Federation for Environment, Climate and Technology

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Week of 19 - 26 Feb 2021

CLIMATE MONITORING AND PREDICTION FOR SRI LANKA

By: Nipuni Alahakoon, Sanduni Gammanpila, Ushan Adithya, Azra Munas, Tuan Hadgie, Lareef Zubair and Michael Bell[1] (FECT and IRI[1])

HIGHLIGHTS

Rainfall Prediction

- *Showers of 45 mm expected in Eastern province during 17th - 23rd Feb. A drop in rainfall over the rest of the country.*

Monitored Rainfalls

- *Heavy rainfall was experienced in Southern, Uva & Sabaragamuwa provinces. Up to 104 mm max in Matara on 14th Feb.*

Monitored Wind

- *From 9th - 15th Feb: up to 4 km/h Northeasterly winds were experienced by the entire island.*

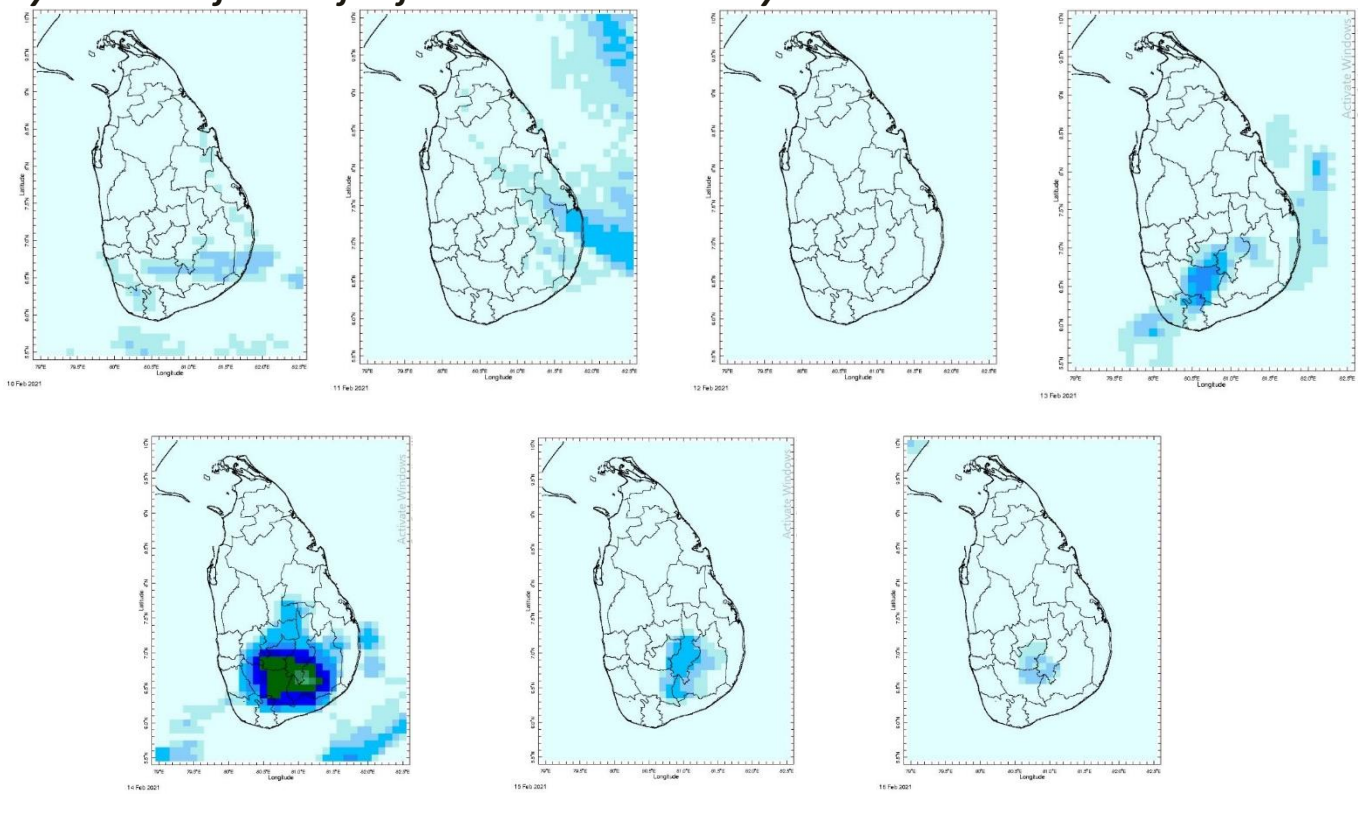
Monitored Sea Surface

- *Sea surface temperature was observed near-neutral all along around Sri Lanka.*

Monitoring

Rainfall

Daily Estimates for Rainfall from 10th – 16th February



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Total Rainfall for the Past Week

The RFE 2.0 tool shows 7-day total Cumulative rainfall by Districts:

Rainfall	Districts
25 – 50 mm	Ratnapura, Matara, Badulla, Moneragala, Nuwara Eliya
10 – 25 mm	Kegalle, Galle, Hambantota, Kandy
5 – 10 mm	Kalutara, Matale
2 – 5 mm	Polonnaruwa, Colombo, Ampara, Batticaloa

There was no rainfall in the week in the remaining districts.

Weekly Rainfall Anomalies by Districts:

Rainfall Excess

Rainfall	Districts
25 – 50 mm	Ratnapura, Badulla, Moneragala
10 – 25 mm	Hambantota, Nuwara Eliya

Rainfall Deficit

Rainfall	Districts
25 – 50 mm	Polonnaruwa, Ampara, Batticaloa
10 – 25 mm	Vavuniya, Anuradhapura, Puttalam, Kurunegala, Gampaha, Colombo, Kalutara, Kegalle, Galle, Matara, Matale, Trincomalee, Kandy

There was no rainfall in the week in the remaining districts.

Monthly Monitoring

During late January and early February, Dekadal Rainfall (mm/day) by Districts:

21st – 31st January:

Rainfall	Districts
12 mm	Ampara
10 mm	Batticaloa
6 mm	Moneragala, Polonnaruwa, Ratnapura
4 mm	Hambantota, Matara, Galle, Kalutara, Colombo, Gampaha, Kegalle, Nuwara Eliya, Kandy, Matale, Badulla, Anuradhapura, Trincomalee
2 mm	Puttalam, Kurunegala, Mannar, Vavuniya, Mullaitivu, Kilinochchi, Jaffna

1st – 10th February:

Rainfall	Districts
12 mm	Ampara, Hambantota
10 mm	Kalutara, Galle
6 mm	Ratnapura, Matara, Moneragala
4 mm	Kandy, Nuwara Eliya, Badulla, Batticaloa
2 mm	Jaffna, Vavuniya, Mannar, Anuradhapura, Polonnaruwa, Puttalam, Kurunegala, Matale, Gampaha, Colombo, Kegalle, Trincomalee

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Ocean State *(Text Courtesy IRI)*

Pacific sea state: February 10, 2021

Equatorial Eastern and western Pacific SST reached La Niña threshold in Early-February, and the atmospheric variables were either ENSO-neutral or indicative of weak La Niña conditions.

Indian Ocean State

Sea surface temperature was observed near-neutral all along around Sri Lanka.

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 17th – 23rd February:

Total rainfall by Provinces:

Rainfall	Provinces
45 mm	Eastern

From 24th February – 02nd March:

Total rainfall by Provinces:

Rainfall	Provinces
25 mm	Eastern

MJO based OLR predictions

For the next 15 days:

MJO shall significantly suppress the rainfall during 16th – 25th Feb slightly suppress during 26th Feb – 2nd March.

Interpretation

Monitoring

Rainfall: During the last two weeks, there had been high rainfall over the following provinces: Southern, Sabaragamuwa and Uva.

Wind: As is typical for February the Northeasterly winds prevailed in the sea area and around the island.

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Temperatures: The temperature anomalies were slightly above normal for the Western & Sabaragamuwa provinces the last – driven by the warm SST's.

Predictions

Rainfall: During the next week (17th Feb – 23rd Feb), showers is predicted for the Eastern coastal region. A drop in rainfall is predicted over the rest of the country.

Temperatures: The temperature remains slightly above normal for February. During 18th–24th Feb, the temperature remains high especially the Western, Northern, North central, Sabaragamuwa and North western provinces.

Teleconnections:

- MJO shall significantly suppress the rainfall during 16th – 25th Feb slightly suppress during 26th Feb – 2nd March.
- La Nina - The SST forecast is for La Nina conditions to continue through April weakening through June. So, the La Niña is expected to be moderate to strong in coming seasons.

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Weekly Climate Bulletin for Sri Lanka

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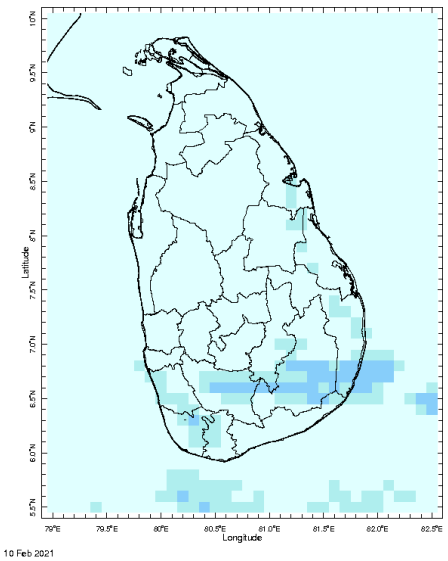
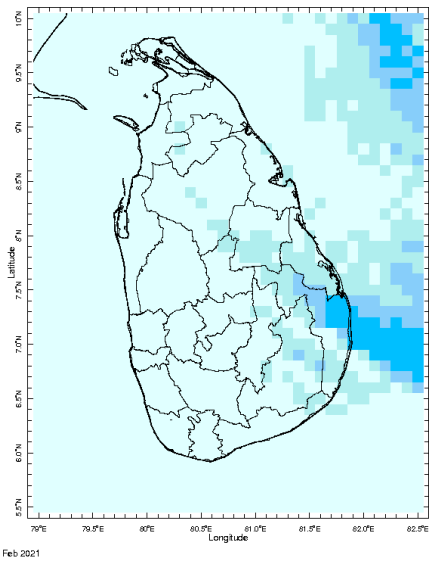
MONITORING

Daily Rainfall Monitoring

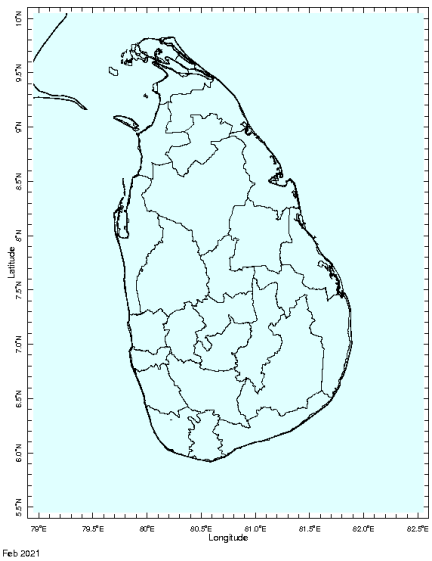
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



10 Feb 2021



11 Feb 2021



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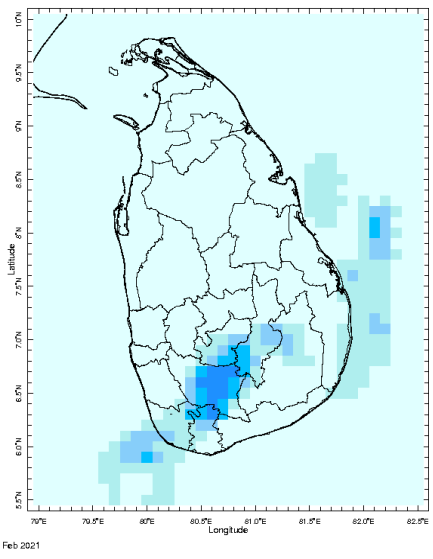

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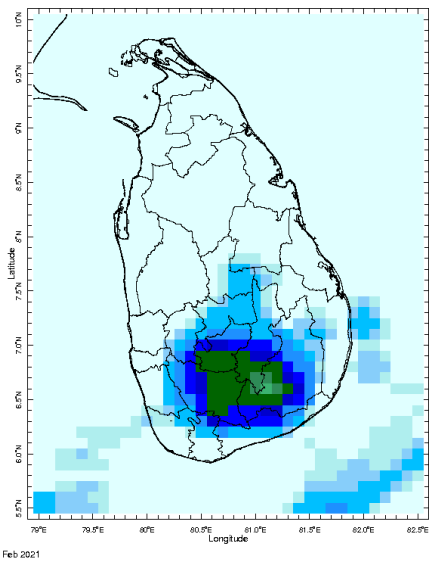
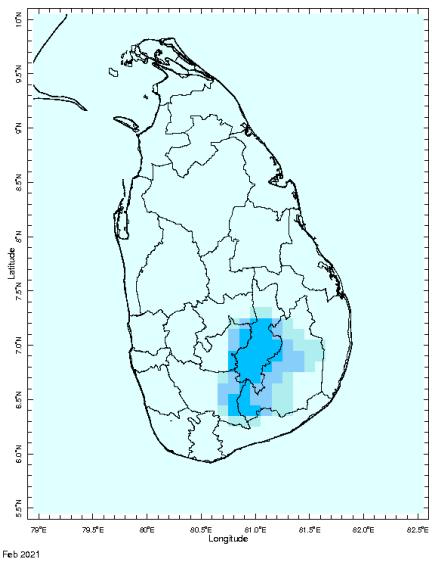
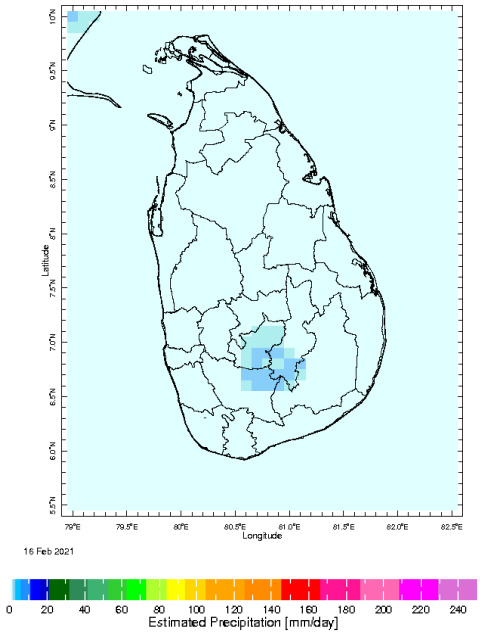


14 Feb 2021

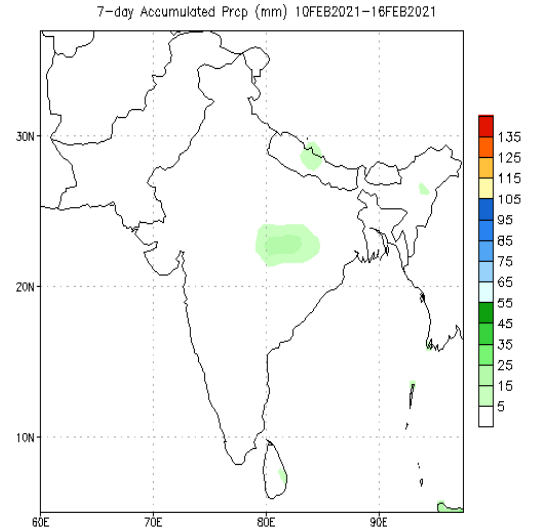


15 Feb 2021

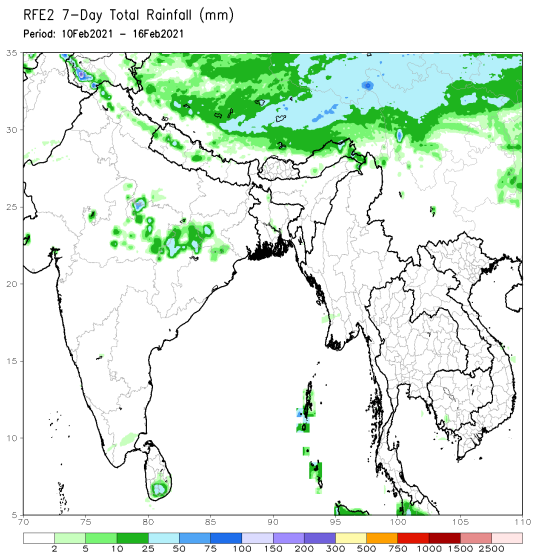


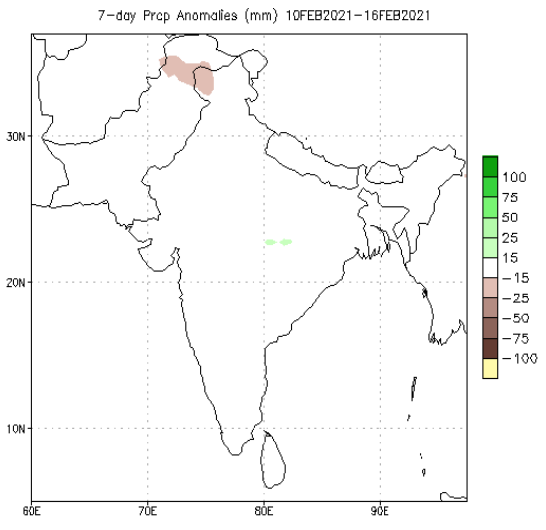
Weekly Rainfall Monitoring

The following figures show the total satellite observed rainfall in the last week in Sri Lanka. The figure in the left is the total 7-day rainfall from NOAA Climate Prediction Center (CPC) Unified Precipitation Analysis and the figure in the right is the total 7-day rainfall from CPC RFE 2.0 Satellite Rainfall Estimates. The bottom two figures are the respective anomalies.

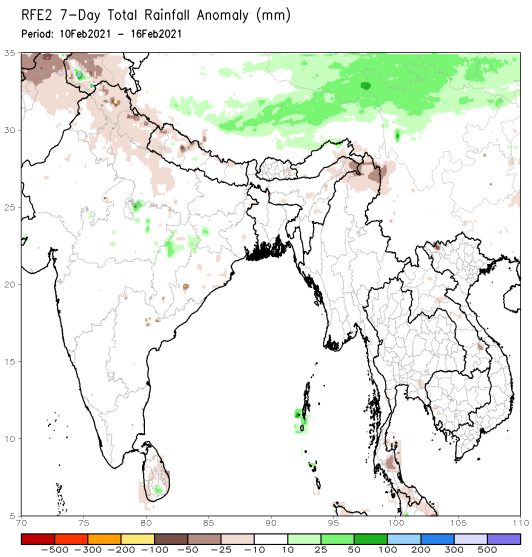


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis



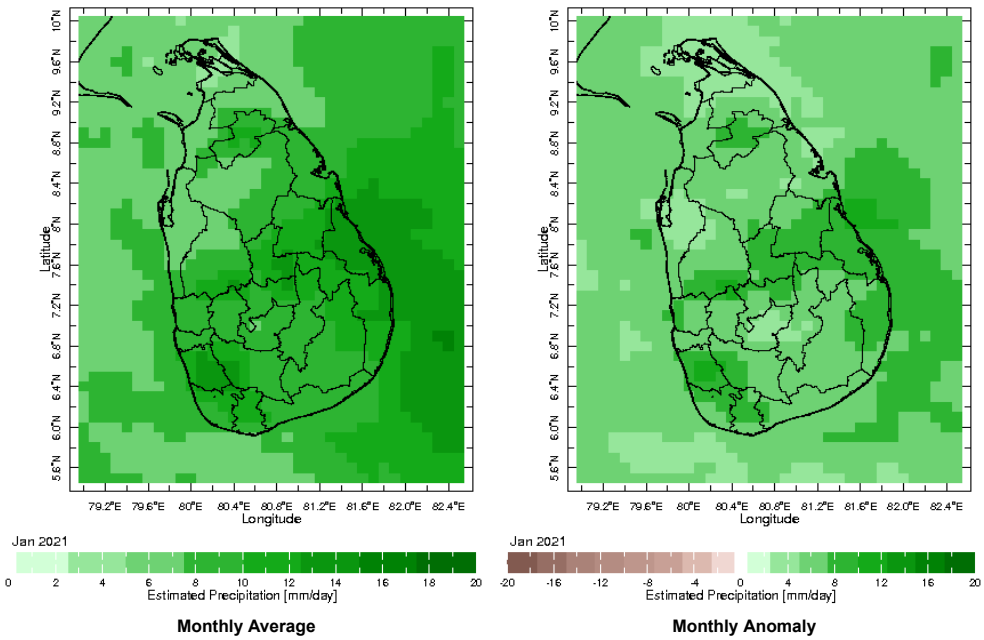


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis Climatology (1981-2010)



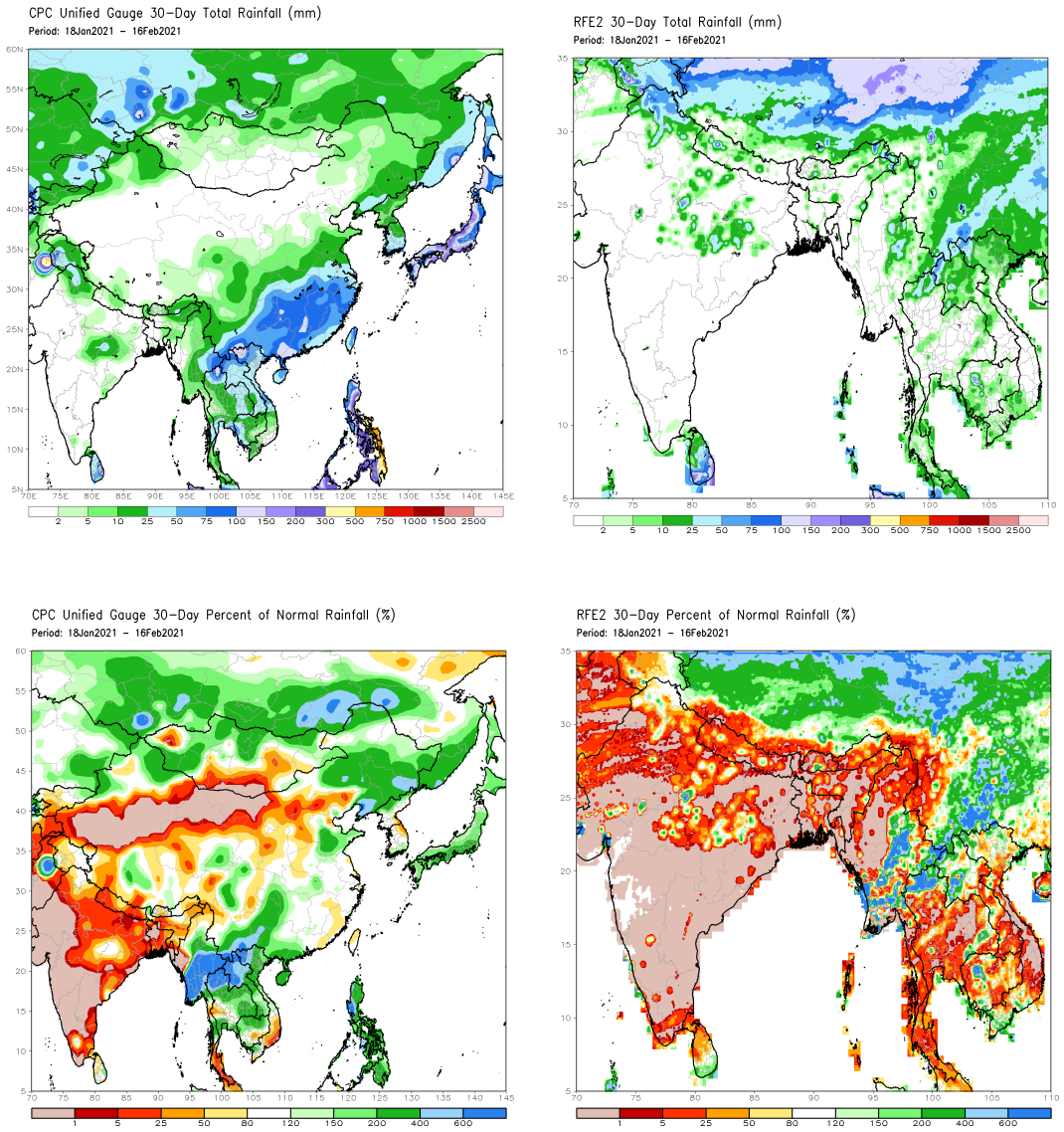
Monthly Rainfall Monitoring

The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places with above average rainfall. Darker shades show higher magnitudes in rainfall

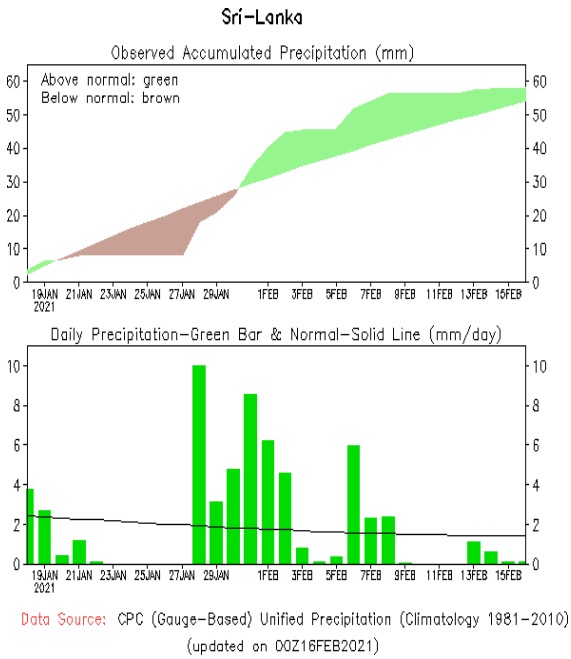


Monthly Average **Monthly Anomaly**

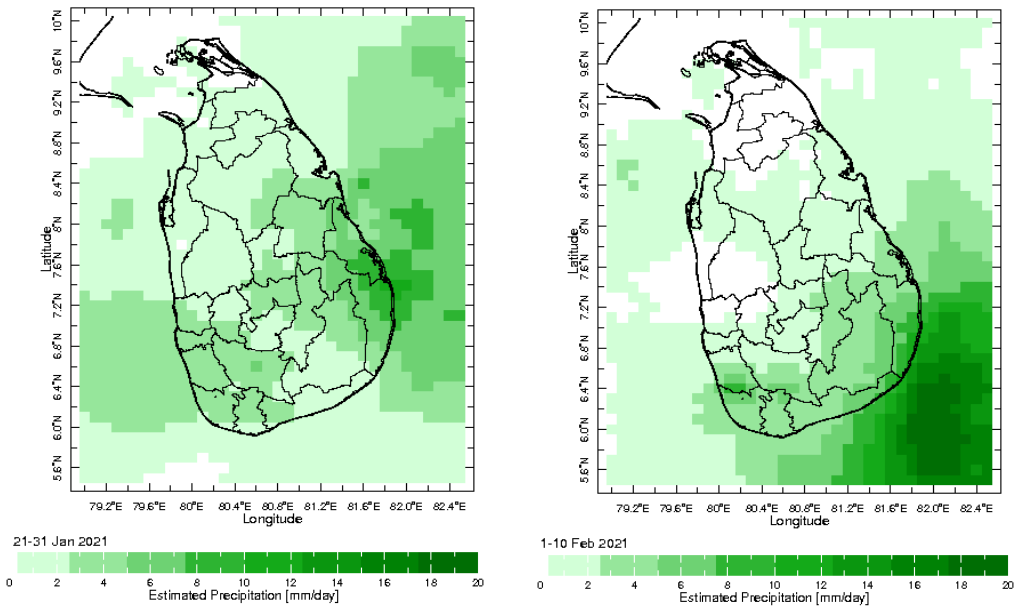
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in the past 30 days compared to normal rainfall in this period.



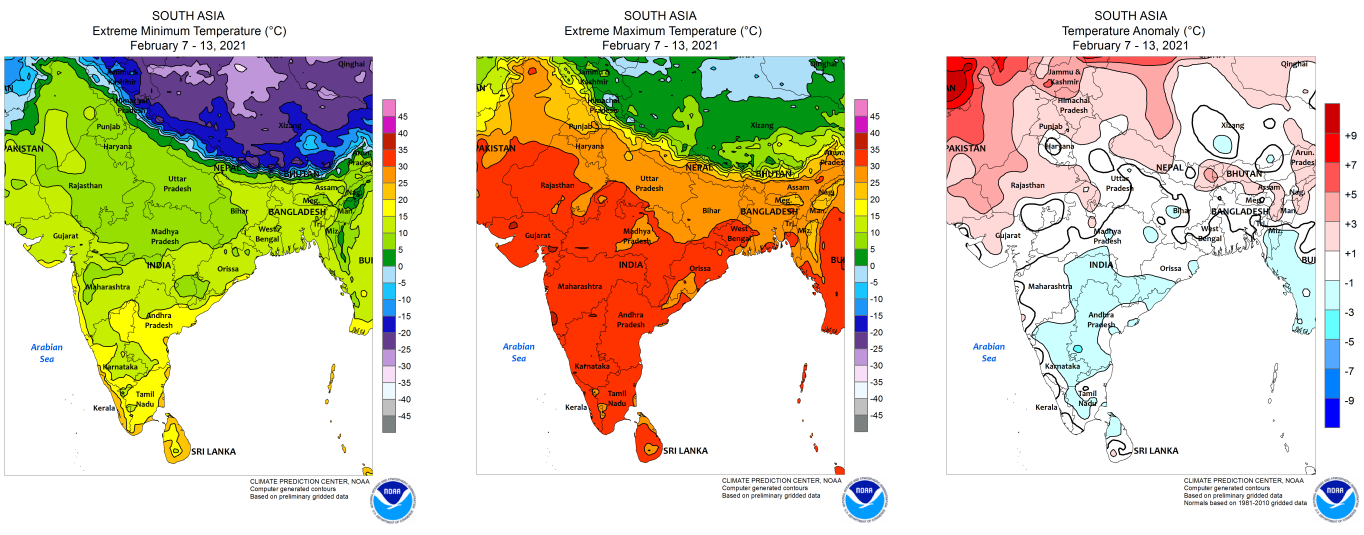
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



Dekadal (10 Day) Satellite Derived Rainfall Estimates

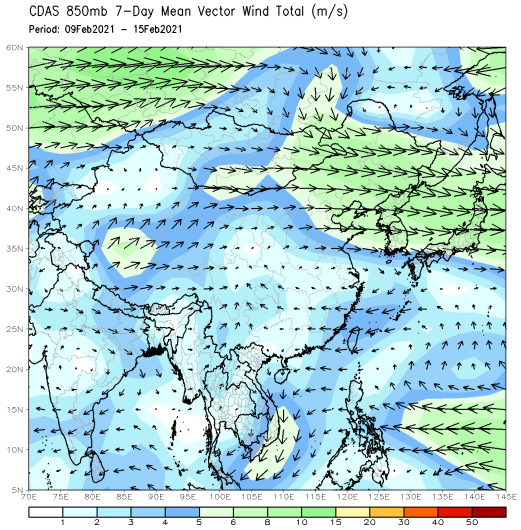


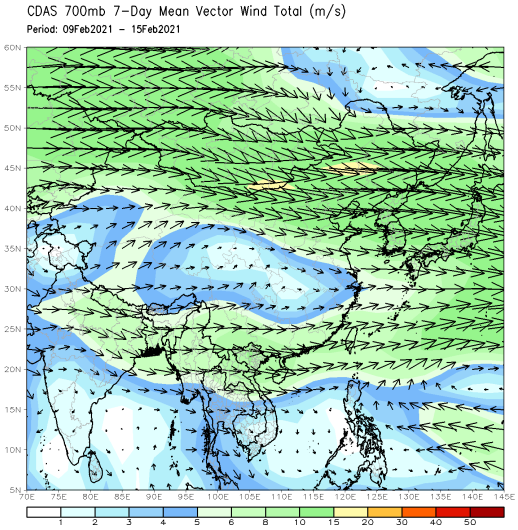
Weekly Temperature Monitoring



Weekly Wind Monitoring

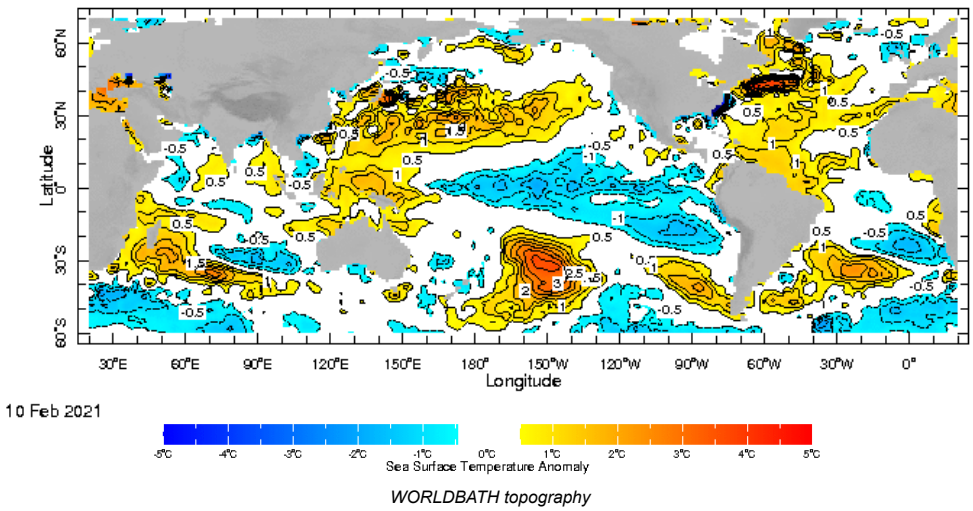
The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



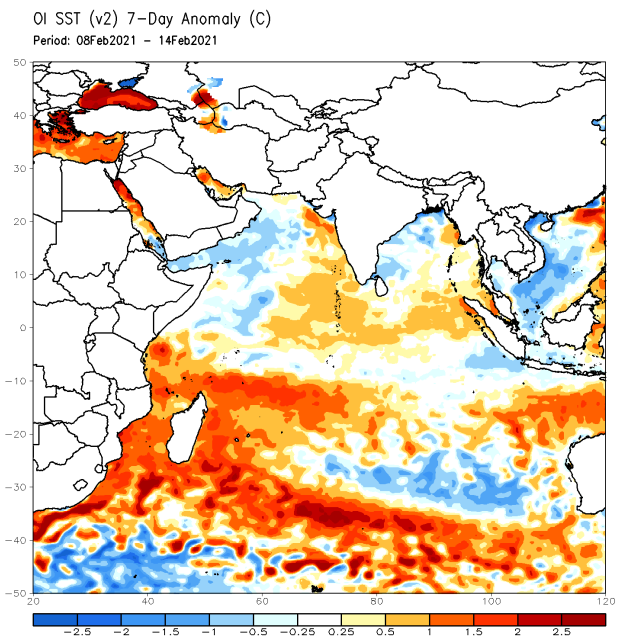


Weekly Average SST Anomalies

Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP

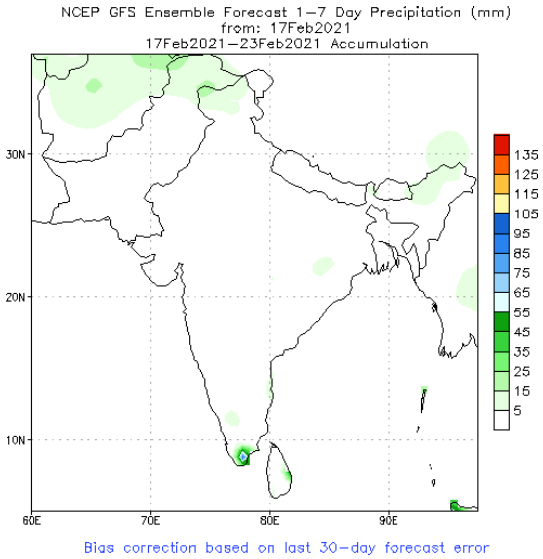


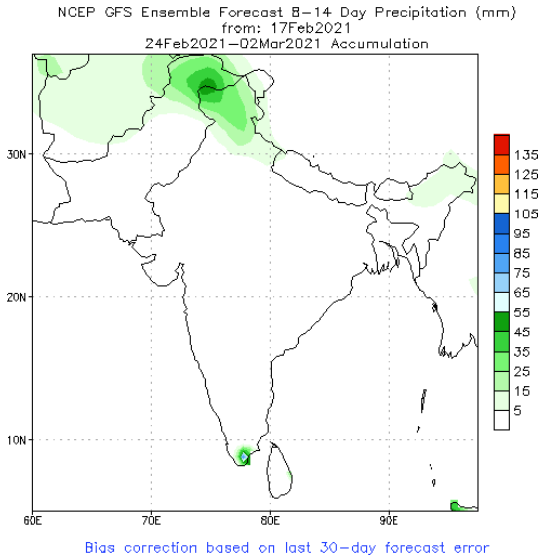
Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC



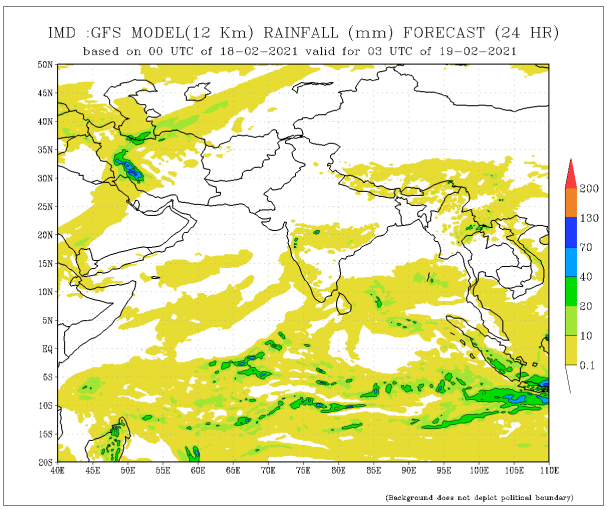
PREDICTIONS

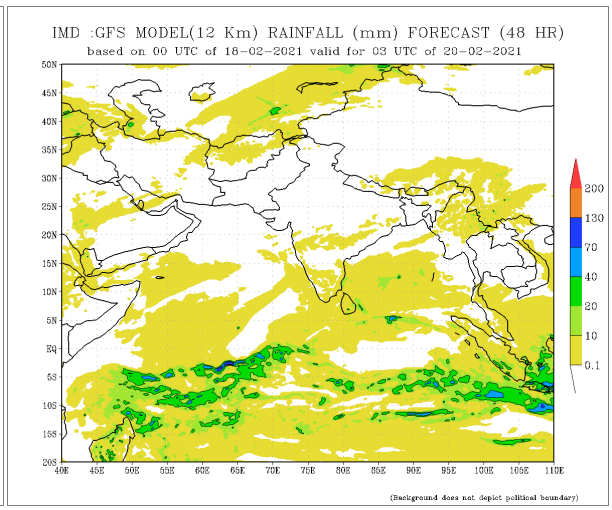
NCEP GFS 1- 14 Day prediction

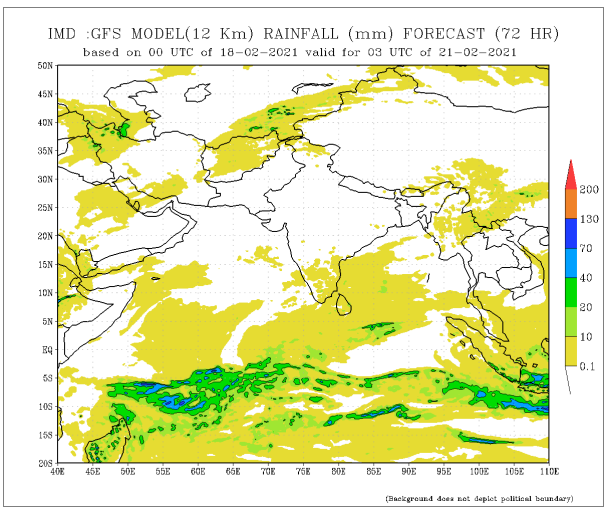


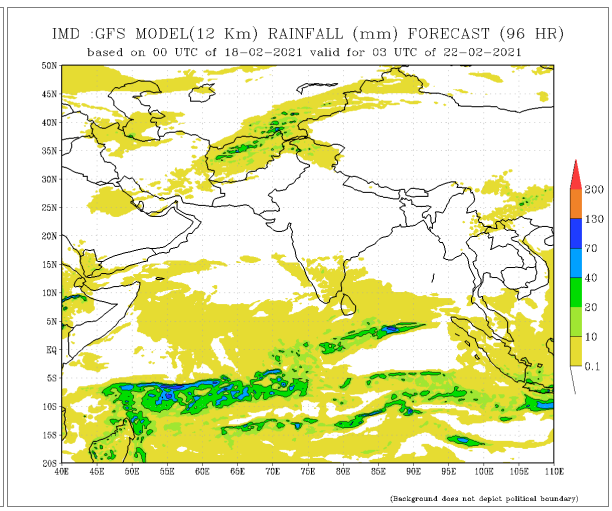


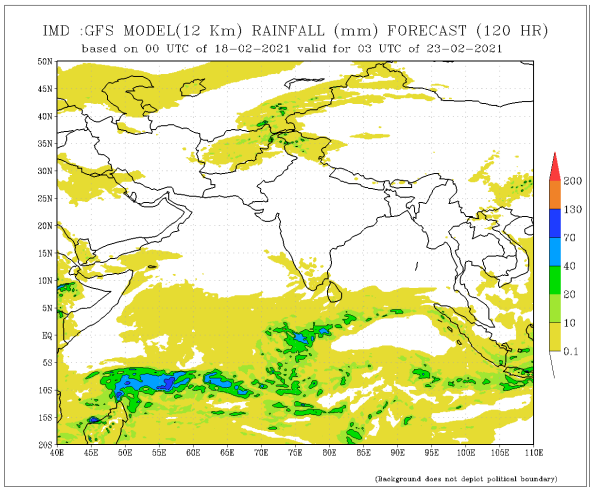
IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India

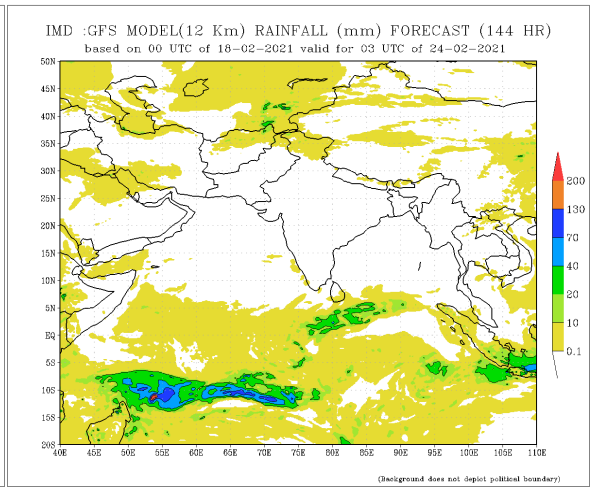


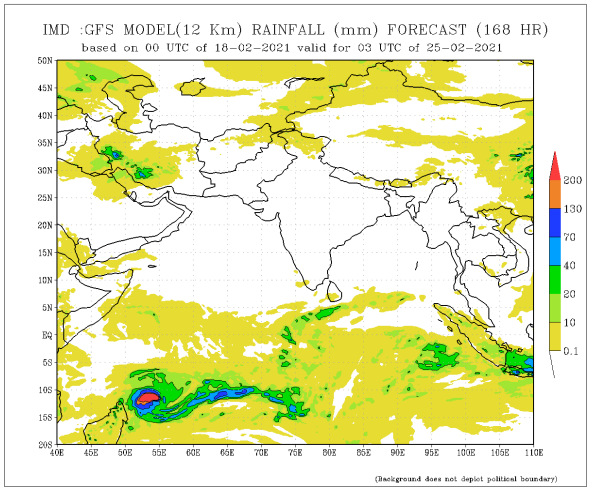






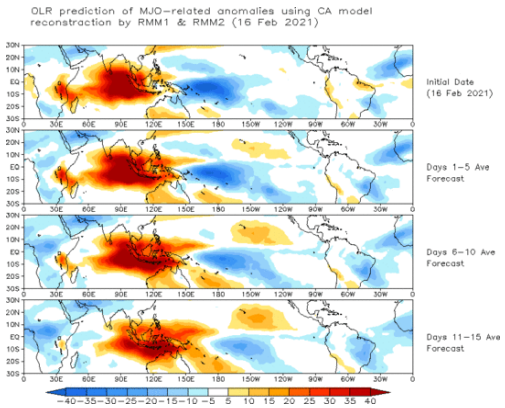






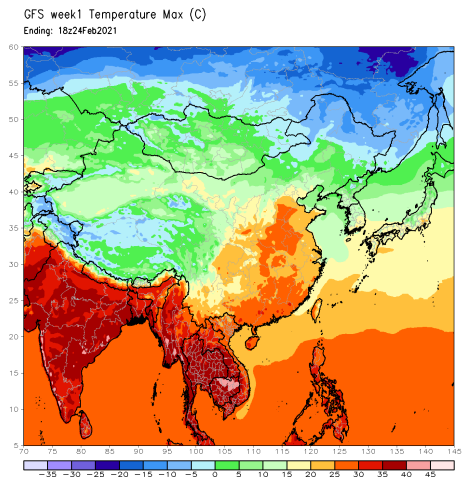
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

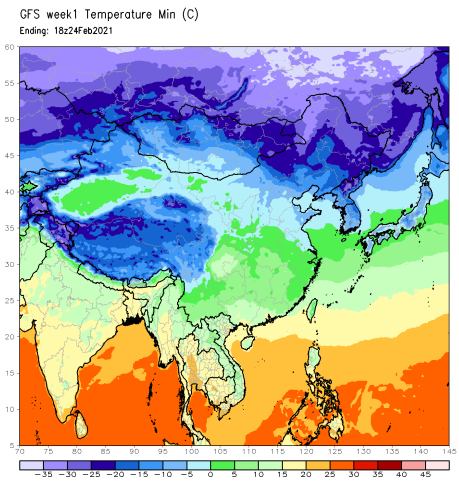
The Outgoing Longwave Radiation (OLR) is a proxy for rainfall. This can be used to identify convective rain clouds based on the MJO phase. Violet and Blue shading indicates enhanced tropical weather and Orange shading indicates suppressed conditions. The following figure shows the forecasts of MJO associated anomolous OLR for the next 15 days from the Constructed Analogue (CA) model forecasts.



Weekly Temperature Forecast

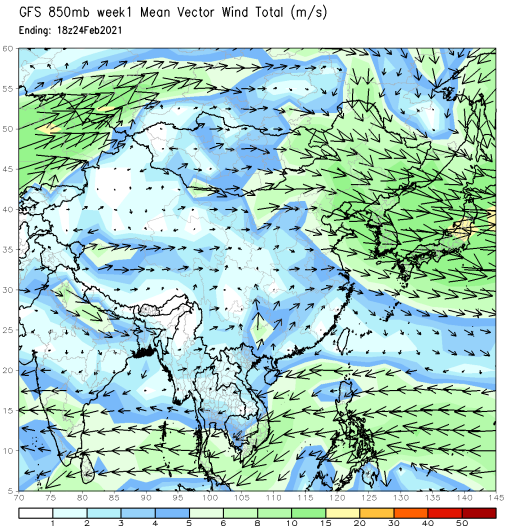
Weekly Minimum and Maximum Temperature prediction from the GFS model (from NOAA CPC)

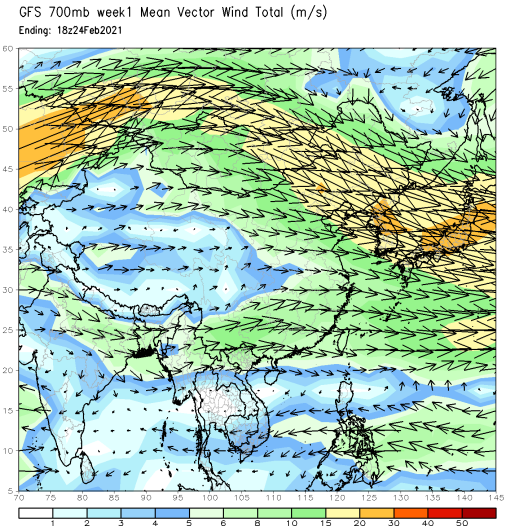




Weekly Wind Forecast

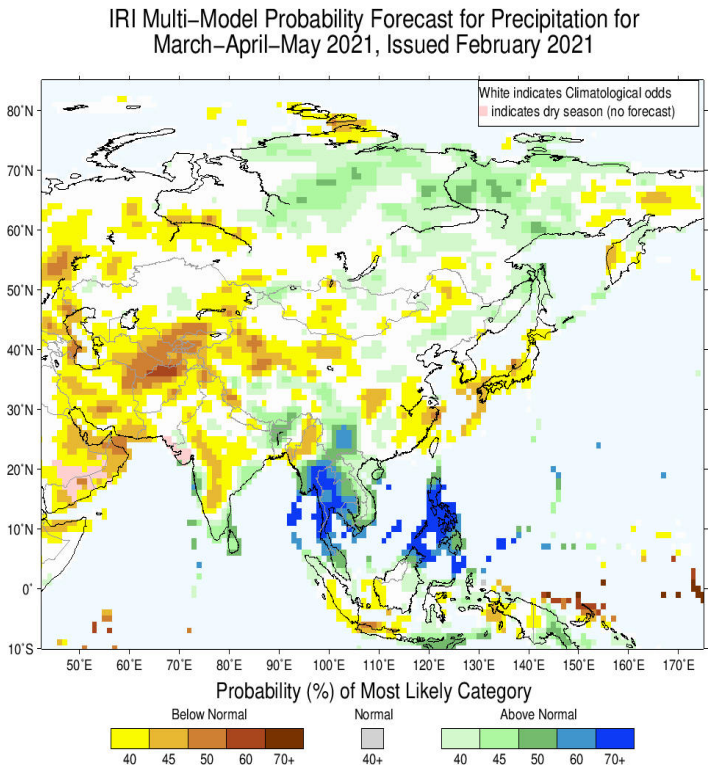
Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)



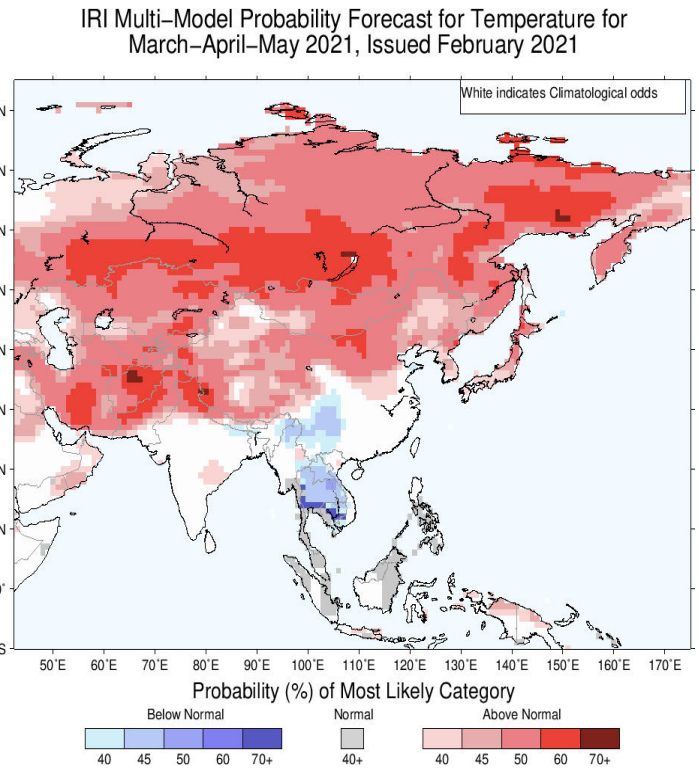


Seasonal Rainfall and Temperature Forecast

Following is the latest seasonal precipitation and temperature prediction for the next 3 months by the IRI. The color shading indicates the probability of the most dominant tercile -- that is, the tercile having the highest forecast probability. The color bar alongside the map defines these dominant tercile probability levels. The upper side of the color bar shows the colors used for increasingly strong probabilities when the dominant tercile is the above-normal tercile, while the lower side shows likewise for the below-normal tercile. The gray color indicates an enhanced probability for the near-normal tercile (nearly always limited to 40%).



Precipitation Forecast



Temperature Forecast

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