



**Mekong River Commission**

# **Weekly Dry Season Situation Report in the Lower Mekong River Basin 5 to 11 January 2021**

Prepared by  
The Regional Flood and Drought Management Centre  
12 January 2021

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Mekong River Commission

Documentation and Learning Centre

184 Fa Ngoum Road, Unit 18, Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR

Telephone: +856-21 263 263 | E-mail: [mrcs@mrcmekong.org](mailto:mrcs@mrcmekong.org) | [www.mrcmekong.org](http://www.mrcmekong.org)

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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 **5 to 11 January 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 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 Lake
- Flash flood and drought situation in the LMB
- Weather, water level and flash flood forecast, and
- Possible implications.

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

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

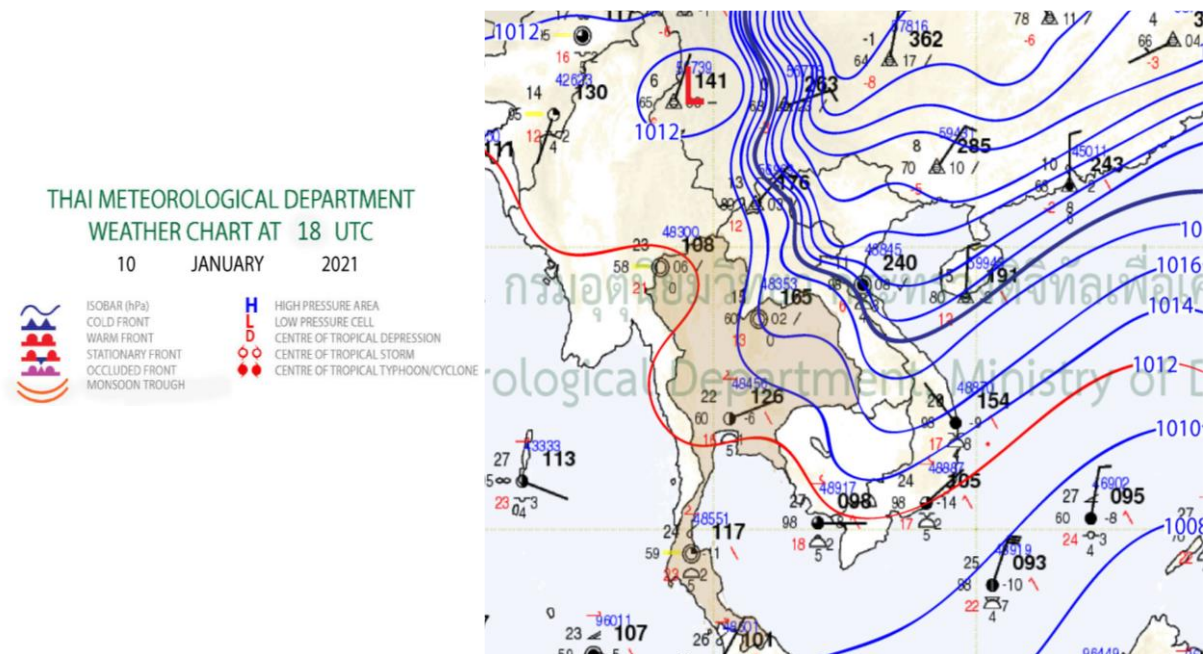
Flash flood information is accessible at: <http://ffw.mrcmekong.org/ffg.php>

## 2 General Weather Patterns

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

The data from the TMD predict that instances of low pressure and tropical cyclones had ended their effect in the Mekong region since December 2020. The cold weather due to the high-pressure air mass is prevailing over the Mekong region in January. The TMD also predicts that scattered coldly high-pressure air mass from China will prevail over the upper part of the Mekong region.

[Figure 1](#) presents the weather map of 10 January 2021, showing a line of low pressure crossing the lower part of 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 eastern half of Southeast Asia during 11–24 January 2021. At the same time, drier conditions are forecasted for the lower part of the Lower Mekong region mainly in Thailand and Cambodia. During this time, the ASMC confirms that drier condition may influence the region.

[Figure 2](#) shows the outlook of comparative wet and dry conditions from 11 to 24 January 2021 in Southeast Asia based on results from the NCEP model (National Centres for Environmental Prediction).

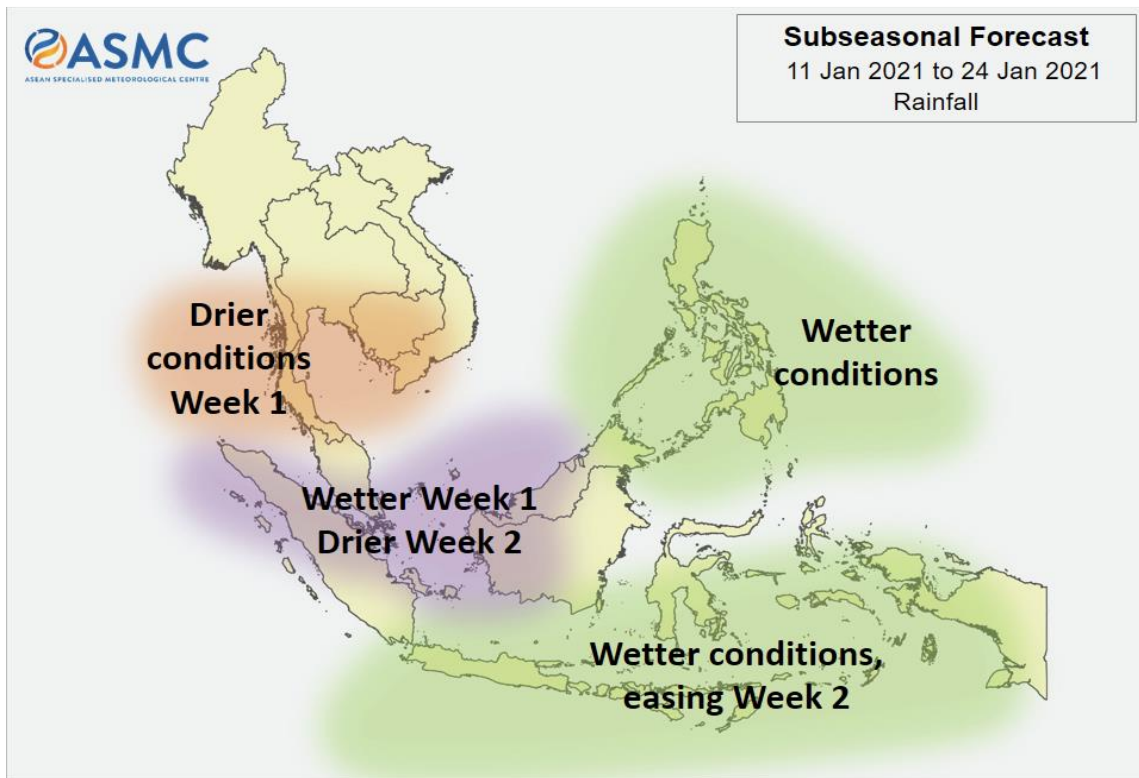


Figure 2: Outlook of wet and dry conditions over the Asian countries by ASMC.

### 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 11 January 2021, as shown in [Figure 1](#). This condition may bring some rain in the LMB. However, based on Tropical Storm Risk (TSR), as displayed in [Figure 3](#), there was no sign of tropical depression (TD), tropical storm (TS) or typhoon (TY) in the Mekong region on 11 January 2021.

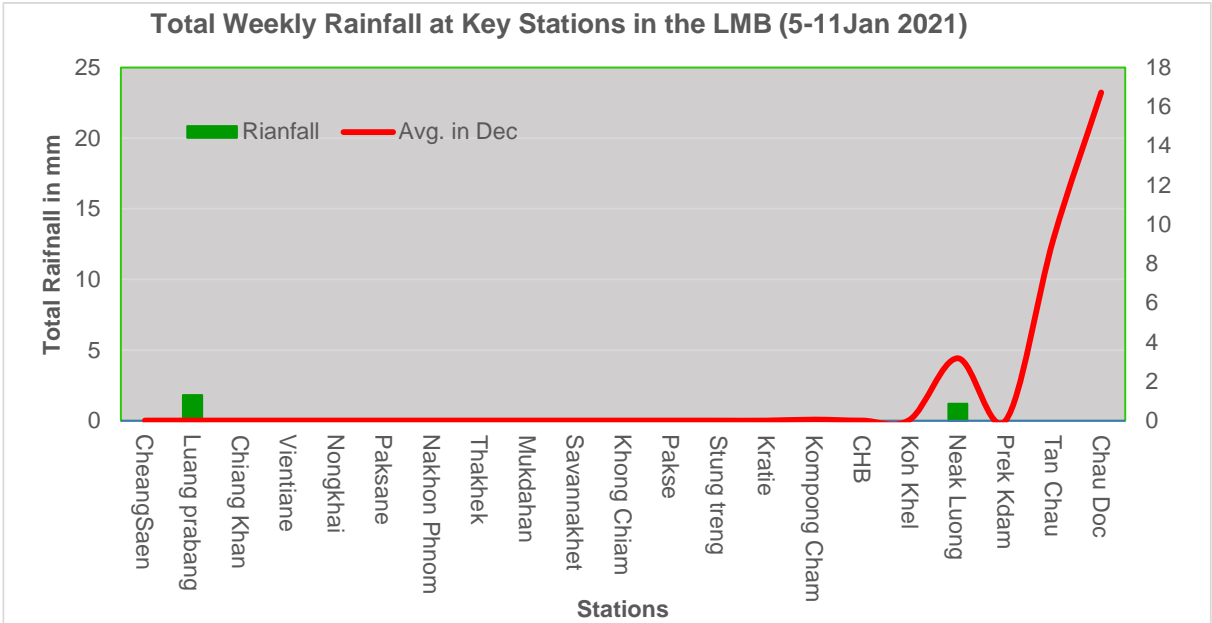


Figure 3: A Tropical Depression risk observed on 11 January 2021.

**2.2 Rainfall patterns over the LMB**

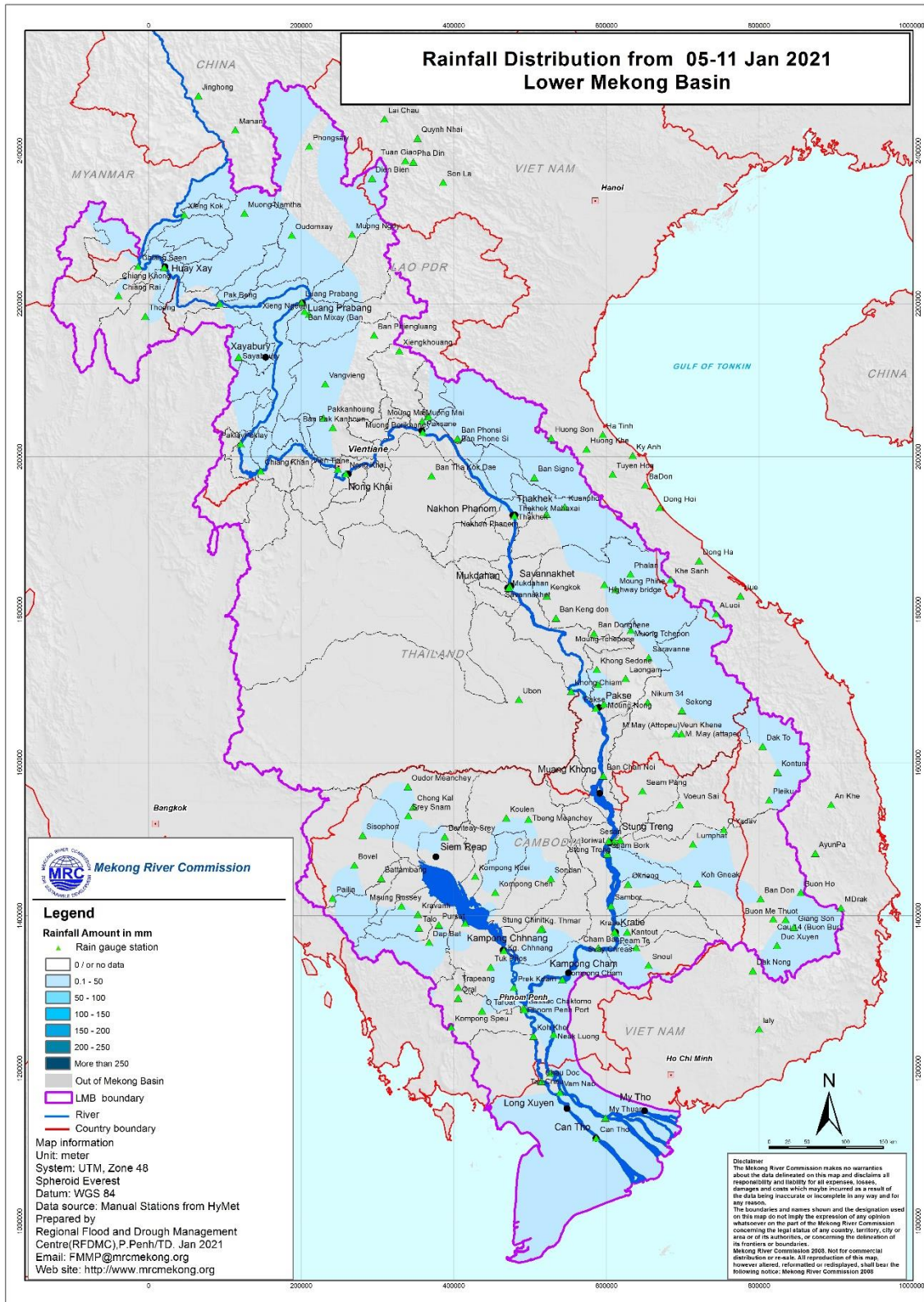
This week, no rainfall was recorded for most of the key stations along the Mekong mainstream, except at Lao PDR’s Luang Prabang and Cambodia’s Neak Luong where rainfall was up to 1.8 mm. This value of rainfall is considered very small.

The total observed rainfall of the week at key stations, compared with average rainfall in December, is 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 5 to 11 January 2021.



**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](#).

A [notification](#) from China on 5 January 2021 said that the water outflow at Jinghong hydropower station in China’s Yunnan province would be operated with the outflow at 1,000 m<sup>3</sup>/s due to power grid maintenance during 5–24 January 2021, leading to changes in river water levels along the Mekong River in Thailand, Lao PDR, and Cambodia.

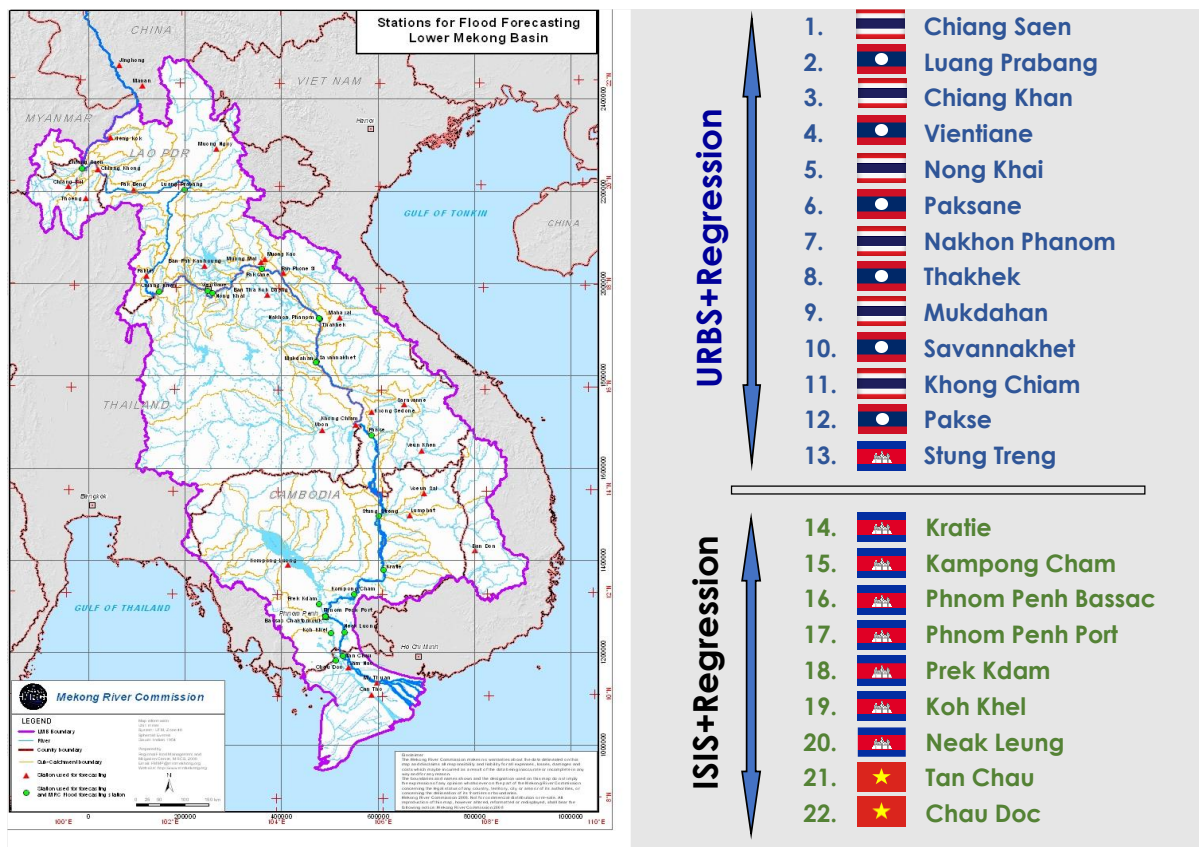


Figure 6: Key stations and model application for River Monitoring and Flood Forecasting.

## Chiang Saen and Luang Prabang

The water level from 5 to 11 January 2021 at Thailand's Chiang Saen slightly increased from 1.87 metres to 2.07 metres. This week's water level is 0.03 metres higher than its long-term average (LTA). When compared to last week, the level this week is a little higher.

The water level at the Luang Prabang station in Lao PDR decreased from 8.94 metres to 8.52 metres, during the reporting period. Compared to last week, the figure shows an increase by about 1.29 metres which 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 wet and dry seasons.**

## Chiang Khan, Vientiane-Nong Khai and Paksane

The water level at Chiang Khan in Thailand decreased from 4.93 metres to 3.76 metres during this week, showing 0.87 metres below its LTA value. Downstream water levels from Vientiane to Paksane in Lao PDR also decreased. The decreased values varied between -0.04 metres and -0.35 metres. Compared to this time last year, the current water level at Vientiane is about 0.60 metre lower than its LTA value. **The water levels at Nong Khai and Paksane are lower than their record last year and even lower than their historical minimum levels. Water levels at Nong Khai and Paksane are considered very critical, as shown in [Figure 7](#).**

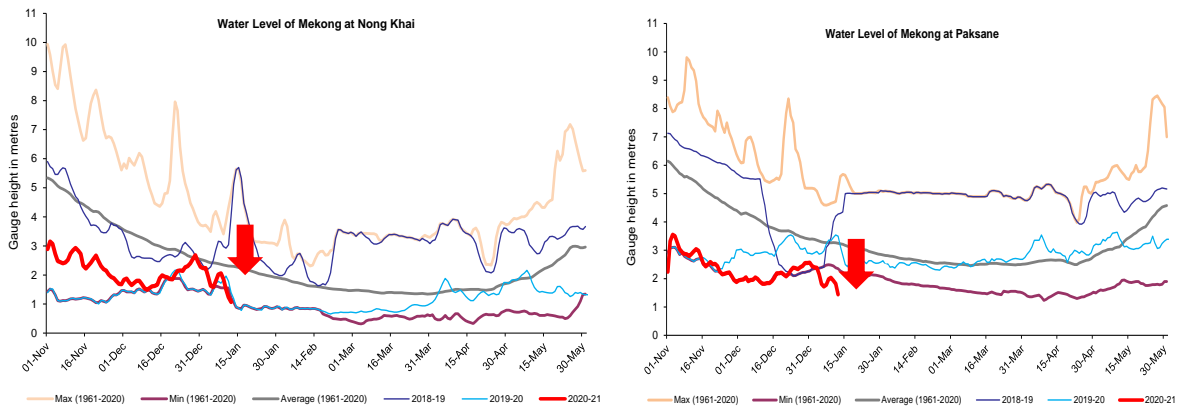
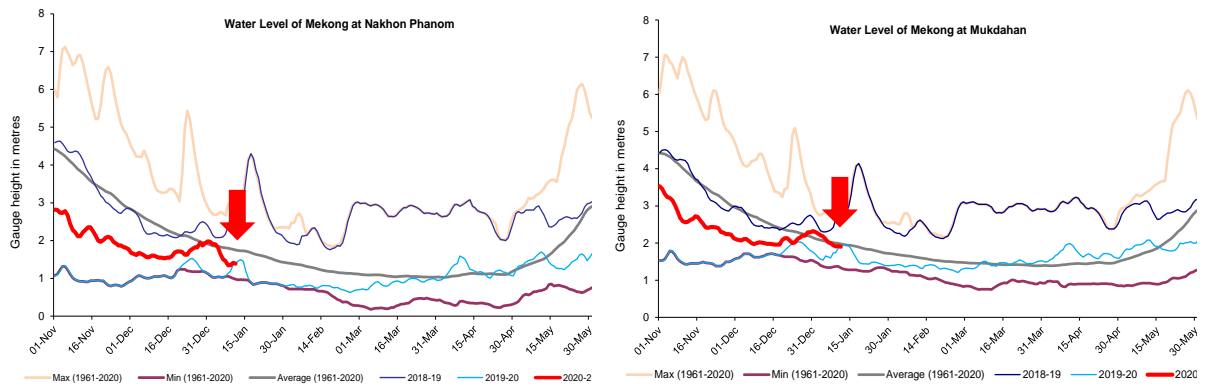


Figure 7: Water levels at Paksane of Lao PDR.

## Nakhon Phanom to Pakse

Water levels from Nakhon Phanom in Thailand to Pakse in Lao PDR decreased by about 0.25 metres, during the reporting period. This week the water levels at these stretches were about 0.20 metres lower than their LTAs, or about 0.02 meters higher than the 2019's level, as shown in [Figure 8](#). **The figures are considered normal.**

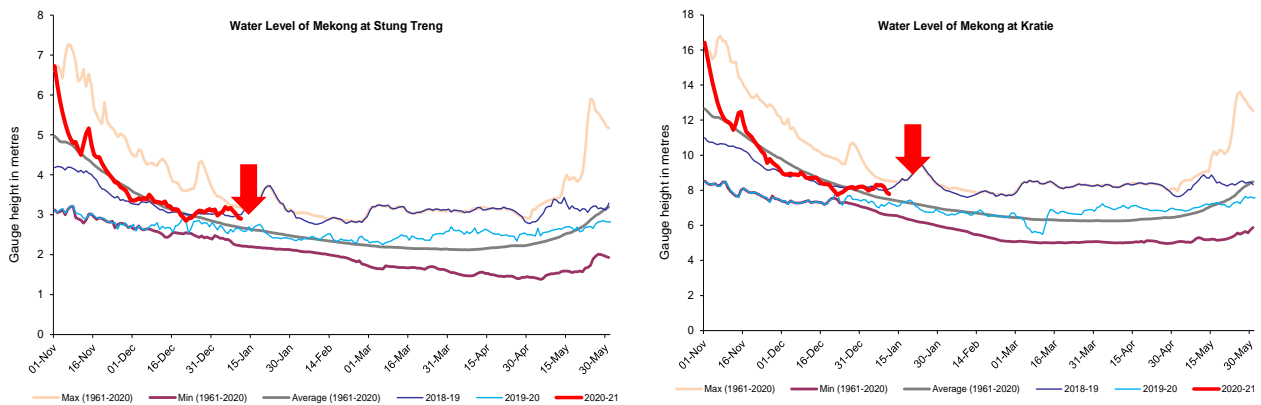


**Figure 8: Water levels at Nakhon Phanom and Pakse of Thailand and Lao PDR.**

### 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 decreased accordingly. However, this week water levels were about 0.23 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 by about 0.25 metres during this reporting week.



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

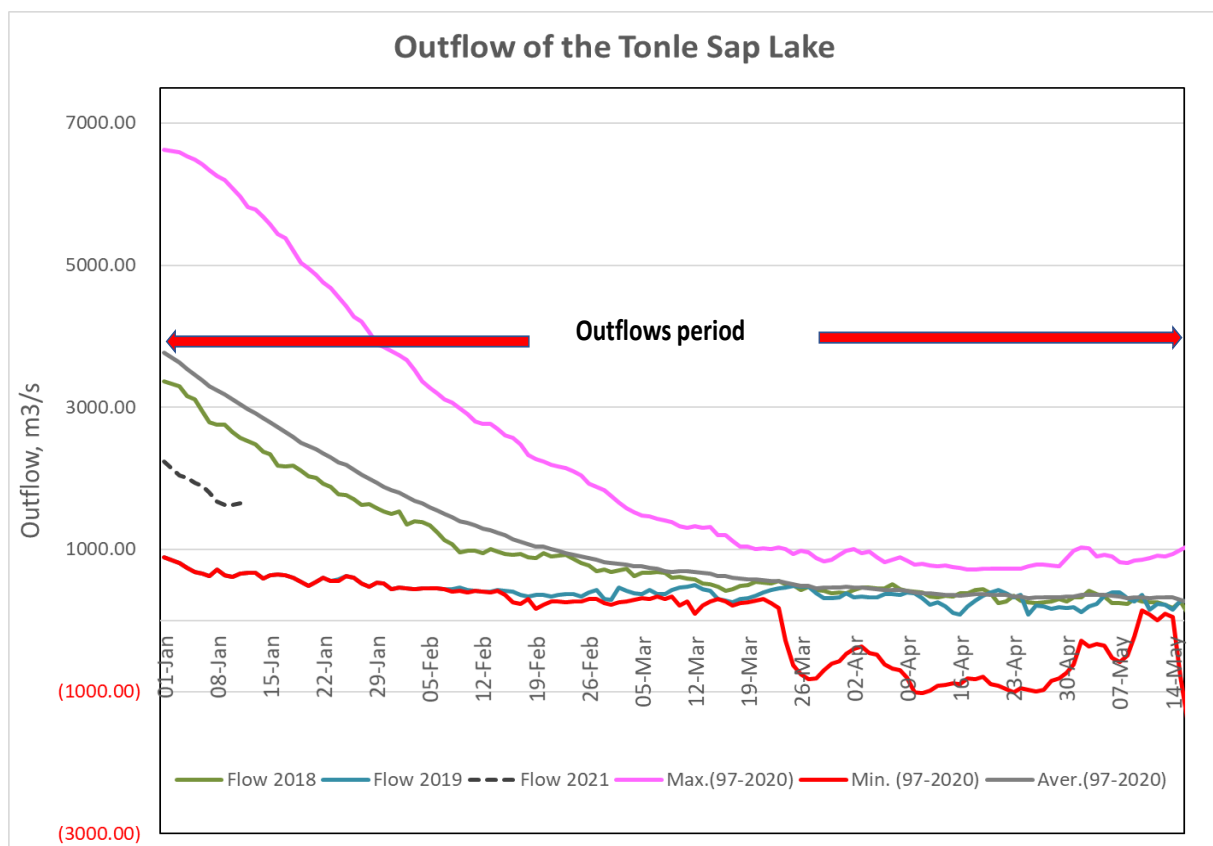
### Tidal stations at Tan Chau and Chau Doc

Like last week, this week from 5 to 11 January 2021, water levels at the two stations of Viet Nam’s Tan Chau and Chau Doc were fluctuating below 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.

[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 11 January 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 and matched with the 2018’s. 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: 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 January 11 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 11 January 2021 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.

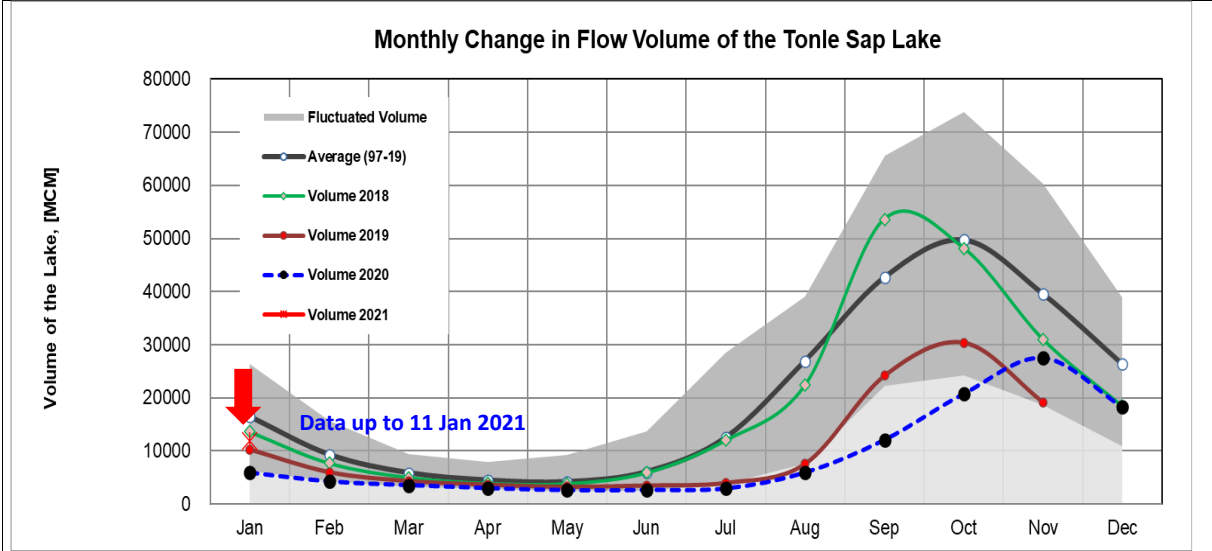


Figure 11: The seasonal change in monthly flow volume of Tonle Sap Lake.

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           | 11954.19          |
| Feb                                                       | 9312.36                                                 | 15596.22         | 4281.41          | 7729.72           | 6019.30           | 4264.19           |                   |
| 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, compared with historical Min values |                  |                  |                   |                   |                   |                   |
|                                                           | Normal condition, compared with LTA (Long term average) |                  |                  |                   |                   |                   |                   |
|                                                           | Low volume situation, compared with LTA values          |                  |                  |                   |                   |                   |                   |
| Unit: Million Cubic Meter (1 MCM= 0.001 Km <sup>3</sup> ) |                                                         |                  |                  |                   |                   |                   |                   |

## **4 Flash Flood in the Lower Mekong Basin**

Between 5 and 11 January 2021, the LMB was affected by two main weather factors. These include (i) the active high pressure from China which extended its ridge to cover the upper and middle parts of the LMB causing some cool 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.

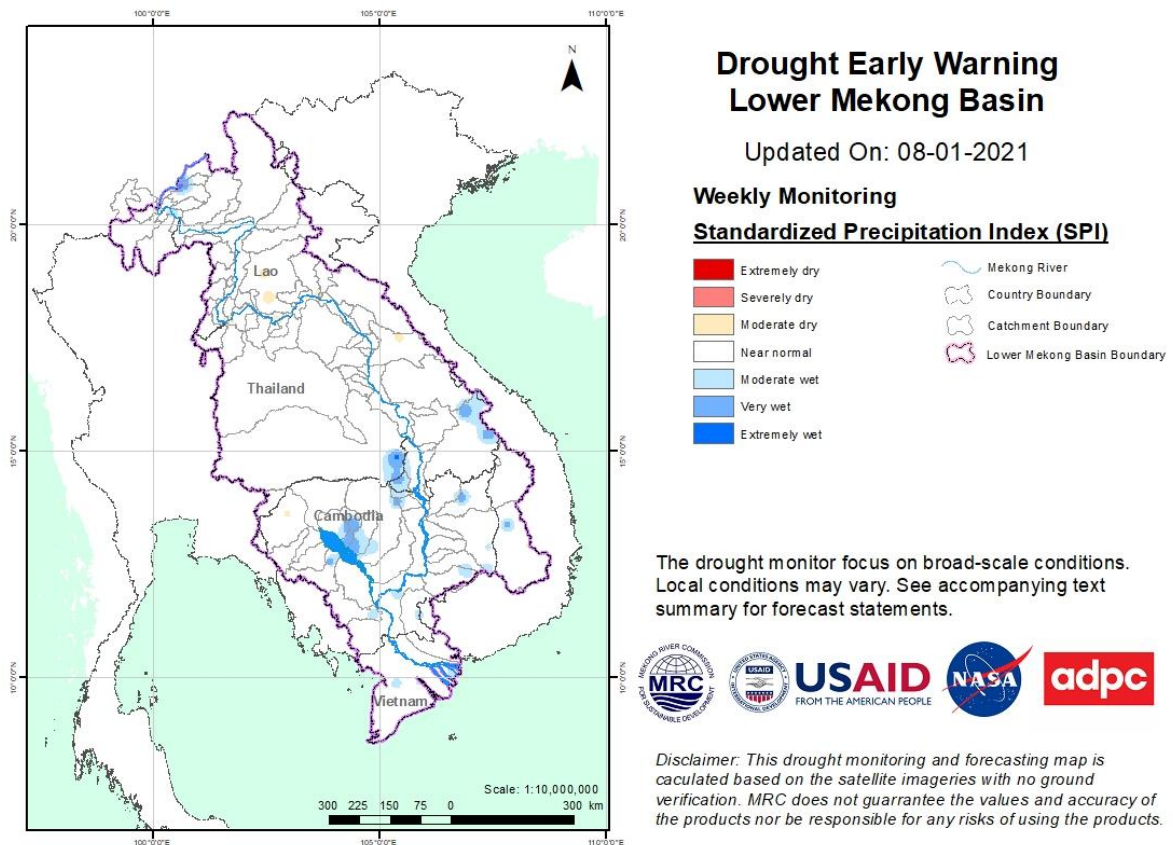
## 5 Drought Monitoring in the Lower Mekong Basin

### Weekly drought monitoring from 2-8 January 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)**

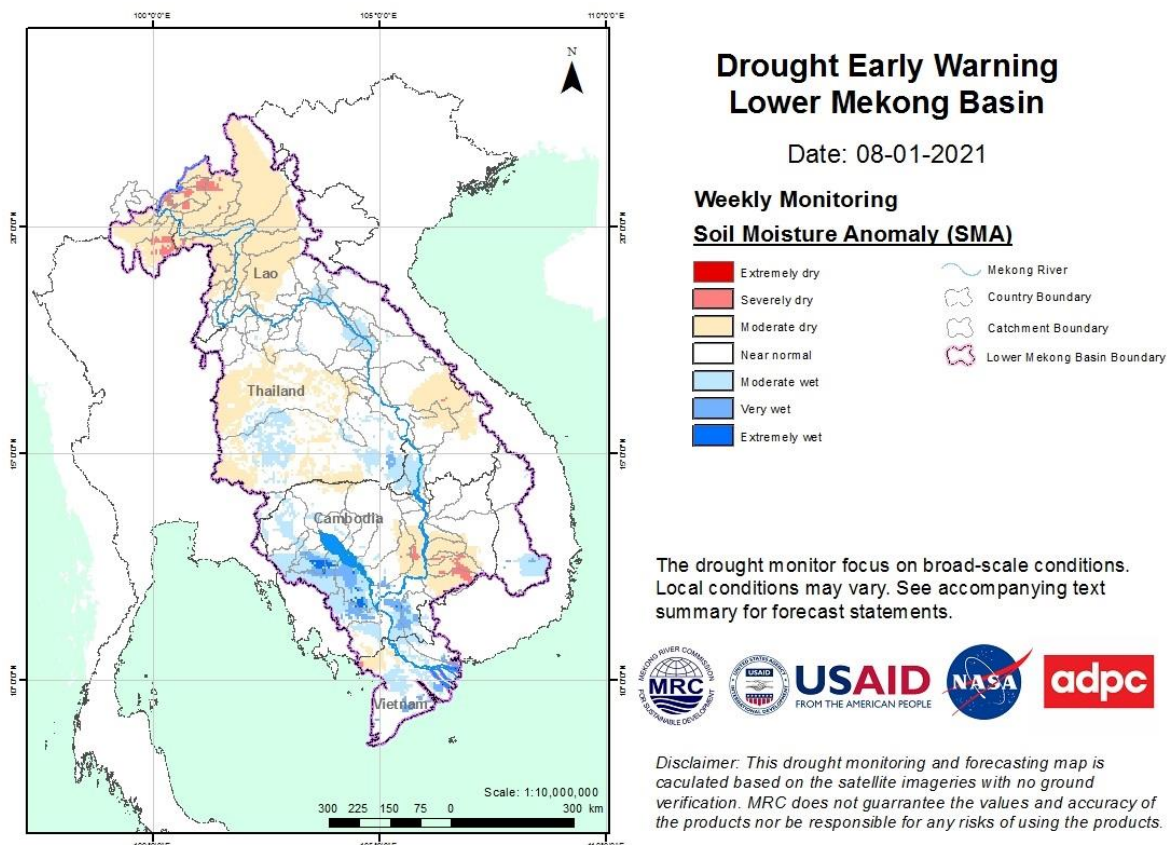
Drought condition of the LMB from 2 to 8 January 2021, as shown in [Figure 12](#), was normal in most parts. Meteorological indicator of SPI shows that the LMB received average rainfall in all parts of the region during the monitoring week. The condition was very much similar to last week (26 Dec 2020 to 1 Jan 2021).



**Figure 12: Weekly standardized precipitation index from 2 to 8 Jan 2021.**

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

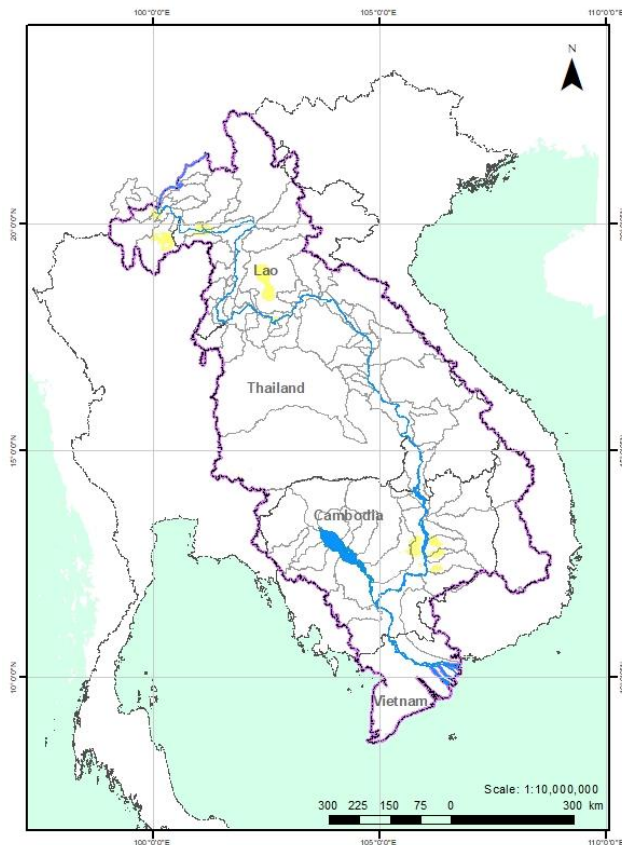
Soil moisture condition from 2 to 8 January 2021, as displayed in [Figure 13](#), was slightly drier in the north, central and the south compared with the previous week (26 Dec 2020 to 1 Jan 2021). Moderate and some extreme dry condition in the north of the LMB covered Chiang Mai, Chiang Rai, and Payao of Thailand; and Bokeo, Luang Namtha, Xayaburi, Phongsaly, Luang Prabang, Xieng Khouang, and Vientiane of Lao PDR. Dry condition 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 2 to 8 Jan 2021.**

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

The overall drought condition through combined drought index from 2 to 8 January 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.










## Drought Early Warning Lower Mekong Basin



Updated On: 08-01-2021

### 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 from 2 to 8 Jan 2021.**

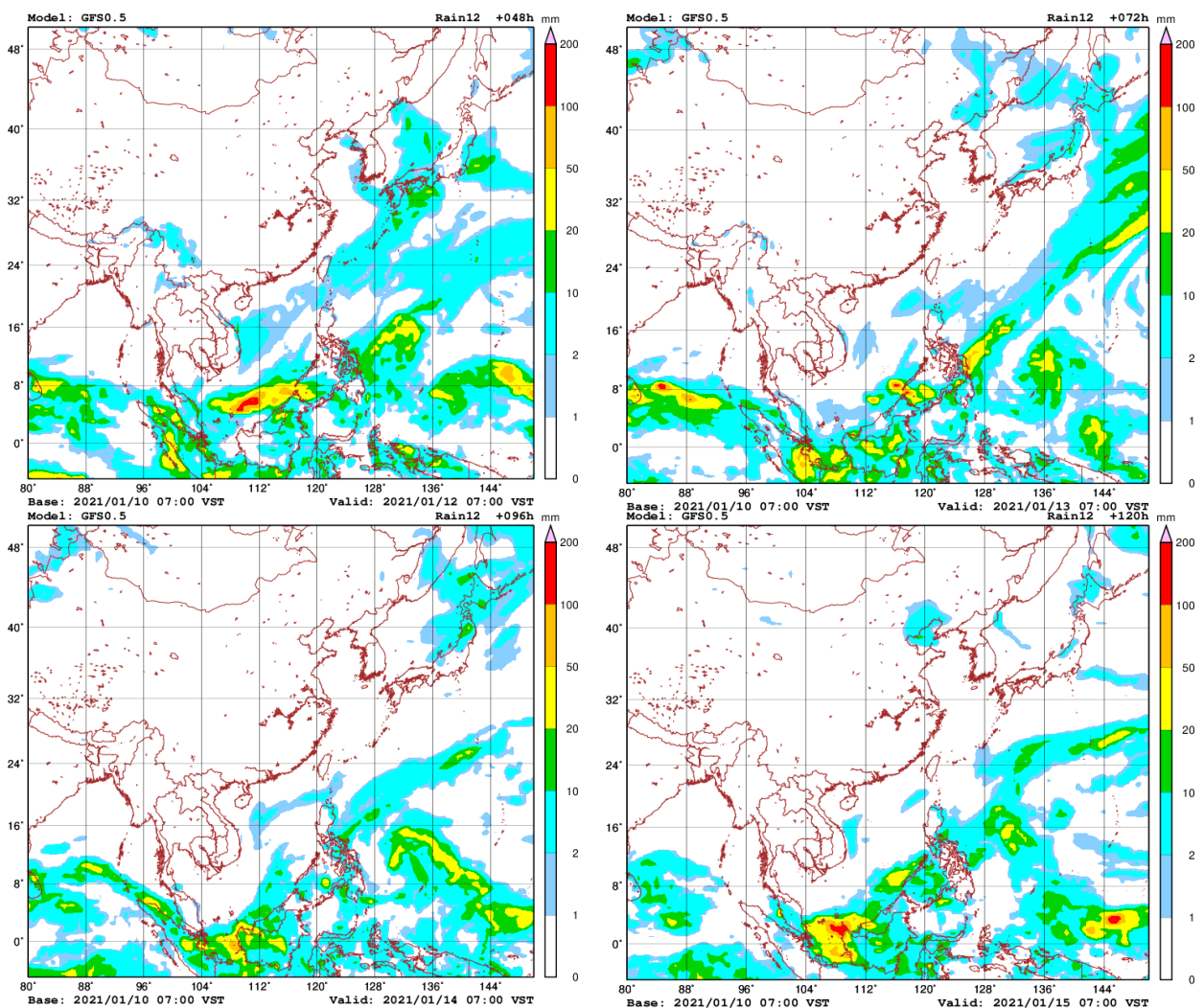
More information on Drought Early Warning and Forecasting as well as the explanation is available here: <http://droughtforecast.mrcmekong.org/templates/view/our-product>.

## 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. They include (i) high pressure from China moving over to the LMB areas, and (ii) the on-going prevailing Southwest Monsoon from the Gulf of Thailand to the lower part of the LMB. During that period, very small rainfall (2–10 mm/24 hrs) may occur in some areas of the LMB.

[Figure 15](#) shows accumulated rainfall forecast (24 hrs) of the GFS model from 12 to 18 January 2021.



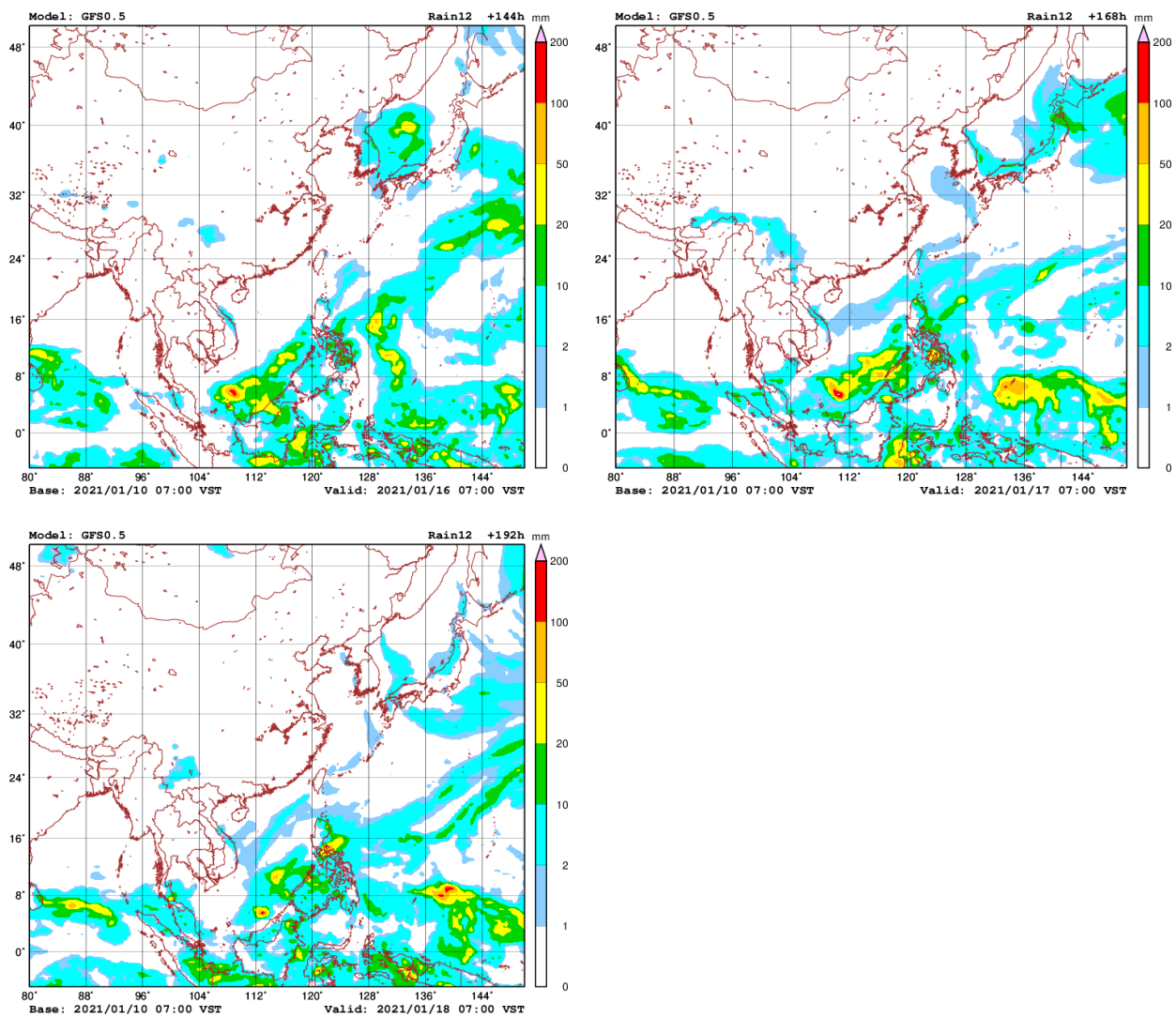


Figure 15: Accumulated rainfall forecast (24 hrs) of model GFS.

## 6.2 Water level forecast

### Chiang Saen and Luang Prabang

Based on January 11's weekly river monitoring bulletin, the weekly forecast water level at Chiang Saen in Thailand is expected to slightly decrease from 2.07 metres to 2.05 metres in the next seven days. The trend of water levels at this station will continue staying below its LTA.

For Luang Prabang in Lao PDR, the water level is likely to increase from 8.52 metres to 8.57 metres during the same period. The current water level is close to its maximum value. No precipitation is forecasted between Chiang Saen and Luang Prabang for next week.

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

Water levels at Chiang Khan in Thailand and Vientiane in Lao PDR are forecasted to go down slightly for about 0.30 metres. From Nong Khai to Paksane, water levels will also slightly

decrease by about 0.18 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 lower than their LTAs at Chiang Khan and Vientiane, while at Nong Khai and Paksane the water levels are close to their minimum level.

### **Nakhon Phanom to Pakse**

Water levels from Nakhon Phanom in Thailand and Savannakhet in Lao PDR may decrease by about 0.25 metres in the next seven days. From Khong Chiam in Thailand to Pakse in Lao PDR the water will also decrease by about 0.20 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 decrease by about 0.35 meters in the next seven days as no 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 0.20 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. A very small amount of rain (2–10 mm/24 hrs) may occur in 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. A very small amount of rain (2–10 mm/24 hrs) may occur in the Delta area for next week.

[Table 2](#) shows the weekly River Monitoring Bulletin issued on January 11. Results of the started weekly river monitoring bulletin are also available at [http://ffw.mrcmekong.org/bulletin\\_wet.php](http://ffw.mrcmekong.org/bulletin_wet.php).

### **6.3 Flash Flood Information**

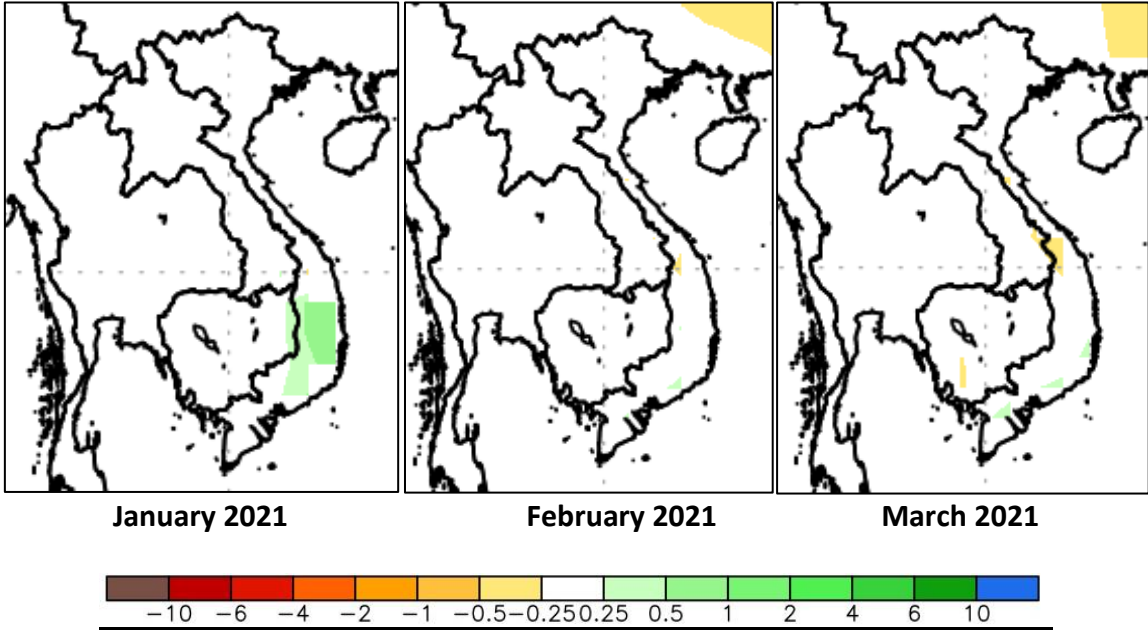
Flash flood events are likely not to happen in the LMB within next week. During the dry season if extreme weather occurs, the information on flash flood guidance for the next one, three, and six hours is updated at <http://ffw.mrcmekong.org/ffg.php>.

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](#) of the monthly anomaly maps shows daily average of each month in mm/day from January to March 2021 produced by the NMME.



**Figure 16: Daily average of monthly rainfall anomaly forecast from Jan to Mar 2021.**

Since the dry season has already begun, the LMB is not going to receive any significant rain from this January to March 2021. The ensemble prediction model forecasts that the LMB is likely to receive very little rain in January mainly in the Central Highland of Viet Nam and almost no rain in February nor March this year.

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: 12 January to 16 January 2021

Date: 11 January 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) |        |        |        |        |        |        |  |  |
|---------------------|---------|------------------------|----------------------------|----------------------------------------|------------------------------------------|--------|-----------------------------|--------|--------|--------|--------|--------|--------|--|--|
|                     |         | 10-Jan                 |                            |                                        | 10-Jan                                   | 11-Jan | 12-Jan                      | 13-Jan | 14-Jan | 15-Jan | 16-Jan | 17-Jan | 18-Jan |  |  |
| Jinhong             |         | 0.0                    | -                          | -                                      | 536.14                                   | 536.06 |                             |        |        |        |        |        |        |  |  |
| Chiang Saen         |         | 0.0                    | 357.110                    | 0.00                                   | 1.89                                     | 2.07   | 2.12                        | 2.08   | 2.05   | 2.02   | 2.00   | 2.03   | 2.05   |  |  |
| Luang Prabang       |         | 1.8                    | 267.195                    | 2.53                                   | 8.40                                     | 8.52   | 8.58                        | 8.65   | 8.71   | 8.80   | 8.72   | 8.64   | 8.57   |  |  |
| Chiang Khan         |         | 0.0                    | 194.118                    | 1.91                                   | 3.85                                     | 3.76   | 3.66                        | 3.58   | 3.48   | 3.58   | 3.66   | 3.72   | 3.70   |  |  |
| Vientiane           |         | 0.0                    | 158.040                    | -0.28                                  | 1.42                                     | 1.18   | 1.14                        | 1.08   | 1.04   | 1.00   | 1.07   | 1.12   | 1.16   |  |  |
| Nongkhai            |         | 0.0                    | 153.648                    | 0.33                                   | 1.51                                     | 1.24   | 1.18                        | 1.12   | 1.06   | 1.00   | 1.08   | 1.14   | 1.19   |  |  |
| Paksane             |         | 0.0                    | 142.125                    | 0.10                                   | 1.93                                     | 1.82   | 1.74                        | 1.71   | 1.68   | 1.65   | 1.63   | 1.68   | 1.71   |  |  |
| Nakhon Phanom       |         | 0.0                    | 130.961                    | 0.18                                   | 1.41                                     | 1.39   | 1.35                        | 1.33   | 1.32   | 1.31   | 1.30   | 1.30   | 1.32   |  |  |
| Thakhek             |         | 0.0                    | 129.629                    | 1.38                                   | 2.75                                     | 2.74   | 2.71                        | 2.68   | 2.66   | 2.64   | 2.62   | 2.63   | 2.66   |  |  |
| Mukdahan            |         | 0.0                    | 124.219                    | 0.72                                   | 1.92                                     | 1.90   | 1.89                        | 1.88   | 1.87   | 1.86   | 1.87   | 1.86   | 1.86   |  |  |
| Savannakhet         |         | 0.0                    | 125.410                    | -0.65                                  | 1.28                                     | 1.27   | 1.27                        | 1.27   | 1.26   | 1.25   | 1.27   | 1.28   | 1.29   |  |  |
| Khong Chiam         |         | 0.0                    | 89.030                     | 1.02                                   | 2.37                                     | 2.35   | 2.30                        | 2.26   | 2.24   | 2.21   | 2.18   | 2.22   | 2.25   |  |  |
| Pakse               |         | 0.0                    | 86.490                     | 0.03                                   | 1.35                                     | 1.34   | 1.31                        | 1.28   | 1.27   | 1.26   | 1.25   | 1.28   | 1.30   |  |  |
| Stung Treng         |         | nr                     | 36.790                     | 0.32                                   | 2.92                                     | 2.90   | 2.84                        | 2.81   | 2.77   | 2.75   | 2.73   | 2.71   | 2.73   |  |  |
| Kratie              |         | nr                     | -1.080                     | 3.06                                   | 7.90                                     | 7.78   | 7.74                        | 7.67   | 7.63   | 7.58   | 7.55   | 7.52   | 7.50   |  |  |
| Kompong Cham        |         | nr                     | -0.930                     | 0.65                                   | 3.63                                     | 3.52   | 3.38                        | 3.32   | 3.23   | 3.28   | 3.23   | 3.19   | 3.15   |  |  |
| Phnom Penh (Bassac) |         | nr                     | -1.020                     | 1.58                                   | 2.85                                     | 2.68   | 2.59                        | 2.55   | 2.52   | 2.50   | 2.47   | 2.44   | 2.42   |  |  |
| Phnom Penh Port     |         | nr                     | 0.000                      | 0.14                                   | 1.87                                     | 1.70   | 1.61                        | 1.57   | 1.53   | 1.50   | 1.47   | 1.43   | 1.40   |  |  |
| Koh Khel            |         | nr                     | -1.000                     | 1.52                                   | 2.82                                     | 2.73   | 2.68                        | 2.66   | 2.64   | 2.62   | 2.60   | 2.58   | 2.56   |  |  |
| Neak Luong          |         | nr                     | -0.330                     | 0.81                                   | 2.60                                     | 2.54   | 2.49                        | 2.42   | 2.39   | 2.34   | 2.32   | 2.30   | 2.28   |  |  |
| Prek Kdam           |         | nr                     | 0.080                      | 0.58                                   | 2.17                                     | 2.11   | 2.07                        | 2.03   | 2.00   | 1.98   | 1.96   | 1.94   | 1.91   |  |  |
| Tan Chau            |         | 0.0                    | 0.000                      | -0.37                                  | 1.34                                     | 1.41   | 1.45                        | 1.48   | 1.50   | 1.46   | 1.40   | 1.31   | 1.20   |  |  |
| Chau Doc            |         | nr                     | 0.000                      | -0.60                                  | 1.44                                     | 1.56   | 1.63                        | 1.68   | 1.72   | 1.70   | 1.62   | 1.52   | 1.41   |  |  |

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/bulletin_wet.php); <http://ffw.mrcmekong.org/reportflood.php>

## 7 Summary and Possible Implications

### 7.1 Rainfall and its forecast

No rainfall during this reporting week was recorded for most of the stations in the LMB, except at Luang Prabang and Neak Luong which was about 1.8 mm. Compared with last week's amount, the rainfall this week was considered much smaller.

Based on the forecasted rainfall from satellite using GFS data, no rainfall is likely to take place in the Mekong region from 12 to 18 January 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<sup>3</sup>/s due to power grid maintenance during 5–24 January 2021. The reduced flow has resulted in changes in river water levels along the Mekong River in Thailand, Lao PDR, and Cambodia. The amount of water flow will be gradually restored to its normal operation status on January 25, based on the notification.

Water levels from Thailand's Chiang Saen to Lao PDR's Vientiane were slightly increasing during this reporting week. Water levels at Nong Khai and Paksane are currently below their historical minimum values. From Nakhon Phanom in Thailand to Pakse in Lao PDR, water levels were also decreasing. At Stung Treng and Kratie in Cambodia, water levels slightly decreased but were still 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 January 5 to 11. Generally, this week's water levels were relatively lower than those of last week from the upper 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 and close to that of 2018. 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 Pakse are expected to continue decreasing, ranging between 0.05 and 0.30 metres. This situation still continues to put most stations' water levels 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 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 2 to 8 January 2021 was very much similar to last week (26 Dec 2020 to 1 Jan 2021). 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 January and February this year mainly in the Central Highland of Viet Nam.

**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 Khei | Neak Luong | Prek Kdam | Tan Chau | Chau Doc |
|------------|----------|-------------|---------------|-------------|-----------|----------|---------|---------------|----------|-------|-------------|--------|--------------|---------------------|----------|------------|-----------|----------|----------|
| 05-01-2021 | 535.64   | 1.87        | 8.94          | 4.93        | 1.58      | 1.58     | 1.81    | 1.65          | 2.11     | 1.64  | 3.19        | 8.09   | 3.66         | 3.01                | 3.00     | 2.24       | 2.41      | 0.93     | 1.01     |
| 06-01-2021 | 535.63   | 1.89        | 8.40          | 5.20        | 1.78      | 1.79     | 1.72    | 1.51          | 2.02     | 1.64  | 3.14        | 8.31   | 3.70         | 2.94                | 2.97     | 2.26       | 2.36      | 0.92     | 1.01     |
| 07-01-2021 | 535.58   | 1.92        | 8.50          | 4.92        | 2.00      | 2.02     | 1.78    | 1.46          | 2.00     | 1.64  | 3.17        | 8.28   | 3.79         | 3.08                | 2.98     | 2.36       | 2.31      | 0.99     | 1.10     |
| 08-01-2021 | 535.67   | 1.92        | 8.24          | 4.52        | 1.96      | 2.06     | 1.98    | 1.35          | 1.94     | 1.64  | 3.09        | 8.29   | 3.75         | 3.05                | 2.96     | 2.46       | 2.29      | 1.03     | 1.13     |
| 09-01-2021 | 536.05   | 1.87        | 8.28          | 4.15        | 1.70      | 1.86     | 2.03    | 1.35          | 1.91     | 1.58  | 3.02        | 8.20   | 3.75         | 2.97                | 2.87     | 2.48       | 2.22      | 1.20     | 1.26     |
| 10-01-2021 | 536.14   | 1.89        | 8.40          | 3.85        | 1.42      | 1.51     | 1.93    | 1.41          | 1.92     | 1.35  | 2.92        | 7.90   | 3.63         | 2.85                | 2.82     | 2.60       | 2.17      | 1.34     | 1.44     |
| 11-01-2021 | 536.06   | 2.07        | 8.52          | 3.76        | 1.18      | 1.24     | 1.82    | 1.39          | 1.90     | 1.34  | 2.90        | 7.78   | 3.52         | 2.68                | 2.73     | 2.54       | 2.11      | 1.41     | 1.56     |

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 Khei | Neak Luong | Prek Kdam | Tan Chau | Chau Doc |
|------------|----------|-------------|---------------|-------------|-----------|----------|---------|---------------|----------|-------|-------------|--------|--------------|---------------------|----------|------------|-----------|----------|----------|
| 05-01-2021 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0        | 0     | 0           | 0      | 0            | 0                   | 0        | 0          | 0         | 0        | 0        |
| 06-01-2021 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0        | 0     | 0           | 0      | 0            | 0                   | 0        | 1.2        | 0         | 0        | 0        |
| 07-01-2021 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0        | 0     | 0           | 0      | 0            | 0                   | 0        | 0          | 0         | 0        | 0        |
| 08-01-2021 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0        | 0     | 0           | 0      | 0            | 0                   | 0        | 0          | 0         | 0        | 0        |
| 09-01-2021 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0        | 0     | 0           | 0      | 0            | 0                   | 0        | 0          | 0         | 0        | 0        |
| 10-01-2021 | 0        | 0           | 0             | 0           | 0         | 0        | 0       | 0             | 0        | 0     | 0           | 0      | 0            | 0                   | 0        | 0          | 0         | 0        | 0        |
| 11-01-2021 | 0        | 0           | 1.8           | 0           | 0         | 0        | 0       | 0             | 0        | 0     | 0           | 0      | 0            | 0                   | 0        | 0          | 0         | 0        | 0        |



## Mekong River Commission Secretariat

P. O. Box 6101, 184 Fa Ngoum Road, Unit 18 Ban Sithane Neua, Sikhottabong District, Vientiane 01000, Lao PDR  
Tel: +856 21 263 263. Fax: +856 21 263 264 [www.mrcmekong.org](http://www.mrcmekong.org)

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