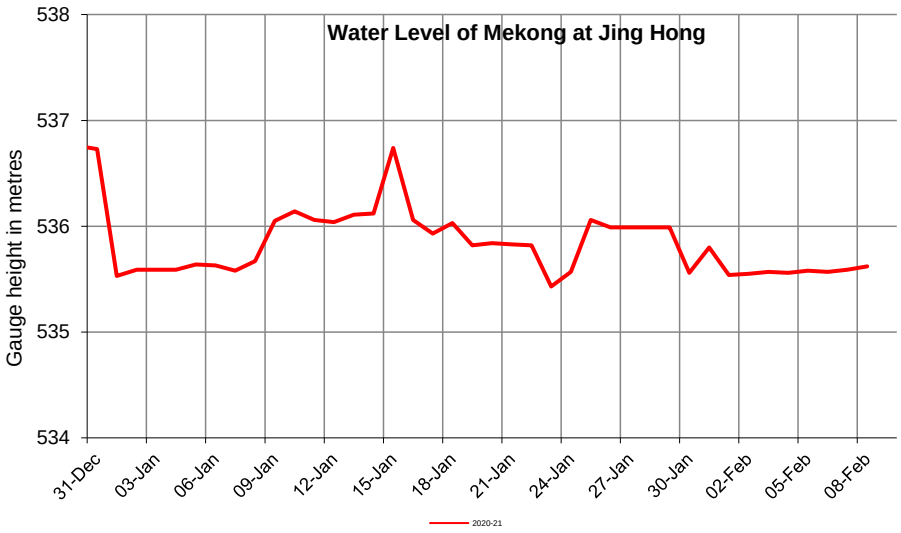
Figure 5: Weekly rainfall distribution over the LMB during 2-8 Feb 2021.

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 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.

China notified the Mekong River Commission on January 5 stating that Jinghong Dam would release outflows at 1,000 cubic meters per second (m^3/s) from January 5 to 24 for power grid maintenance. This is a significant decrease of flow from its original amount of 1,410 m^3/s on 31 December 2020 down to 768 m^3/s on 1 January 2021. Furthermore, between January 29 and February 8, the flow was reduced from 990m3/s to 800 m3/s. It seems that China's Jinghong Dam is still restricting the release to the Mekong downstream. Water level fluctuation from January 1 to February 8 at Jinghong Dam is presented in the graph below.



The near-real time of hydro-meteorological monitoring at Jinghong Station is presented at https://portal.mrcmekong.org/monitoring/river-monitoring-telemetry.
It was observed that up to 8 February 2021, water levels from Chiang Saen in Thailand to Vientiane in Lao PDR were slightly increasing and were still higher than their TLAs. Water levels from Nakhon Phanom to Pakse in Thailand and Lao PDR decreased about 0.20 metres (from 2 to 8 Feb 2021). It was probably due to the influence of both the Mekong-Lancang upstream and downstream dam operation at Mekong mainstream and its tributaries during the Dry Season.

The increased water level at Jinghong of about 0.42 metres from January 5 to 25 has made water levels at both Thailand's Chiang Saen and Lao PDR's Vientiane higher than their LTAs. This means that the practices of Jinghong Hydropower during January 4 and 24 have significant impacts on the water flow and water levels at Chiang Saen areas.

Based on a hydrological phenomenon, the inflow contribution of water from the upstream of Lancang-Mekong in China to the Mekong mainstream is about 20% in total during the dry season from November to May. The whole inflow of water into the lower Mekong basin is influenced not only by the Mekong-Lancang upstream but also by downstream dam operation at Mekong mainstream and its tributaries during the Dry Season.

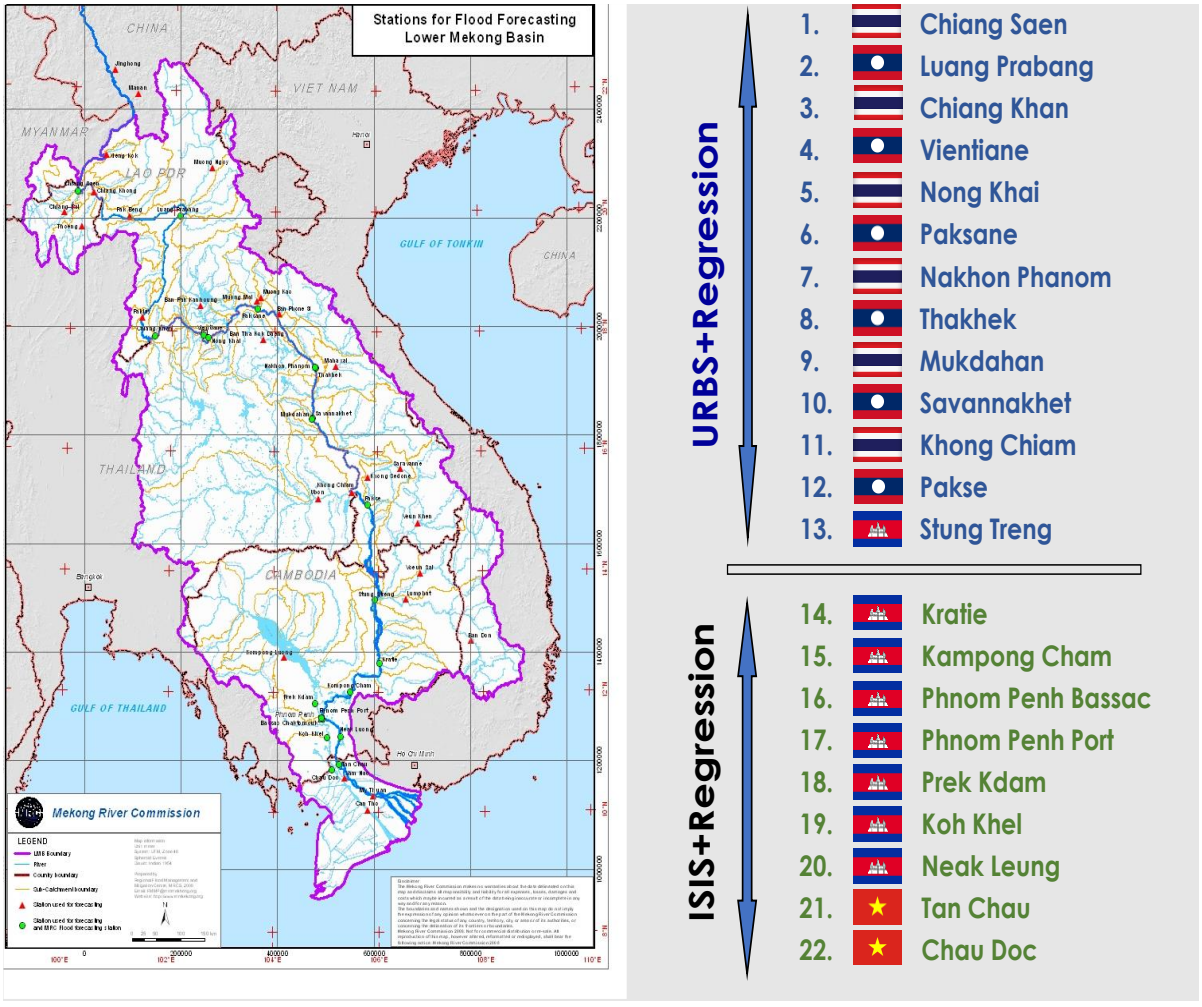


Figure 6: Key stations and model application for River Monitoring and Flood Forecasting.

Chiang Saen and Luang Prabang

The water level from 2 to 8 February 2021 at Thailand's Chiang Saen slightly decreased from 1.94 metres to 1.78 metres. This week's water level is 0.17 metres higher than its long-term average (LTA). When compared to last week, the level this week is lower.

The water level at the Luang Prabang station in Lao PDR slightly decreased from 8.68 metres to 8.60 metres, during the reporting period. This level shows 0.12 metres higher than its maximum level.

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 decreased from 3.86 metres to 3.62 metres during this week, showing 0.10 metres below its LTA value. Downstream water levels from Vientiane to Paksane in Lao PDR were decreasing. The decreased values varied between -0.08 metres and -0.03 metres. The current water level at Vientiane is about 0.51 metres higher than its LTA value. But the water level at Nong Khai is about 0.60 metres lower than its LTA, while the water level at Paksane is about 0.34 metres lower than its historical minimum level. **Water levels at Nong Khai and Paksane are considered very critical, as shown in Figure 7** .

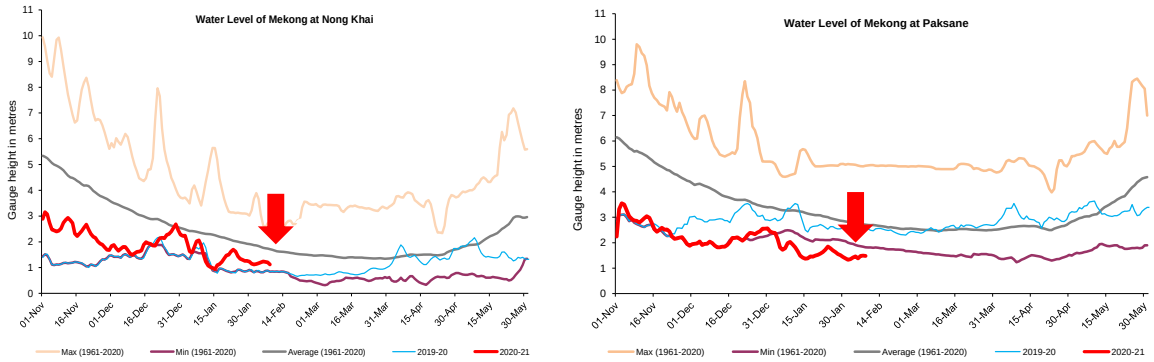


Figure 7: Water levels at Paksane of Lao PDR.

Nakhon Phanom to Pakse

Water levels from Nakhon Phanom to Mukdahan in Thailand slightly increased by about 0.10 metres, except at Pakse in Lao PDR which decreased about 0.25 metres during the reporting period. However, the weekly water levels at these stations were lower than their LTAs but higher than the 2019's level, as shown in Figure 8. **The water levels at Nakhon Phanom to Pakse are considered critical.**

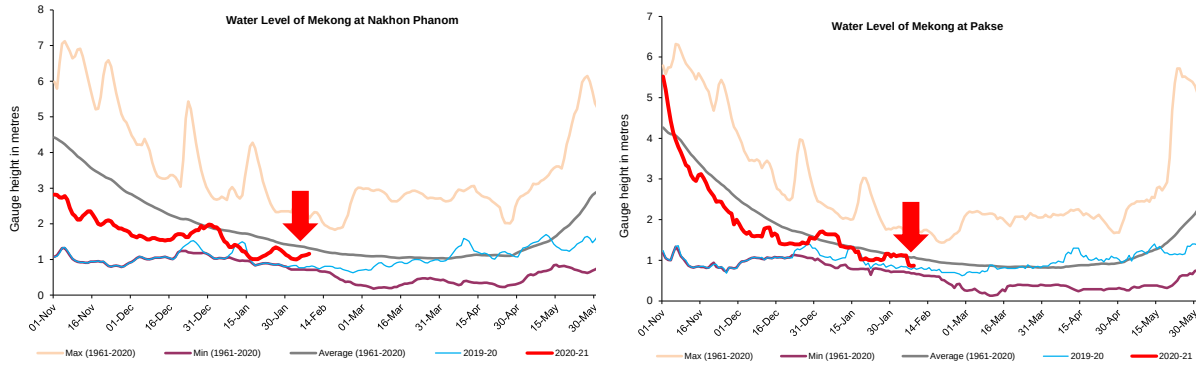


Figure 8: Water levels at Nakhon Phanom and Pakse of Thailand and Lao PDR.

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

With less contribution of flows from 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 in Cambodia slightly decreased accordingly. However, this week water levels were about 0.10 metres higher than their LTAs, as shown in Figure 9.

Water levels in Cambodia's Kompong Cham, Neak Luong on the Mekong River, Koh Khel on the Bassac River and Prek Kdam on the Tonle Sap River were decreasing, remaining lower than their LTAs. The decrease was about 0.25 metres during this reporting week.

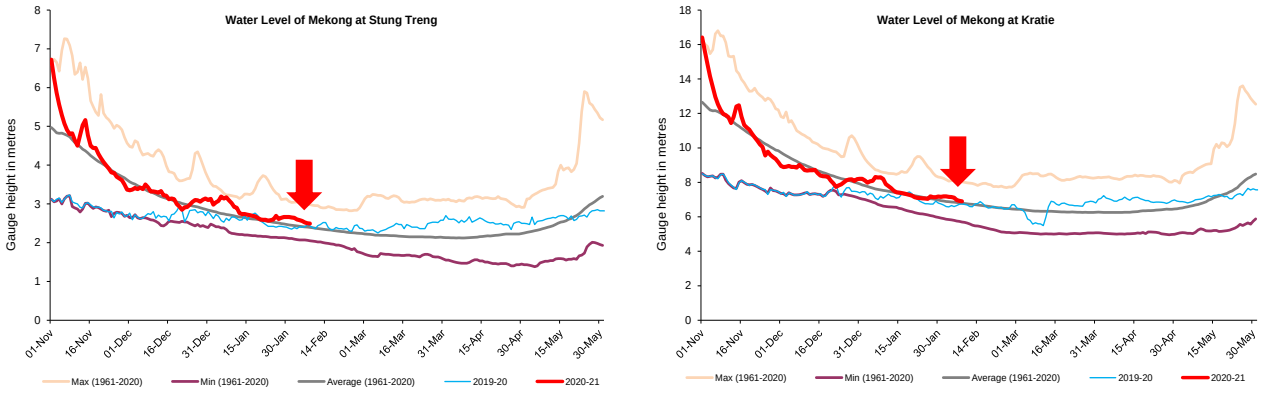


Figure 9: Water levels at Stung Treng and Kratie on the Mekong River.

Tidal stations at Tan Chau and Chau Doc

Like last week, from 2 to 8 Feb 2021, water levels at the two stations of Viet Nam's Tan Chau and Chau Doc were fluctuating over their LTAs due to daily tidal effects from the sea.

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) returns to the Mekong mainstream and then to the Delta. This phenomenon normally takes place from mid-October to early November. The delay of the outflow was due to the heavy rain from last October in some of the inflow tributaries around the TSL

Figure 10 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 8 February 2021 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 flows but higher than the 2019's flow. From next week, the outflow is expected to decrease more, since water levels at downstream parts of the Mekong and Bassac rivers are lower than their LTAs levels which can extract flow from the Lake.

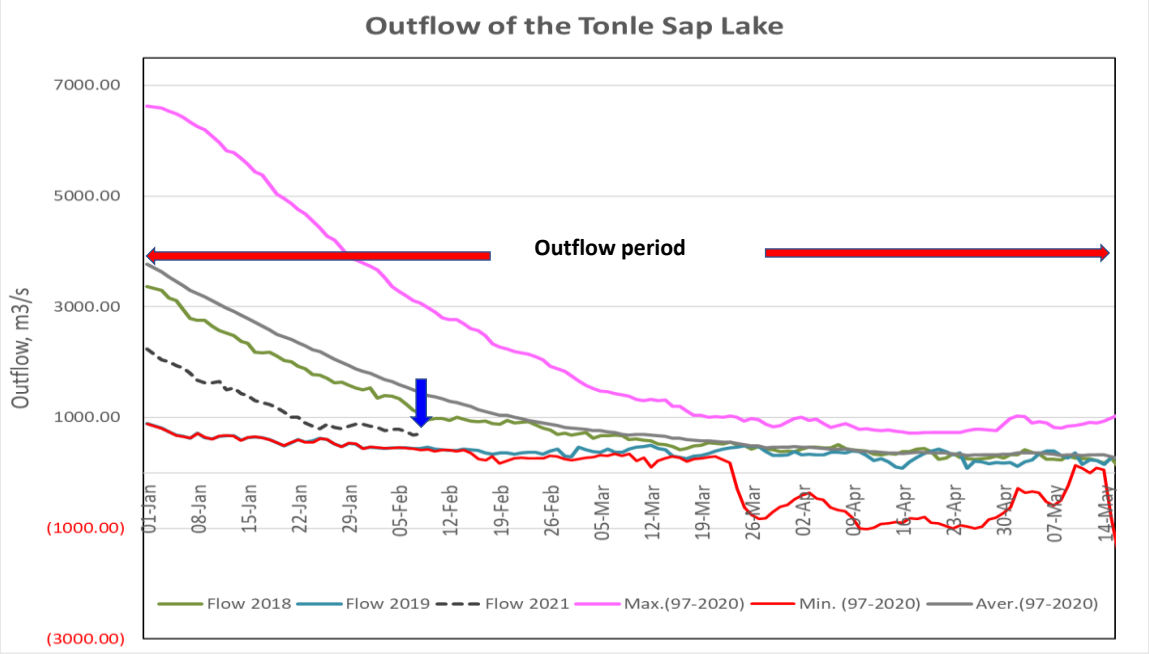


Figure 10: Seasonal change of inflows and outflows of Tonle Sap Lake.

The 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 11 shows seasonal changes in monthly flow volumes up to February 8 for the TSL compared with the volumes in 2018 and 2019 and their LTA and the fluctuating levels (1997–2019). **It shows that up to 8 February the water volumes of the Lake were higher than those of 2019 and lower than those of 2018 during the same period**. This is clearly evidenced in Table 1, which indicates that the TSL has been affected by inflows from the Mekong River, the tributaries, and rainfall in the surrounding sub-catchments.

The increased inflows (inflows from the Mekong River and tributaries) of the TSL in October 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, 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 Tonle Sap Lake water levels and on its hydrology.

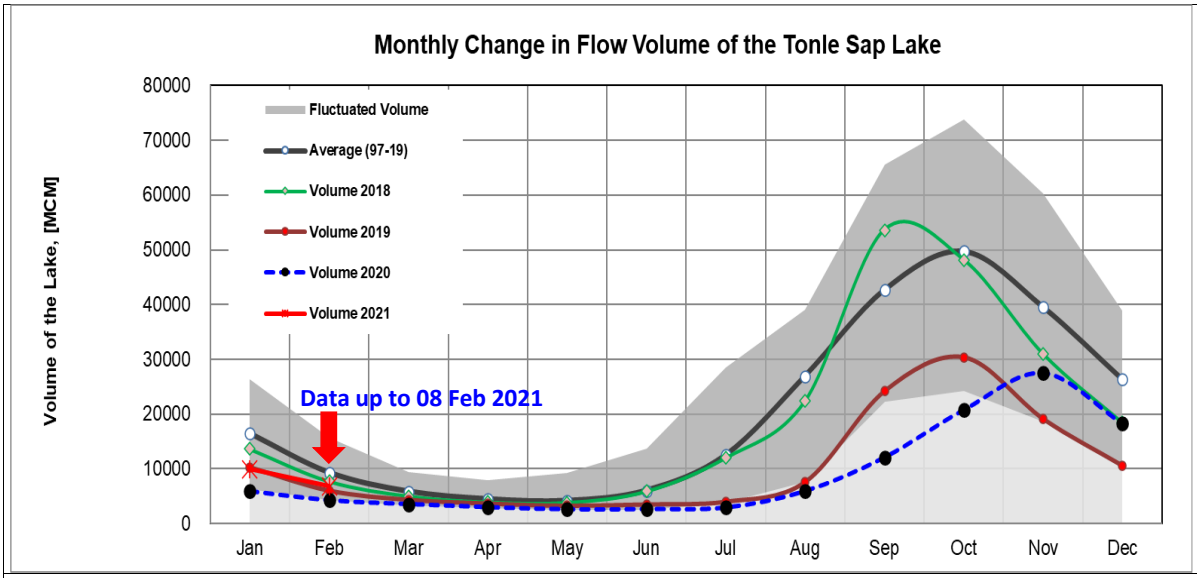


Figure 11: The seasonal change in monthly flow volume of Tonle Sap Lake.

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	6832.63
Mar	5868.92	9438.24	3350.92	5037.06	4354.62	3553.99	
Apr	4474.98	8009.14	2875.42	3956.47	3667.47	2992.61	
May	4166.07	9176.93	2417.81	3864.00	3266.43	2594.92	
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, comapred with historical Min values						
	Normal condition, compared with LTA (Long term average)						
	Low volume situation, comapred with LTA values						
Unit: Million Cubic Meter (1 MCM= 0.001 Km^3)							

4 Flash Flood in the Lower Mekong Basin

From 2 to 8 February 2021, the LMB was affected by two main weather factors. These include (i) the active high pressure from China which extended its ridge over the upper and middle parts of the LMB causing some cold weather in the northern and north-eastern areas; and (ii) the strong northeast monsoon which prevailed over the Gulf of Thailand.

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 30 January to 5 February 2021

Drought monitoring data for 2021 are available from Saturday to Friday every week; thus, the reporting period is normally three days delayed compared to Flood and Flash Flood reports.

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

Drought condition of the LMB from 30 January to 5 February 2021, as shown in Figure 12, was normal in most parts. Meteorological indicator of SPI shows that the LMB did not receive any rainfall during the monitoring week and was normal compared with its historical records. The condition was very much similar to last week (23-29 January 2021).

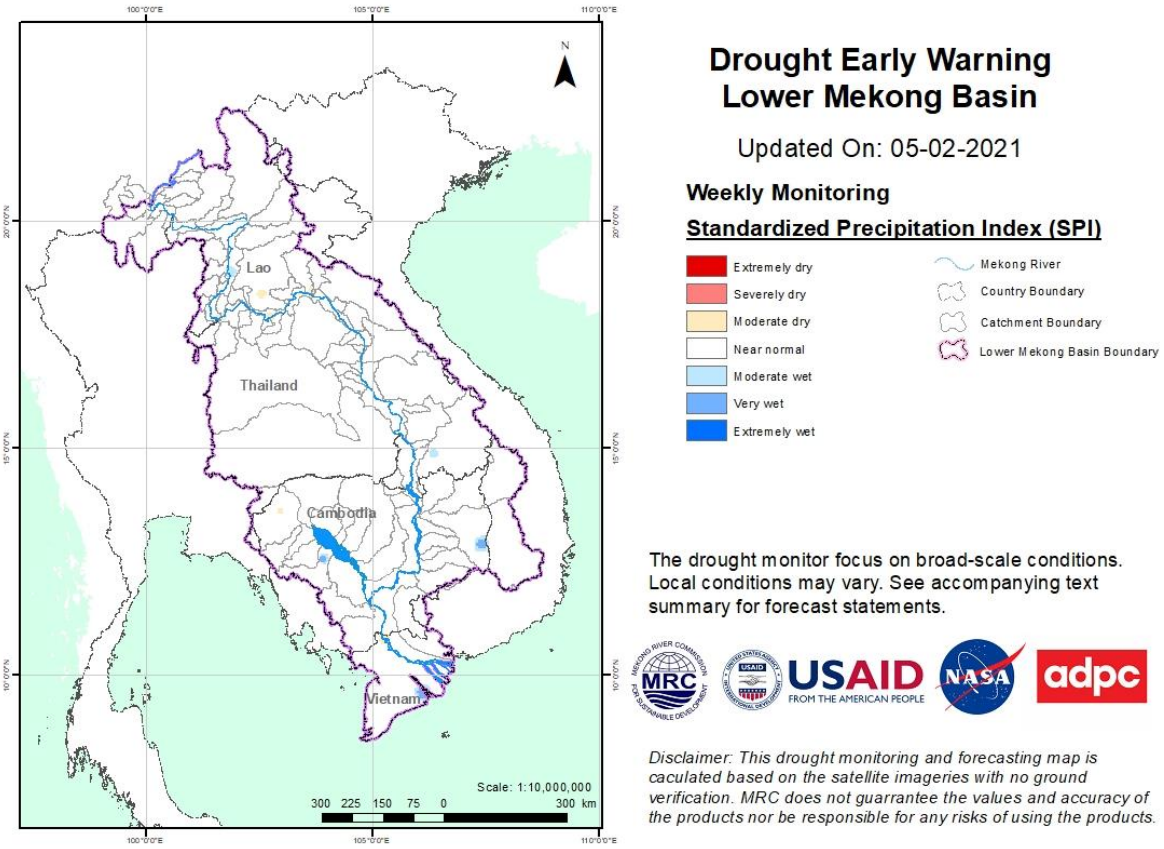


Figure 12: Weekly standardized precipitation index from 30 Jan to 5 Feb 2021.

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

Soil moisture condition from 30 January to 5 February 2021, as displayed in Figure 13, was very much like the condition last week (Jan 23-19) which was at moderate dry in the north and some areas in the central and the south. Moderate dry condition in the north of the LMB covered Chiang Mai, Chiang Rai, and Payao of Thailand; and Bokeo, Luang Namtha, Xayaburi, Phongsaly, Luang Prabang, Xieng Khouang, and Vientiane of Lao PDR. Dry condition also took place in Kratie and Mondulkiri of Cambodia. Other areas were normal and wet during the monitoring week.

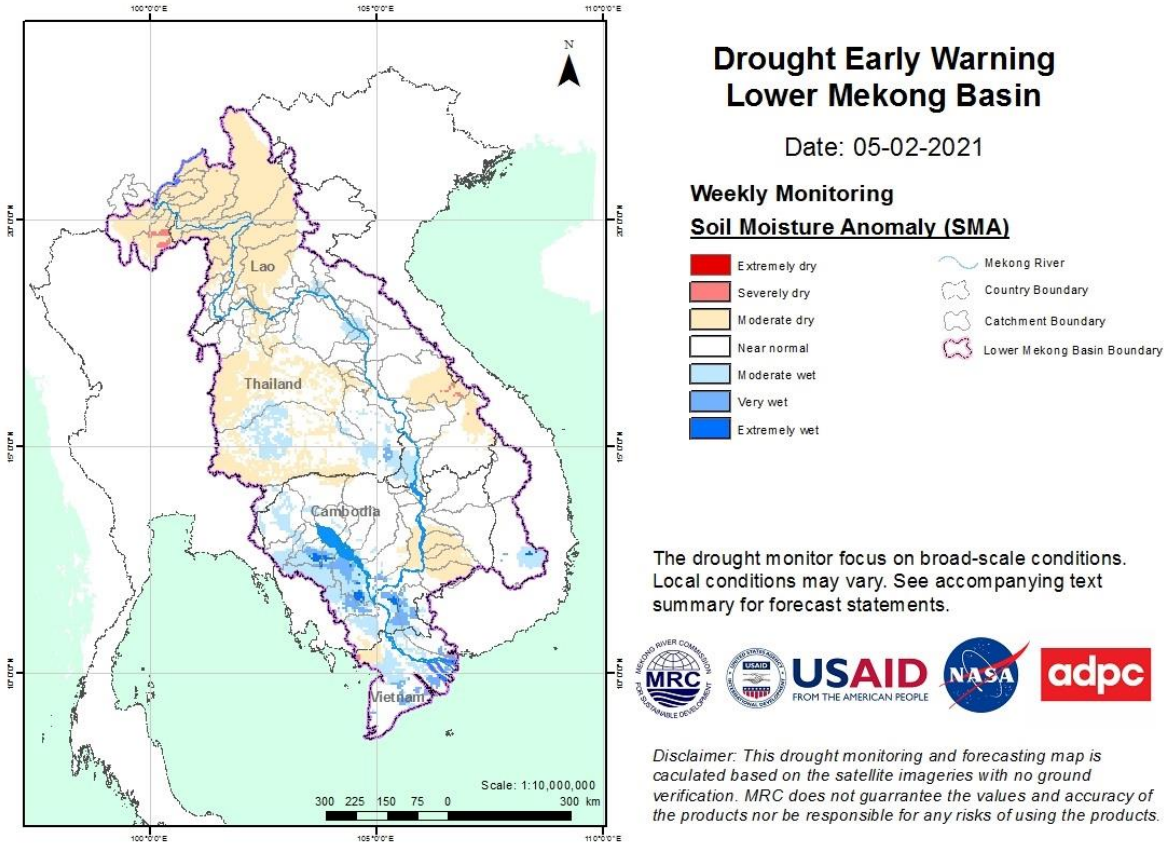


Figure 13: Weekly Soil Moisture Anomaly from 30 Jan to 5 Feb 2021.

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

The overall drought condition through combined drought index from 30 January to 5 February 2021, as displayed in Figure 14, shows no drought threat over the region amid some dry soil moisture. The CDI presents normal condition in almost all LMB areas.

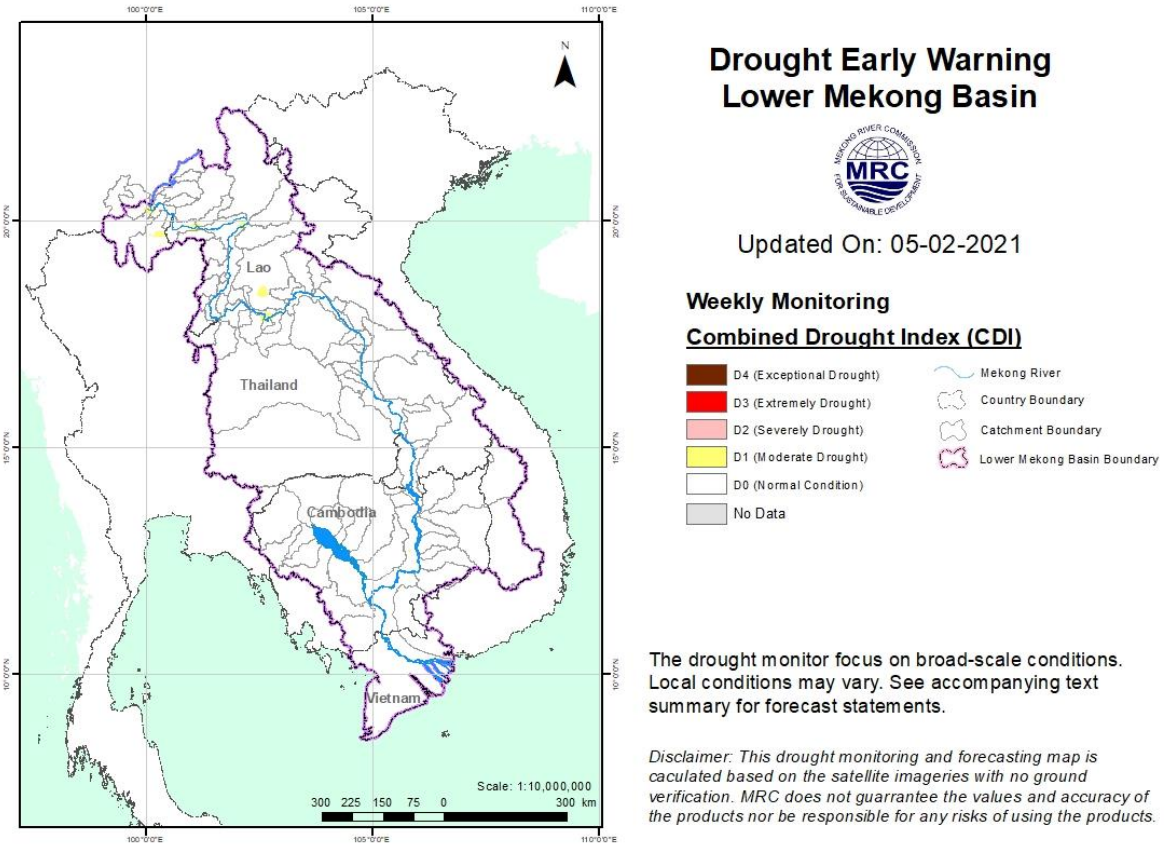


Figure 14: Weekly Combined Drought Index from 30 Jan to 5 Feb 2021.

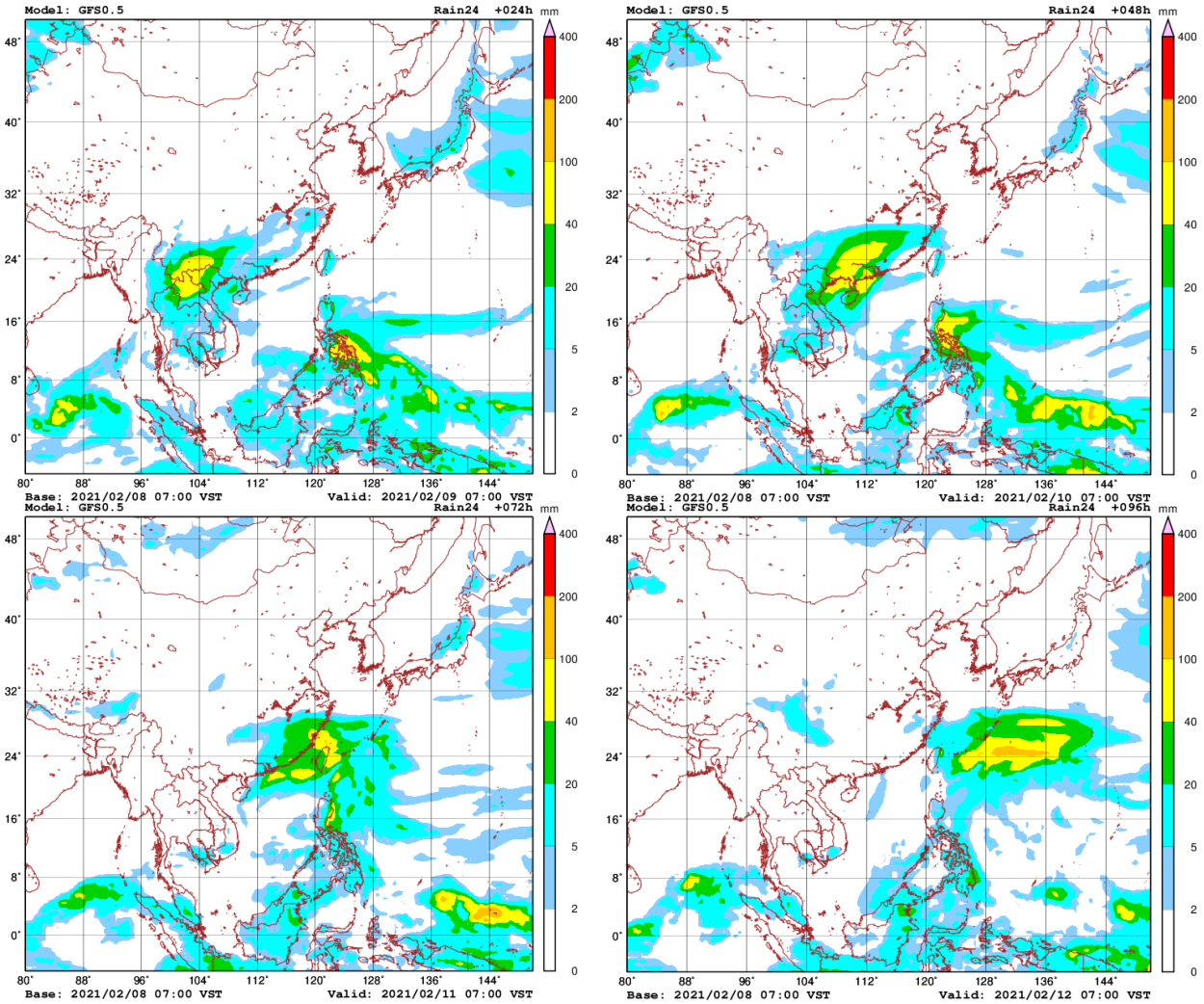
More information on Drought Early Warning and Forecasting as well as the explanation is available here: http://droughtforecast.mrcmekong.org/templates/view/our-product.

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 two factors affecting the LMB, as have been the case. They include (i) high pressure from China moving over to the LMB areas, and (ii) the on-going prevailing northeast monsoon from the Gulf of Thailand to the lower part of the LMB. Moderate rainfall (20-40 mm/24h) may occur in some areas of the northern part of the LMB from 9 to 10 February 2021. From February 11 to 16, very small rainfall (2–5 mm/24 hrs) may also take place in some areas of the LMB.

Figure 15 shows accumulated rainfall forecast (24 hrs) of the GFS model from 9 to 15 Feb 2021.



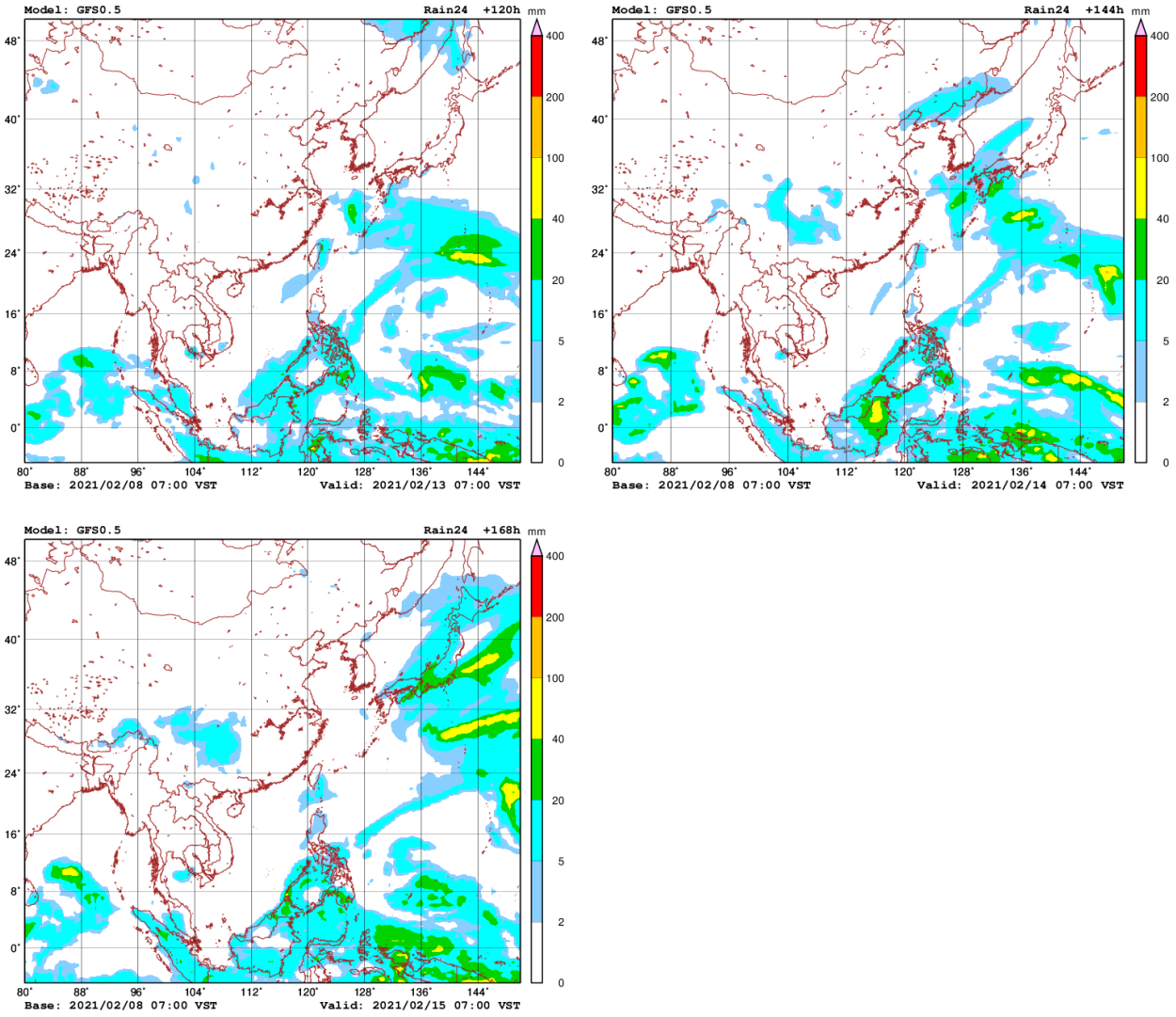


Figure 15: Accumulated rainfall forecast (24 hrs) of model GFS.

6.2 Water level forecast

Chiang Saen and Luang Prabang

Based on February 8's weekly river monitoring bulletin, the weekly forecast water level at Chiang Saen in Thailand is expected to slightly increase from 1.80 metres to 1.92 metres in the next seven days. The trend of water levels at this station will continue staying above its LTA.

For Luang Prabang in Lao PDR, the water level is likely stable in between 8.64 metres and 8.65 metres during the same period. The current water level is higher than its maximum value. Unlike last week, some rainfall is forecasted between Chiang Saen and Luang Prabang for next week.

Chiang Khan, Vientiane-Nong Khai and Paksane

The water level at Chiang Khan in Thailand is forecasted to go up slightly by about 0.05 metres, while at Vientiane in Lao PDR the water level is likely to go down by about 0.02 metres. From Nong Khai to Paksane, water levels will also slightly decrease by about 0.02 metres in the next

seven days. No precipitation is forecasted for the areas between Chiang Khan and Paksane for next week.

The water levels will remain higher than its LTA at Vientiane, while at Nong Khai they will probably be lower than their LTAs. And at Paksane the water level will be lower than its minimum level.

Nakhon Phanom to Pakse

Water levels from Nakhon Phanom in Thailand and Savannakhet in Lao PDR may slightly increase by about 0.15 metres in the next seven days. From Khong Chiam in Thailand to Pakse in Lao PDR the water will also increase by about 0.08 metres. No precipitation is forecasted in between Nakhon Phanom and Pakse for next week.

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 slightly increase by about 0.15 meters in the next seven days, with some rain is forecasted for 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 0.15 metres over the next seven days.

With the trend, water levels at these stations will continue staying below their LTA levels, particularly from the Kompong Cham and Bassac at Phnom Penh to Neak Luong as well as Tonle Sap at Prekdam to Phnom Penh Port. Small amount of 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 around their LTAs, following daily tidal effects from the sea. Some rainfall are forecasted in the Delta area for next week.

Table 2 shows the weekly River Monitoring Bulletin issued on February 8. 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 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.

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 February 2021. 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).

The global scale of rainfall prediction is used to see how the rain distribution looks like for the coming months. Figure 16 shows the ensemble mean of daily average precipitation (mm/day) each month from February to April 2021 produced by the NMME.

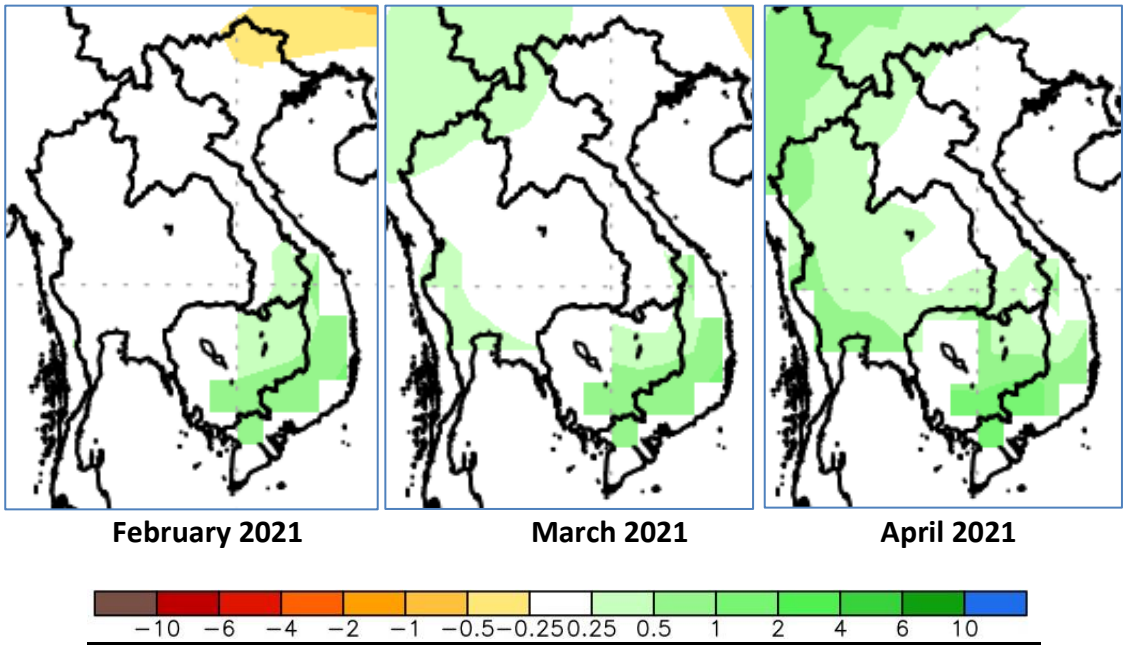


Figure 16: Daily average of monthly rainfall anomaly forecast from Feb to Apr 2021.

Since the dry season has already begun, the LMB is not going to receive any significant rain from January to April 2021. The ensemble prediction model forecasts that the LMB is likely to receive some little rain in February and March mainly in the Central Highland of Viet Nam and eastern part of Cambodia. The initial forecast shows some rain in April covering Thailand, Cambodia and Viet Nam. It seems that dry season this 2021 is wetter than last year 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: 09 February to 15 February 2021

Date: 08 February 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)						
		07-Feb			07-Feb	08-Feb	09-Feb	10-Feb	11-Feb	12-Feb	13-Feb	14-Feb	15-Feb
Jinhong		29.5	-	-	535.59	535.62							
Chiang Saen		32.0	357.110	0.00	1.74	1.78	1.80	1.82	1.84	1.87	1.89	1.91	1.92
Luang Prabang		0.0	267.195	2.53	8.78	8.60	8.64	8.68	8.63	8.58	8.61	8.63	8.65
Chiang Khan		0.0	194.118	1.91	3.70	3.62	3.58	3.61	3.64	3.66	3.63	3.65	3.66
Vientiane		0.0	158.040	-0.28	1.78	1.70	1.66	1.64	1.66	1.68	1.69	1.67	1.68
Nongkhai		0.0	153.648	0.33	1.20	1.12	1.08	1.06	1.08	1.11	1.13	1.11	1.13
Paksane		0.0	142.125	0.10	1.49	1.48	1.45	1.43	1.42	1.43	1.45	1.46	1.45
Nakhon Phanom		0.0	130.961	0.18	1.13	1.16	1.18	1.19	1.20	1.22	1.23	1.24	1.25
Thakhek		0.0	129.629	1.38	2.41	2.46	2.50	2.53	2.55	2.58	2.60	2.62	2.64
Mukdahan		0.0	124.219	0.72	1.61	1.61	1.63	1.65	1.67	1.68	1.70	1.71	1.72
Savannakhet		0.0	125.410	-0.65	1.08	1.08	1.08	1.10	1.11	1.12	1.13	1.13	1.14
Khong Chiam		0.0	89.030	1.02	1.97	2.00	2.02	2.06	2.10	2.13	2.16	2.20	2.23
Pakse		0.0	86.490	0.03	0.86	0.87	0.88	0.91	0.93	0.95	0.97	1.00	1.02
Stung Treng		nr	36.790	0.32	2.50	2.49	2.5	2.51	2.53	2.55	2.56	2.57	2.59
Kratie		nr	-1.080	3.06	6.93	6.90	6.88	6.90	6.92	6.95	6.97	7.00	7.02
Kompong Cham		nr	-0.930	0.65	2.58	2.62	2.60	2.57	2.59	2.62	2.64	2.66	2.68
Phnom Penh (Bassac)		nr	-1.020	1.58	2.37	2.28	2.25	2.23	2.21	2.22	2.23	2.24	2.25
Phnom Penh Port		nr	0.000	0.14	1.35	1.21	1.17	1.14	1.12	1.13	1.14	1.15	1.16
Koh Khel		nr	-1.000	1.52	2.39	2.26	2.23	2.21	2.19	2.17	2.16	2.16	2.17
Neak Luong		nr	-0.330	0.81	1.72	1.78	1.80	1.78	1.77	1.76	1.77	1.78	1.78
Prek Kdam		nr	0.080	0.58	1.25	1.26	1.22	1.19	1.16	1.15	1.16	1.17	1.17
Tan Chau		0.0	0.000	-0.37	0.46	0.65	0.85	1.03	1.12	1.21	1.27	1.33	1.40
Chau Doc		nr	0.000	-0.60	0.61	0.80	1.01	1.20	1.32	1.43	1.50	1.57	1.65

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 recorded at Chiang Saen (about 35 mm) but not for most of the stations along the mainstream of the Mekong River, based on ground stations. Based on the forecasted satellite data, rainfall is forecasted for some areas of the LMB from 10 to 50 mm for the next few days.

The forecasted model using GFS data, on the other hand, shows that no significant rainfall (<60mm) is likely to take place in the Mekong region from 9 to 15 February 2021.

7.2 Water level and its forecast

The notification from China on January 5 said that the water outflow at Jinghong hydropower station in China's Yunnan province would be operated with the outflow at 1,000 m^3/s due to power grid maintenance during 5–24 January 2021. The water level at this station was decreasing about 0.24 metres, based on observed data from 2 to 8 Feb 2021.

It was observed that up to 8 February 2021, water levels from Chiang Saen in Thailand to Vientiane in Lao PDR were slightly increasing and were still higher than their TLAs. Water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR decreased about 0.20 metres (from 2 to 8 Feb 2021). It was probably due to the influence of both the Mekong-Lancang upstream and downstream dam operation at Mekong mainstream and its tributaries during the Dry Season.

From Nakhon Phanom in Thailand to Pakse in Lao PDR, water levels were decreasing. At Stung Treng and Kratie in Cambodia, water levels slightly decreased but were still slightly higher than their LTAs, perhaps due to the influence of tributary dam operations. Water levels at Kompong Cham, Neak Luong, Bassac at Phnom Penh, and Prek Kdam in Cambodia were still lower than their LTA levels. The low level was due to low inflows from upstream and no rainfall in the region from February 2 to 8.

Generally, this week's water levels were relatively lower than those of last week from the middle part to the lower part.

The starting date of the outflow from the Tonle Sap Lake 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 2019. However, it is lower than its LTA which is considered critical.

Over the next few days, water levels across most monitoring stations in the LMB from Chiang Khan to Vientiane are expected to slightly decrease about 0.10 metres but increase about 0.15 from Nakhon Phanom to Pakse. This situation continues to put most stations' water levels below their LTAs.
From Stung Treng to Kratie, the water levels slightly increased and remained above their LTAs except from Komgpong Cham to Neak Luong on the Mekong, Prek Kdam to Phnom Penh Port

on the Tonle Sap, and Chaktomuk to Koh Khel on the Bassac, the water levels are below their LTAs.

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

The low rainfall during the past months in 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 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 LMB.

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 very small predicted 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 30 January to 5 February 2021 was very much similar to last week (January 23-29). The region only showed moderate dry soil moisture in some areas of the northern and southern parts with 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 three-month forecast, LMB is likely to receive very little rain in February and March mainly in the Central Highland of Viet Nam and eastern part of Cambodia and moderate rainfall in April for Thailand, Cambodia, and Viet Nam. NMME forecast shows a wetter condition during this dry season 2021 than last year.

Annex A: Tables for weekly updated water levels and rainfall at the Key Stations from 02 to 08 February 2021

Table A1: Weekly observed water levels in metres

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
02-02-2021	535.55	1.94	8.68	3.86	1.75	1.14	1.35	1.01	1.55	1.12	2.64	7.19	2.98	2.34	2.44	1.64	1.43	0.65	0.68
03-02-2021	535.57	1.83	8.75	3.95	1.78	1.17	1.42	1.00	1.52	1.13	2.60	7.16	2.91	2.43	2.48	1.64	1.43	0.36	0.43
04-02-2021	535.56	1.76	8.76	3.94	1.80	1.20	1.46	1.04	1.54	1.12	2.58	7.15	2.83	2.46	2.50	1.68	1.47	0.31	0.44
05-02-2021	535.58	1.76	8.74	3.92	1.83	1.24	1.38	1.10	1.56	1.12	2.56	7.11	2.72	2.38	2.46	1.62	1.42	0.30	0.42
06-02-2021	535.57	1.76	8.75	3.88	1.80	1.22	1.48	1.11	1.54	0.88	2.52	6.98	2.60	2.37	2.42	1.65	1.37	0.38	0.52
07-02-2021	535.59	1.74	8.78	3.70	1.78	1.20	1.49	1.13	1.61	0.86	2.50	6.93	2.58	2.37	2.39	1.72	1.25	0.46	0.61
08-02-2021	535.62	1.78	8.60	3.62	1.70	1.12	1.48	1.16	1.61	0.87	2.49	6.90	2.62	2.28	2.26	1.78	1.26	0.65	0.80

Table A2: Weekly observed rainfall in mm

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
02-02-2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
03-02-2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04-02-2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05-02-2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06-02-2021	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07-02-2021	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08-02-2021	29.5	32	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

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