



**Climate Outlook:**

**1. During the next 3 months,** the mean total rain of Thailand in the following parts: northern, northeastern, central parts and Bangkok Metropolis and Vicinity will be 20% below normal. In other words, the total rain of the above parts is to be about 130 (Normal: 165), 100 (Normal: 136), 160 (Normal: 207) and 260 (Normal: 301) millimeters consecutively.

For the eastern part, the mean total rain will be 10% below normal or is to be about 240 (Normal: 286). For the Southern Thailand, the mean total rain will be 5% below normal, specifically that of the Eastern Coast is to be about 850 (Normal: 891) while that of the Western Coast is to be about 610 (Normal: 635) millimeters.

Furthermore, the mean temperature of the Upper Thailand will be slightly above normal as the mean maximum temperature is to be about 31 – 33 C. (Normal: 31.4 C.) while the mean minimum temperature is to be about 24 – 25 C. (Normal: 21.4 C.).

Additionally, the mean temperature of the Southern Thailand will be near normal as the mean maximum temperature is to be about 30 – 31 C. (Normal: 30.9 C.) whereas the mean minimum temperature is to be about 23 – 24 C. (Normal: 23.3 C.).

**2. In October 2018,** the mean total rain of the Upper Thailand will be about 10% below normal (the mean total rain of the following parts is as follows:

The northern part: 110, the northeastern part: 100, the central part: 150,

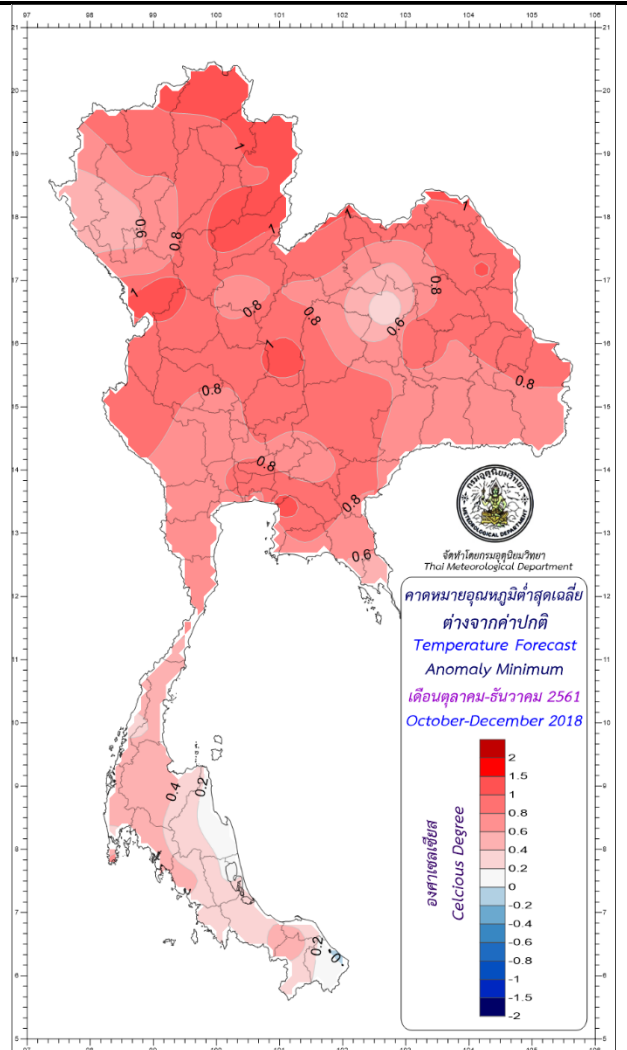
The eastern part: 200, Bangkok Metropolis and Vicinity: 220 millimeters consecutively.

While the mean total rain of the Southern Thailand will be about 5% below normal as that of the Eastern Coast is to be 240 and that of the Western Coast is to be about 350 millimeters consecutively.

Additionally, the mean temperature of the Upper Thailand in this October will be slightly above normal. In other words, the mean maximum temperature is to be about 32 – 34 C. whereas the mean minimum temperature is to be about 23 – 25 C.

Furthermore, the mean temperature of the Southern Thailand in this October will be near normal. In fact, the mean maximum temperature is to be about 31 – 33 C. while the mean minimum temperature is to be about 23 – 25 C.

**3. In November 2018,** the mean total rain of the northern, northeastern and central parts including with that of Bangkok Metropolis and Vicinity will be about 20, 10, 20 and 30 millimeters accordingly, or 20% below normal.



In addition, the mean total rain of the eastern part will be 10% below normal, that is 40 millimeters. Besides, the mean total rain of the Southern Thailand will be near normal, that is to be about 360 for the Eastern Coast and to be about 190 millimeters consecutively for the Western Coast.

Moreover, the mean temperature of the Upper Thailand in this November will be above normal as the mean maximum temperature is to be about 31 – 34 C. while the mean minimum temperature is to be about 21 – 24 C.

Furthermore, the mean temperature of the Southern Thailand in this November will be slightly above normal as the mean maximum temperature is to be about 31 – 33 C. whereas the mean minimum temperature is to be about 23 – 25 C.

**4. In December 2018,** the mean total rain of the northern, northeastern and central parts along with that of Bangkok Metropolis and Vicinity will be less than 5 millimeters or 30% below normal. Furthermore, the mean total rain of the eastern part will be less than 10 millimeters or 20% below normal.

However, the mean total rain of the Southern Thailand will be near normal as that of the Eastern Coast is to be about 240 whereas that of the Western Coast is to be about 70 millimeters consecutively.

Moreover, the mean temperature of the Upper Thailand in this December will be above normal as the mean maximum temperature is to be about 30 – 33 C. while the mean minimum temperature is to be about 19 – 22 C.

Alternatively, the mean temperature of the Southern Thailand will be near normal as the mean maximum temperature is to be about 30 – 32 C. whereas the mean minimum temperature is to be about 23 – 25 C.

\* The information supporting this 3-month climate outlook is at the following pages:

## Thailand climate for October-November-December 2018 from baseline: 1981-2010

**October 2018:** As being the transition month from the rainy to the winter seasons, the rain and temperature of the Upper Thailand will reduce and cool weather begins since the middle of this month. The reason is that the Southwest Monsoon starts to transform to become the Northeast Monsoon along with coldly high-pressure air mass areas from China begin to prevail over the Upper Thailand periodically.

As a result, the rainy low-pressure air mass trough placing over the central and eastern parts earlier will move downward to place over the Southern Thailand and the Gulf of Thailand during the 2<sup>nd</sup> half of this month. Consequently, the Southern Thailand will still meet densely abundant rainfall. Probably, some tropical cyclones may move near or toward the eastern portion of Thailand around the eastern part and then move continuously to the upper portion of the Gulf of Thailand or the Southern Thailand further.

**November 2018:** The Upper Thailand will meet less rain with cool weather for the whole month. The reason is that the influential coldly high-pressure air mass areas from China will prevail over the Upper Thailand actively and periodically. Then, this will cause temperature to lessen to become cold weather (8.0 - 15.9 C) at some areas, specifically at the northern and northeastern parts.

On the other hand, the Southern Thailand will still meet abundant rain, especially around the East Coast. The reason is that the influentially Northeast Monsoon prevails over and the rainy low-pressure air mass trough moves to place at the Southern Thailand and the Gulf of Thailand.

**December 2018:** Usually, the coldly high-pressure air mass areas from China will prevail over Thailand for the whole month of this December actively and periodically. As a result, the temperature of the Upper Thailand will possibly reduce to become commonly chilly, especially around the upper portion of the northern and northeastern parts including with feasibly very cold weather (8.0 - 15.9 C) at mount tops or mountainous areas.

For the Southern Thailand, abundant rainfall still occurs mostly during the 1<sup>st</sup> half of this month, specifically at the Eastern Coast due to the influentially Northeast Monsoon prevailing over the Southern Thailand and the Gulf of Thailand. Nevertheless, there may be some tropical cyclones moving near or toward Thailand further, commonly at the lower portion of the Southern Thailand.

# Outlook of the phenomena influencing climate of Thailand

## 1. El Niño Southern Oscillation (ENSO)

During the past August 2018, the ENSO phenomenon was neutral as 0.3 (ONI Neutral: not above or equal to 0.5 or below or equal to -0.5). And from NOAA El Niño/Southern Oscillation (ENSO) Diagnostic Discussion (short), IRI ENSO forecast, and NOAA ENSO: Recent Evolution, Current Status and Predictions (long), they predict for ENSO scenario probability and sea surface temperature around the Pacific Ocean. Furthermore, from statistical data analysis together with dynamic modeling (Figures 1 and 2), the sea surface temperature around the equatorial Pacific Ocean is near normal during August 2018 until early September 2018 and tends to increase further.

Conclusively, during September until November 2018, global climate centers predict that ENSO will still become neutral. Afterward from December 2018 till February 2019, ENSO will favorably become El Niño.

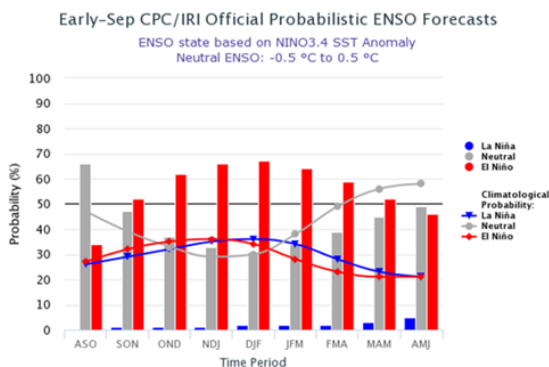


Fig. 1: Graph of ENSO scenario probability forecasts (source: IRI/CPC)

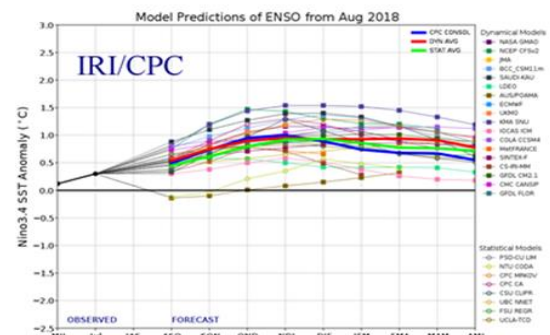


Fig. 2: Graph of ensemble model forecasts for 'mean sea surface temperature' anomaly around Nino 3.4 from global climate centers (source: IRI/CPC)

## 2. Indian Ocean Dipole (IOD)

During the past August till September 2018, IOD was still neutral. IOD (Fig. 3) is the anomaly index of sea surface temperature due to anomalous cooling of the sea surface temperature at the eastern side of the Indian Ocean around the equator (EAST) and anomalous warming of the sea surface temperature at the western side of the Indian Ocean around the equator (WEST).

Moreover, from model forecasts (Fig. 4) of IOD index, IOD scenario probability and sea surface temperature around the Indian Ocean, they predict that IOD will still become positive from October until November 2018.

In other words, IOD will influence on mean total rain and mean temperature of Thailand to reduce during the next 2 months. Then, IOD will become neutral and thus not influence on weather of Thailand during December 2018.

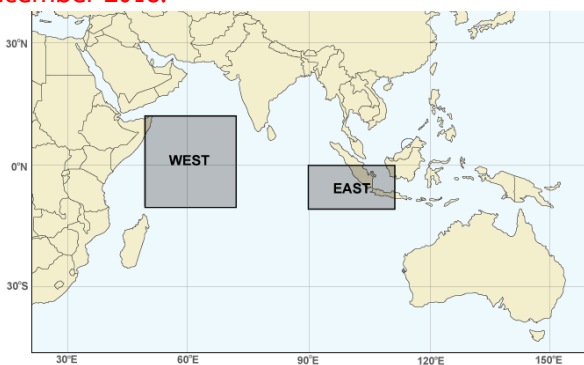


Fig. 3: a Map of the Indian Ocean Dipole (source: Bureau of Meteorology, Australia)

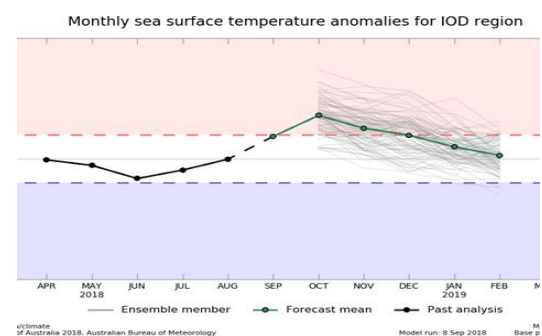


Fig. 4: IOD index forecast (source: Bureau of Meteorology, Australia)

### 3. Madden Julian Oscillation (MJO)

MJO is a gigantic phenomenon originated from the atmospheric circulation coupled with the uplift of air in the tropics with 30 – 90 days duration. MJO will move easterly which will relate to anomalous rainfall. During the past September 2018, weak MJO appeared around the western side of the Pacific Ocean as scattered clouds influencing on tropical cyclone development presently.

And from various MJO index forecast models, many models (Fig. 5: the circle positioning on 25 September 2018 as the starting date) predicted quite the same that during early October 2018, MJO will newly develop around the western portion of the Indian Ocean (Fig. 6: MJO will be negative during Days 1 – 15). Furthermore, the MJO movement during this period will assist the ENSO phenomenon to develop quicker.

MJO is expected to influence on increasing rain at the middle and lower portions of Thailand during this middle October 2018.

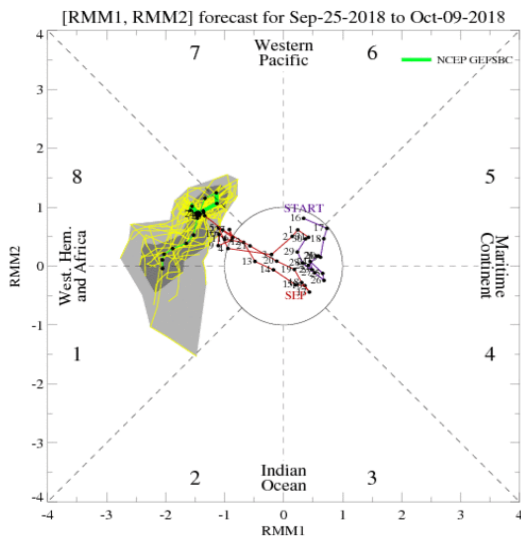


Fig. 5: Graph of MJO index and phase forecast from global climate centers (source: IRI/CPC)

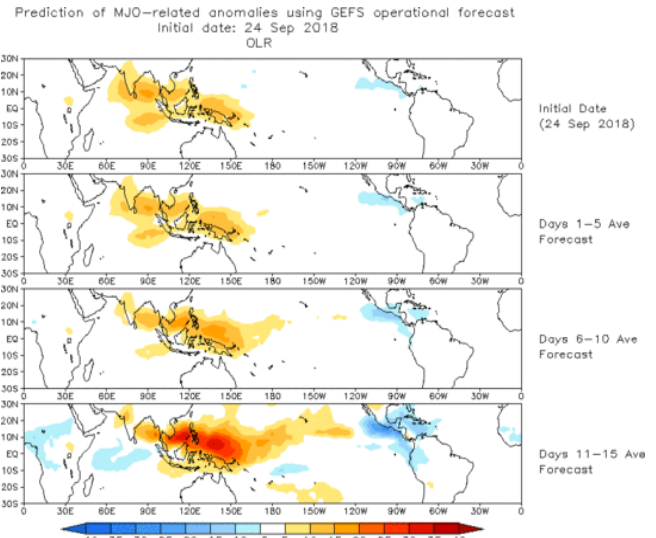


Fig. 6: Three-phase forecast maps of mean OLR (Outgoing Longwave Radiation), each phase consists of 5 days. (source: IRI/CPC)

### 4. Monsoon

Monsoon is a seasonal wind with continuously precise direction. Thailand is under two influential monsoons as Southwest Monsoon and Northeast Monsoon.

The Southwest Monsoon prevailing over Thailand during middle May until middle October is originated from high-pressure air mass areas at the Southern Hemisphere around the Indian Ocean. This monsoon will bring humid air mass from the Indian Ocean toward Thailand bringing about cloudy and widespread abundant rain. Especially along coastal areas and windward mountains, these areas will receive more rain than others. After the diminishing effect of the southwest monsoon around middle October onward, the Northeast Monsoon will prevail over Thailand until middle February. This Monsoon is originated from high-pressure air mass areas at the Northern Hemisphere around Mongolia and China. Thus, the Monsoon brings cold and dry air mass from the source toward Thailand until middle February. Consequently, clear sky with chilly and dry weather occurs commonly, specifically around the northern and northeastern parts. While the Southern Thailand, specifically at the Eastern Coast will meet abundant rain because this Monsoon brings prevailing moisture from the Gulf of Thailand.

The mean wind velocity of the Southwest Monsoon prevailing over Thailand during the past September 2018 was slightly above normal and periodically active. In this coming October 2018, the Southwest Monsoon is expected to prevail over Thailand during the 1<sup>st</sup> half of the month and will start to transform to become the Northeast Monsoon prevailing over the Upper Thailand since the middle of the month onward (Fig. 7).

Whereas in November 2018, the Northeast Monsoon prevailing over Thailand is expected to be above-normal active resulting in increasing rain in the Southern Thailand (Fig. 8). For December 2018, the Northeast Monsoon prevailing over Thailand will be near normal (Fig. 9).

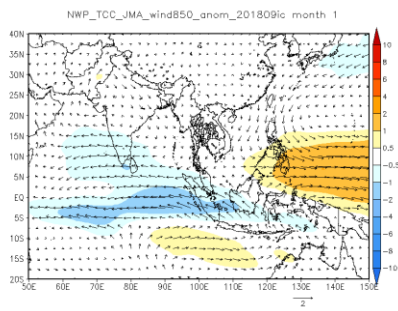


Fig. 7: Map of 'mean wind velocity' anomaly from normal at the 850-hPa (1.5 km level) during October 2018 (Tokyo climate center, JMA - Japan Meteorological Agency, Japan)

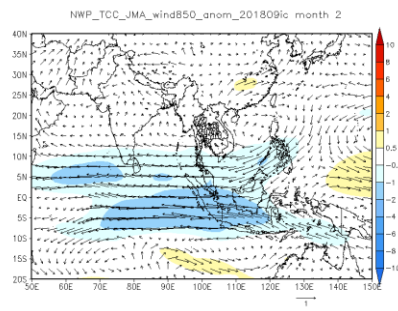


Fig. 8: Map of 'mean wind velocity' anomaly from normal at the 850-hPa (1.5 km level) during November 2018 (Tokyo climate center, JMA - Japan Meteorological Agency, Japan)

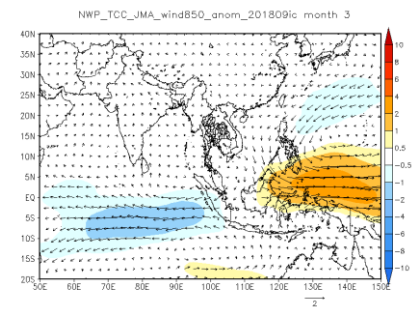
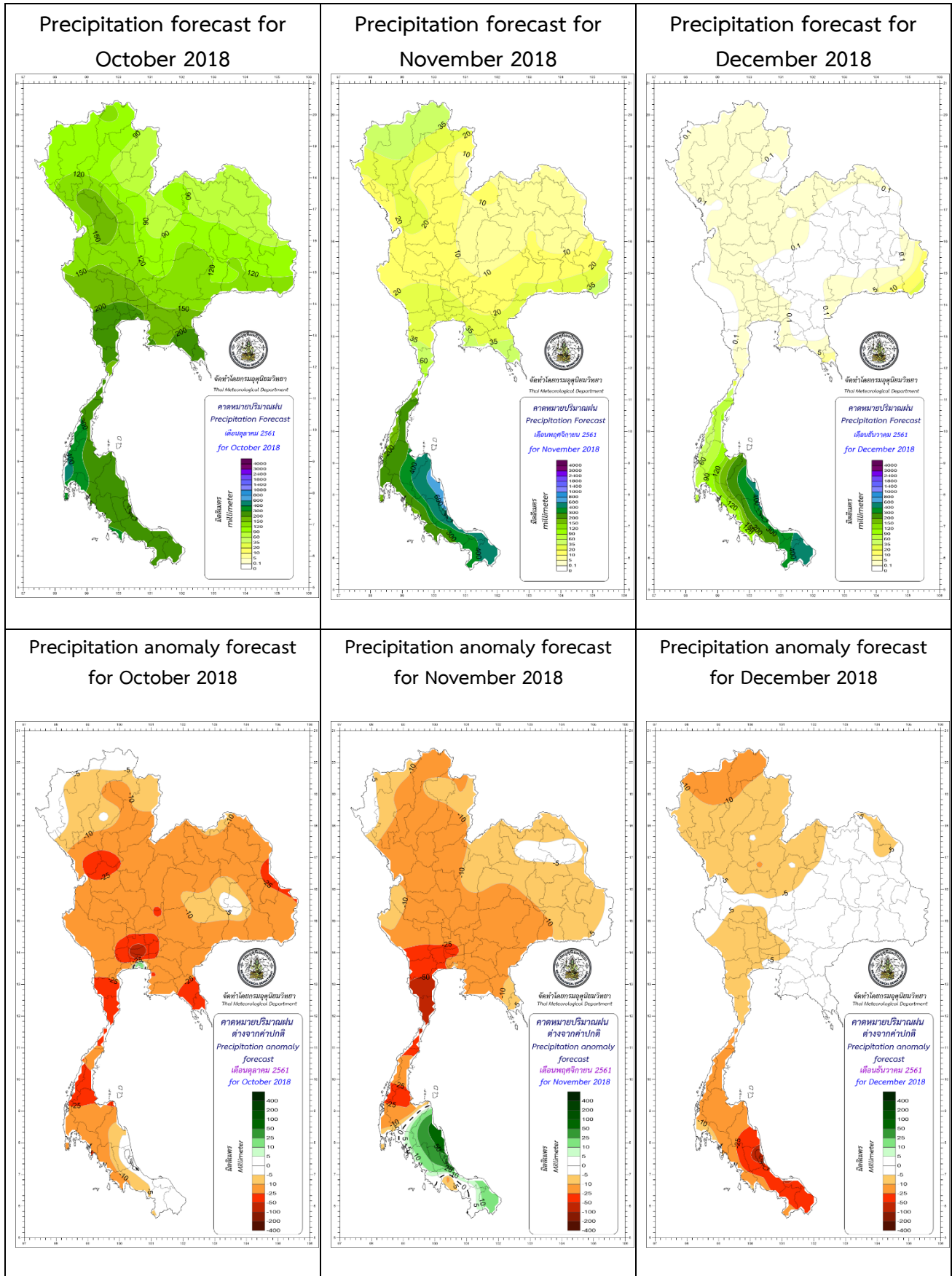


Fig. 9: Map of 'mean wind velocity' anomaly from normal at the 850-hPa (1.5 km level) during December 2018 (Tokyo climate center, JMA - Japan Meteorological Agency, Japan)

\*\* For further information, please visit [www.tmd.go.th/en](http://www.tmd.go.th/en) and [www.climate.tmd.go.th](http://www.climate.tmd.go.th) \*\*

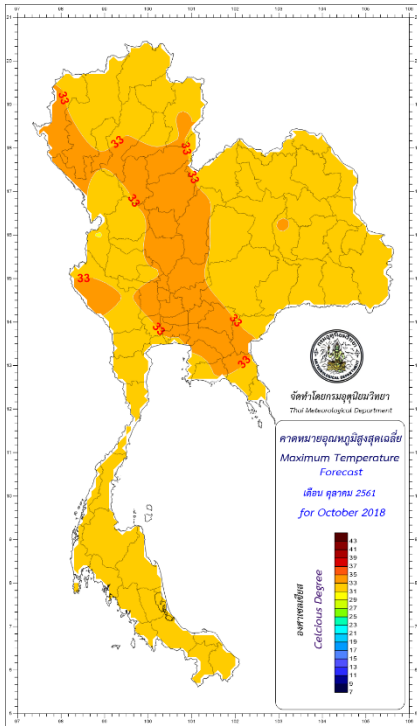


## Precipitation (mm/month) and Anomaly (mm/month) Forecast:

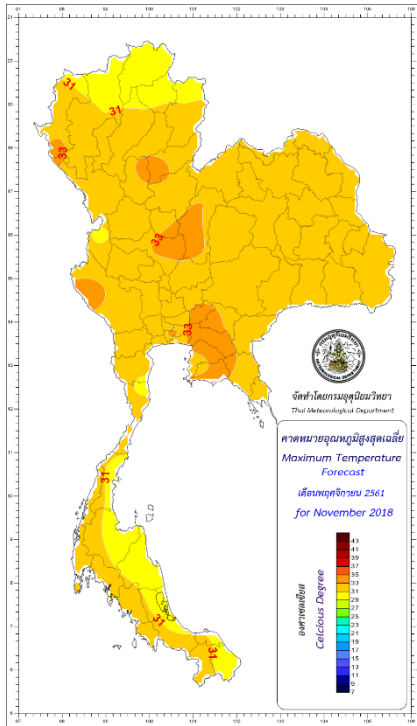


## Mean Maximum Temperature (°C) and Anomaly (°C) Forecast:

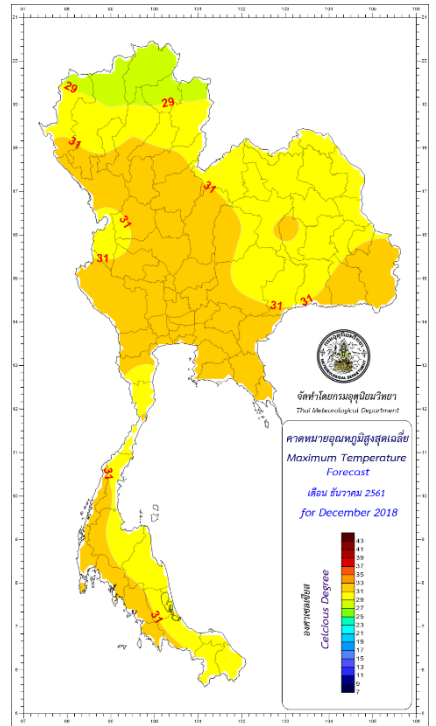
Mean maximum temperature forecast for October 2018



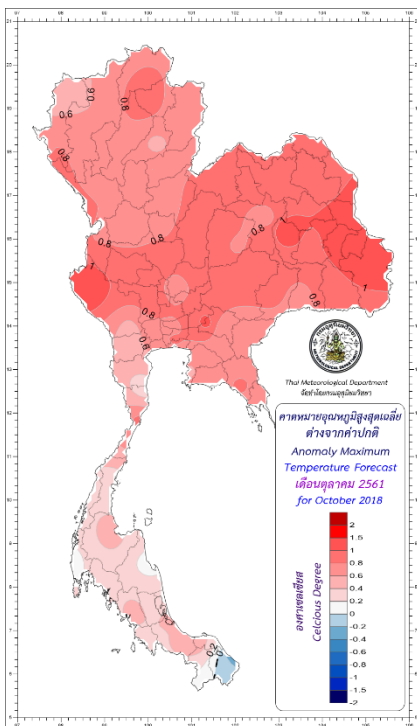
Mean maximum temperature forecast for November 2018



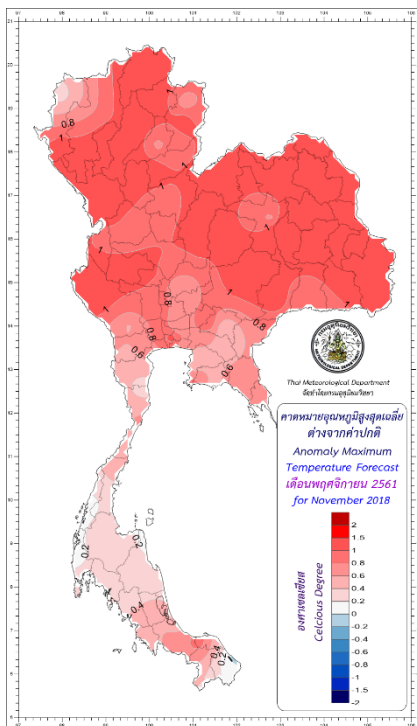
Mean maximum temperature forecast for December 2018



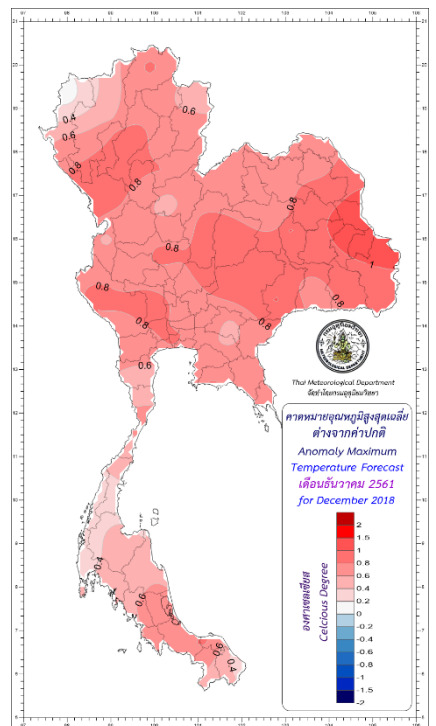
Mean maximum temperature anomaly forecast for October 2018



Mean maximum temperature anomaly forecast for November 2018

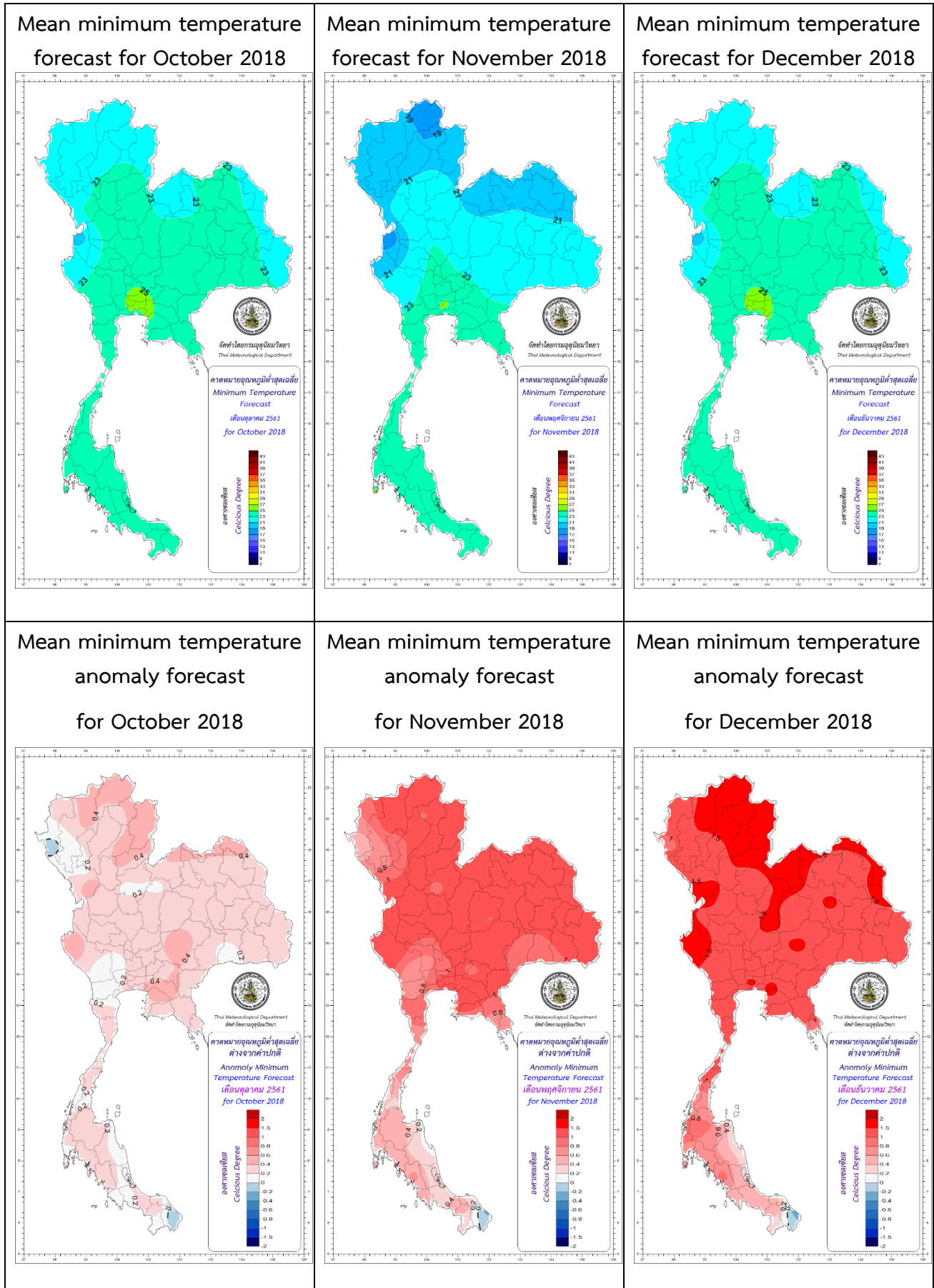


Mean maximum temperature anomaly forecast for December 2018





## Mean Minimum Temperature (°C) and Anomaly (°C) Forecast:



**\*\*\* Caution: \*\*\***

**October 2018:** The central and eastern parts will still meet continuous rainfall with high tide at some periods influencing flood and overflow to occur at some areas.

**November 2018:** Some tropical cyclones favor a high chance to move near Thailand or pass the Southern Thailand. They will pass the tip of the Indochina Peninsula toward the Gulf of Thailand influencing the Southern Thailand (East Coast) to meet increasing rainfall. As a result, flash or forest flood may happen at some areas.

**December 2018:** Some westerly wind waves from Myanmar may pass the Upper Thailand causing the area to meet thunder rain, gusty wind at some areas and possibly falling hail. The public then should follow weather forecast news from the Thai Meteorological Department closely.

Table 1: Prediction of Rain (mm = millimeters), Rainy Days (days) and comparing with normal

Part	Prediction									Normal (Baseline period 1980-2010)					
	October 2018			November 2018			December 2018			October		November		December	
	Rain (mm)	Rainy Days	Comparing with normal	Rain (mm)	Rainy Days	Comparing with normal	Rain (mm)	Rainy Days	Comparing with normal	Rain (mm)	Rainy Days	Rain (mm)	Rainy Days	Rain (mm)	Rainy Days
Northern	85-135	10-12	10% below normal	10-35	2-4	20% below normal	Less than 5	1-2	30% below normal	124.1	12.0	32.9	4.1	8.2	1.2
Northeastern	75-130	8-10	10% below normal	5-20	1-3	20% below normal	Less than 5	1-2	30% below normal	117.1	10.4	19.5	2.9	3.5	0.8
Central	120-180	12-14	10% below normal	5-35	1-3	20% below normal	Less than 5	1-2	30% below normal	187.1	14.4	37.2	4.1	5.2	1.0
Eastern	170-140	14-16	10% below normal	25-60	3-5	10% below normal	Less than 5	1-2	20% below normal	225.1	16.5	53.3	5.6	8.1	1.4
Southern Thailand (East Coast)	200-280	17-19	5% below normal	295-445	15-17	Near normal	180-305	11-13	10% below normal	255.3	18.6	357.2	16.3	236.9	12.1
Southern Thailand (West Coast)	305-390	21-23	5% below normal	150-230	15-17	Near normal	45-90	8-10	10% below normal	366.5	22.8	193.3	16.2	75.0	9.1
Bangkok Metropolis and Vicinity	190-255	15-17	10% below normal	15-50	3-5	20% below normal	Less than 5	1-2	30% below normal	292.1	17.5	49.5	5.8	6.3	1.2

Table 2: Prediction of Mean Maximum Temperature (Tmax) and Mean Minimum Temperature (Tmin) (°C) comparing with normal:

Part	Prediction									Normal (Baseline period 1980-2010)					
	October 2018			November 2018			December 2018			October		November		December	
	Mean Tmax	Mean Tmin	Comparing to Normal	Mean Tmax	Mean Tmin	Comparing to Normal	Mean Tmax	Mean Tmin	Comparing to Normal	Mean Tmax	Mean Tmin	Mean Tmax	Mean Tmin	Mean Tmax	Mean Tmin
Northern	32-34	22-24	Slightly above normal	31-33	19-22	Above normal	29-32	16-19	Above normal	31.9	22.5	31.0	19.5	29.8	15.9
Northeastern	31-33	22-24	Slightly above normal	31-33	20-23	Above normal	29-32	17-20	Above normal	31.4	22.8	30.7	20.3	29.5	17.1
Central	32-34	23-25	Slightly above normal	31-34	21-24	Above normal	31-34	19-22	Above normal	32.4	24.2	31.9	22.6	31.4	20.1
Eastern	32-34	24-25	Slightly above normal	32-34	23-25	Above normal	31-34	21-24	Above normal	32.0	24.1	32.1	23.0	31.6	21.2
Southern Thailand (East Coast)	31-33	23-25	Near normal	30-32	23-25	Slightly above normal	39-31	22-24	Slightly above normal	31.4	23.8	30.3	23.4	29.7	22.5
Southern Thailand (West Coast)	31-33	23-25	Near normal	31-33	23-25	Slightly above normal	31-33	23-25	Slightly above normal	31.2	23.7	31.4	23.5	31.5	23.0
Bangkok Metropolis and Vicinity	32-34	24-26	Slightly above normal	32-34	24-26	Above normal	31-33	22-25	Above normal	32.6	24.8	32.4	23.9	31.7	22.0

**Remarks:** - Normal means average during the 30-year period (A.D. 1981 – 2010 or B.E. 2524 – 2553).

- This long-range climate forecast is created by applying some climate models and statistical methods, the public then should follow the daily weather forecast news from the Thai Meteorological Department for more accuracy further.
- The next 3-month climate forecast will be published online before the end of October 2018.
- Further enquiry of monthly climate, 3-month climate and seasonal forecasts can be preceded at Tel: (662)-398-9929 or Fax: (662)-383-8827.
- Also, please follow monthly climate, 3-month climate and seasonal forecasts at <http://www.tmd.go.th/en/> at the climate tab.

Climate Center, Meteorological Development Division, Thai Meteorological Department [www.climate.tmd.go.th](http://www.climate.tmd.go.th)