Federation for Environment, Climate and Technology

c/o, Maintenance Office, Mahaweli Authority, Digana Village, Rajawella, Sri Lanka.
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Week of 5 Mar - 12 Mar 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 55 mm expected in Eastern province during 4th - 10th March. A drop in rainfall over the rest of the country.*

Monitored Rainfalls

- *Heavy rainfall was experienced in Western & Southern provices. Up to 79 mm max in Kalutara on 23rd Feb.*

Monitored Wind

- *From 23rd Feb - 1st March: up to 6 km/h Northeasterly winds were experienced around along Sri Lanka.*

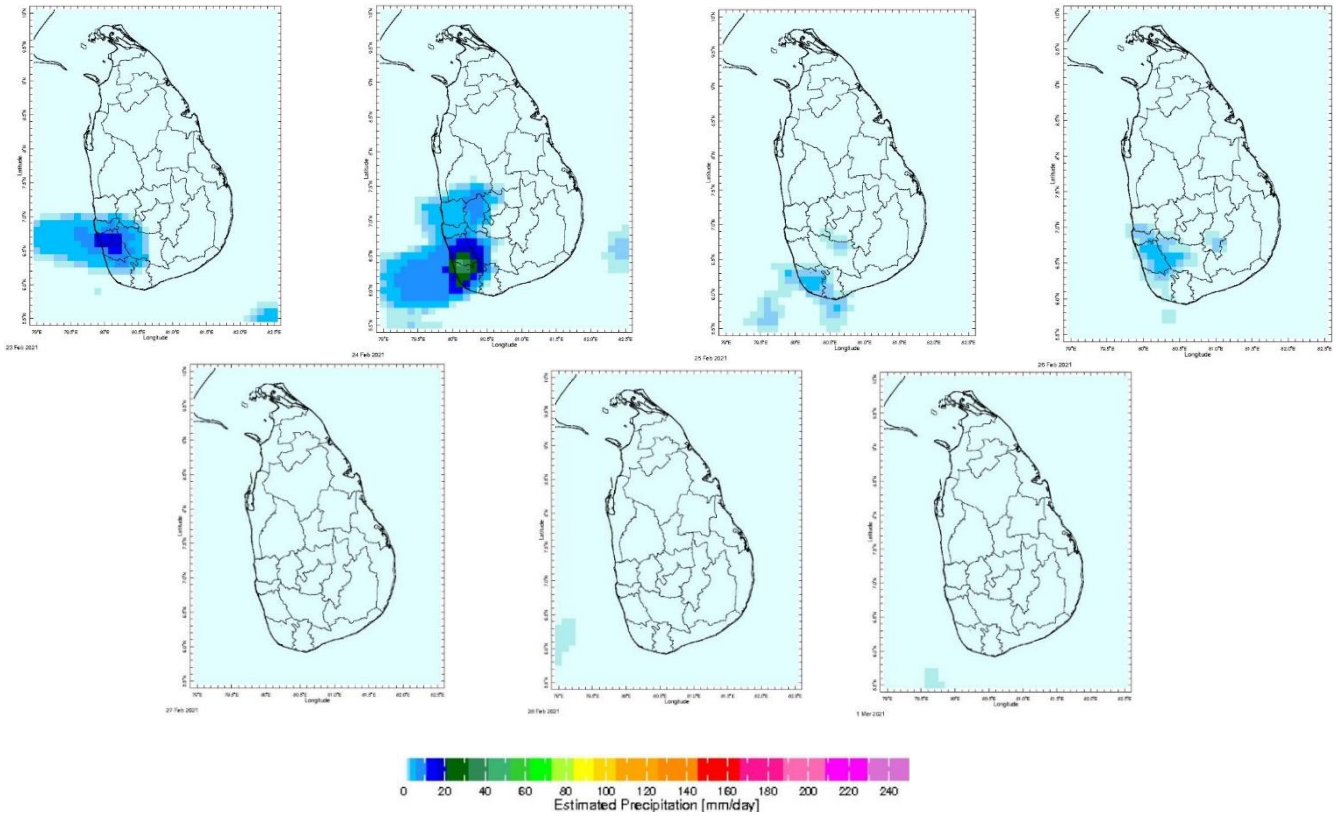
Monitored Sea Surface

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

Monitoring

Rainfall

Daily Estimates for Rainfall from 23rd February – 1st March



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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	Kalutara, Galle
10 – 25 mm	Matara, Ratnapura
5 – 10 mm	Kurunegala, Kandy, Gampaha, Colombo, Kegalle
2 – 5 mm	Puttalam, Nuwara Eliya

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

Weekly Rainfall Anomalies by Districts:

Rainfall Excess

Rainfall	Districts
25 – 50 mm	Kalutara, Galle

Rainfall Deficit

Rainfall	Districts
10 – 25 mm	Mullaitivu, Mannar, Vavuniya, Puttalam, Kurunegala, Anuradhapura, Polonnaruwa, Batticaloa, Ampara, Badulla, Moneragala, Matale, Kandy, Nuwara Eliya, Colombo, Matara, Hambantotta, Kegalle, Ratnapura

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:

11th– 20th February:

Rainfall	Districts
6 mm	Kilinochchi, Mullaitivu, Mannar
4 mm	Badulla, Moneragala, Nuwara Eliya, Matara, Hambantota, Kegalle, Ratnapura
2 mm	Jaffana, Vavuniya, Polonnaruwa, Batticaloa, Ampara, Matale, Kandy, Colombo, Kalutara, Galle

21st – 28th February:

Rainfall	Districts
6 mm	Kalutara, Galle, Ratnapura
4 mm	Nuwara Eliya, Colombo, Matara, Kegalle
2 mm	Puttalam, Kurunegala, Ampara, Badulla, Moneragala, Matale, Kandy, Gampaha, Hambantota

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Ocean State *(Text Courtesy IRI)*

Pacific sea state: February 24, 2021

Equatorial Eastern and western Pacific SST reached La Niña threshold in late-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 04th – 10th March:

Total rainfall by Provinces:

Rainfall	Provinces
55 mm	Eastern
35 mm	Uva
25 mm	North Central, North western, Southern, Western, Central, Sabaragamuwa
15 mm	Northern

From 11th – 17th March:

Total rainfall by Provinces:

Rainfall	Provinces
45 mm	Eastern
25 mm	Central, Uva
15 mm	Northern, North Central, North western, Southern, Western, Sabaragamuwa

MJO based OLR predictions

For the next 15 days:

MJO shall slightly suppress the rainfall during 3rd – 7th March and Neutral during 8th– 17th Mar.

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Interpretation

Monitoring

Rainfall: During the last two weeks, there had been high rainfall over the following provinces: Western, Sabaragamuwa & Southern

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

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

Predictions

Rainfall: During the next week (6^{th} – 11^{th} Mar), showers is predicted for the Eastern coastal, Central & Uva region. A drop in rainfall is predicted over the rest of the country.

Temperatures: The temperature remains slightly above normal for February. During 11^{th}–17^{th} Mar, the temperature remains high especially the Western, Northern, Southern, Sabaragamuwa, Uva, North central, and North western provinces.

Teleconnections:

- MJO shall slightly suppress the rainfall during 3^{rd} – 7^{th} March and Neutral during 8^{th}– 17^{th} Mar.
- 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.

Tropical Climate Guarantee, Federation of Environment, Climate and Technology, Columbia University Water Center, [1] International Research Institute for Climate and Society, , Earth Institute at Columbia University, New York.

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Weekly Climate Bulletin for Sri Lanka

Inside This Issue

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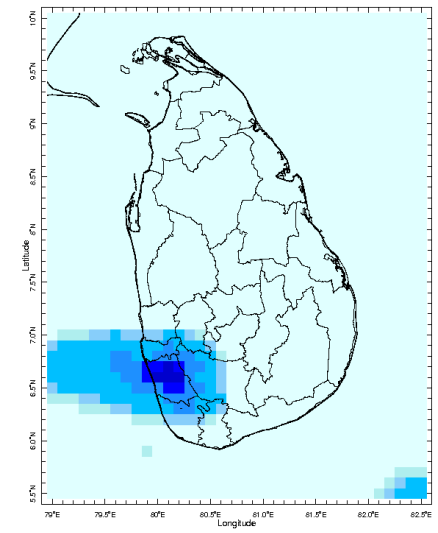
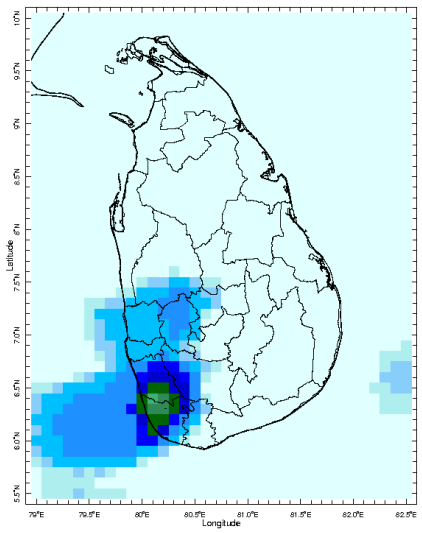
MONITORING

Daily Rainfall Monitoring

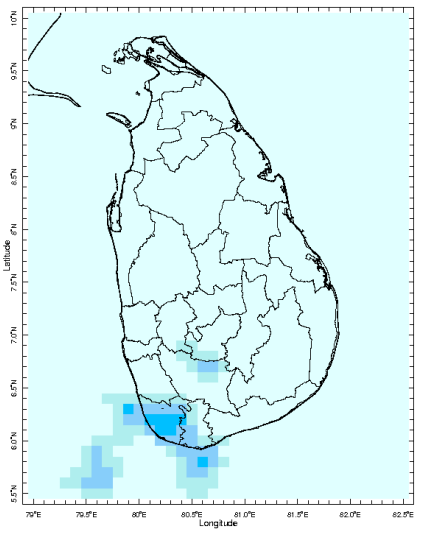
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



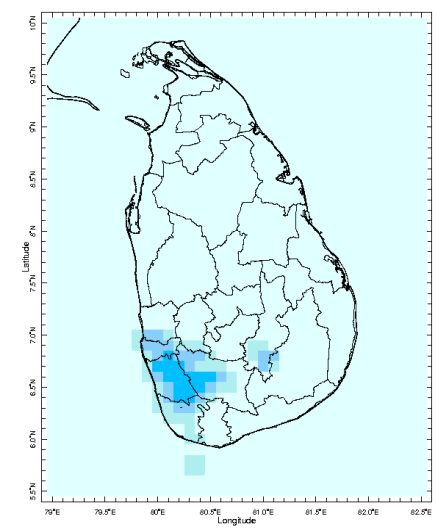
23 Feb 2021



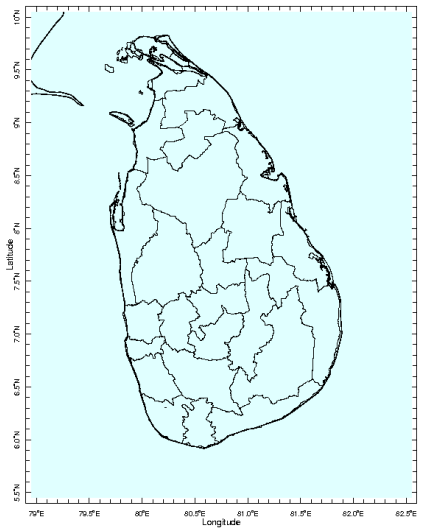
24 Feb 2021



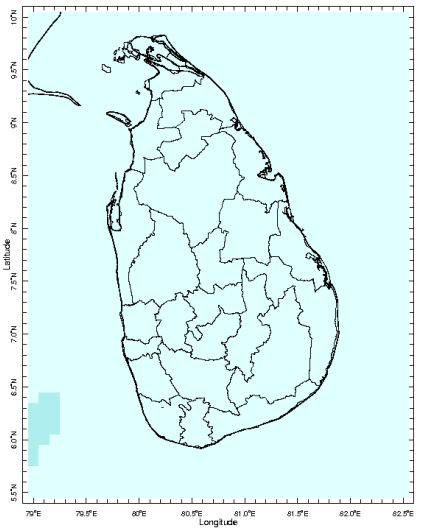
25 Feb 2021



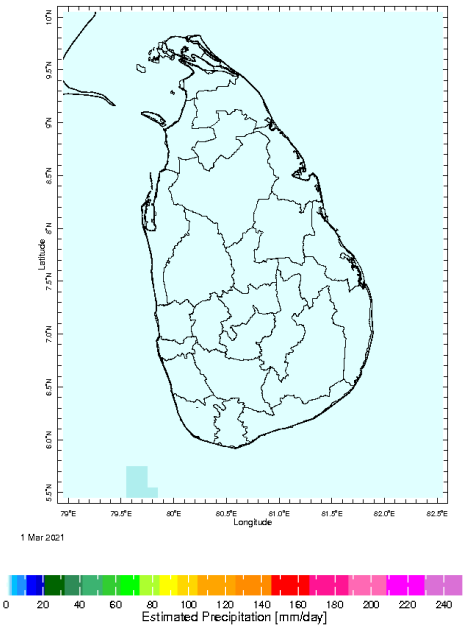
26 Feb 2021



27 Feb 2021

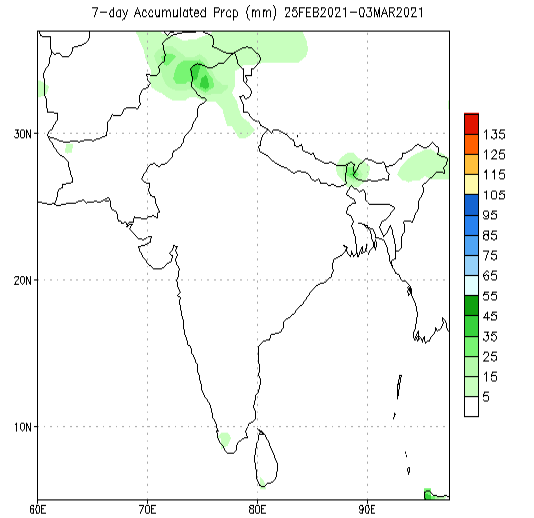


28 Feb 2021

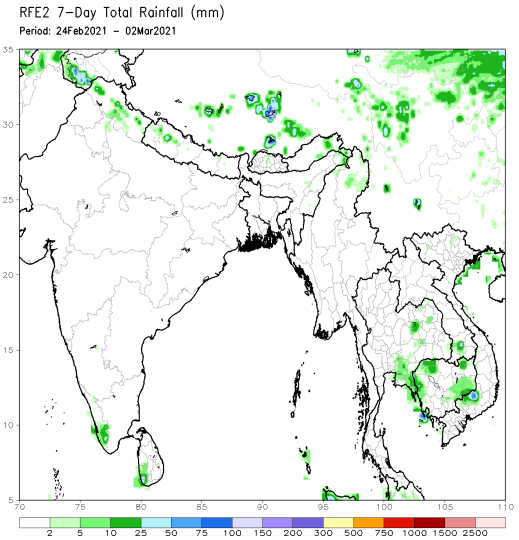


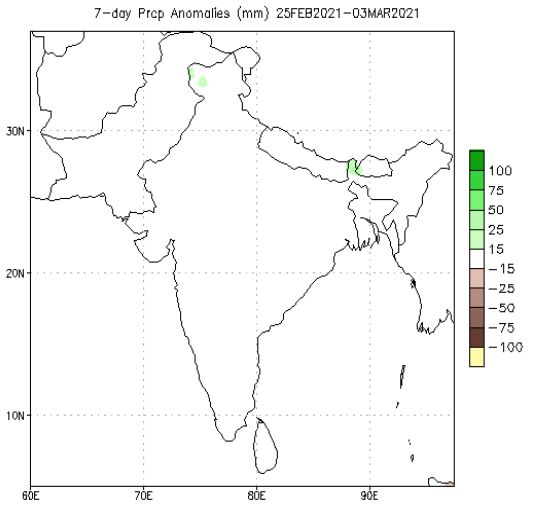
Weekly Rainfall Monitoring

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.

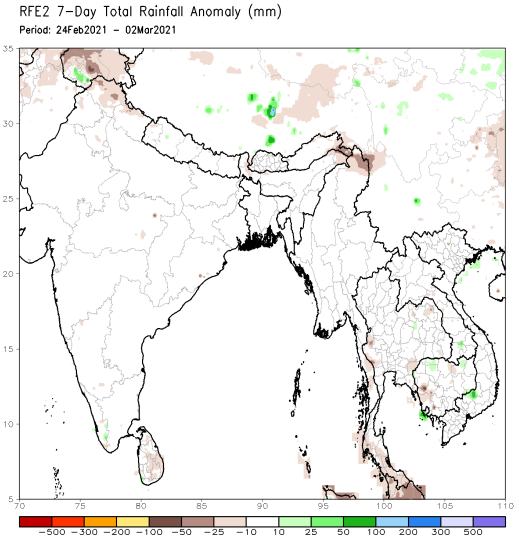


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis



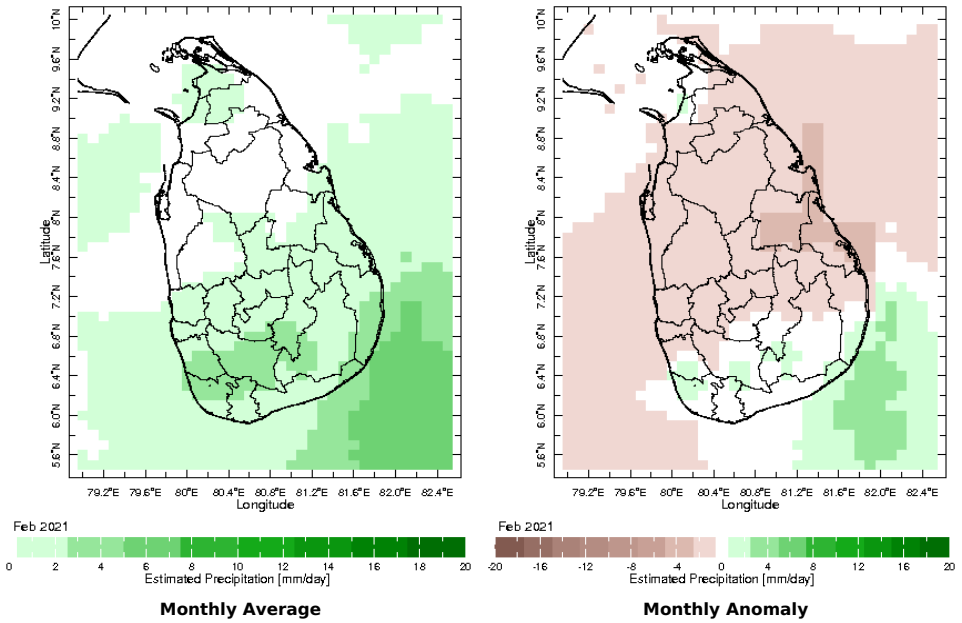


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis Climatology (1981-2010)



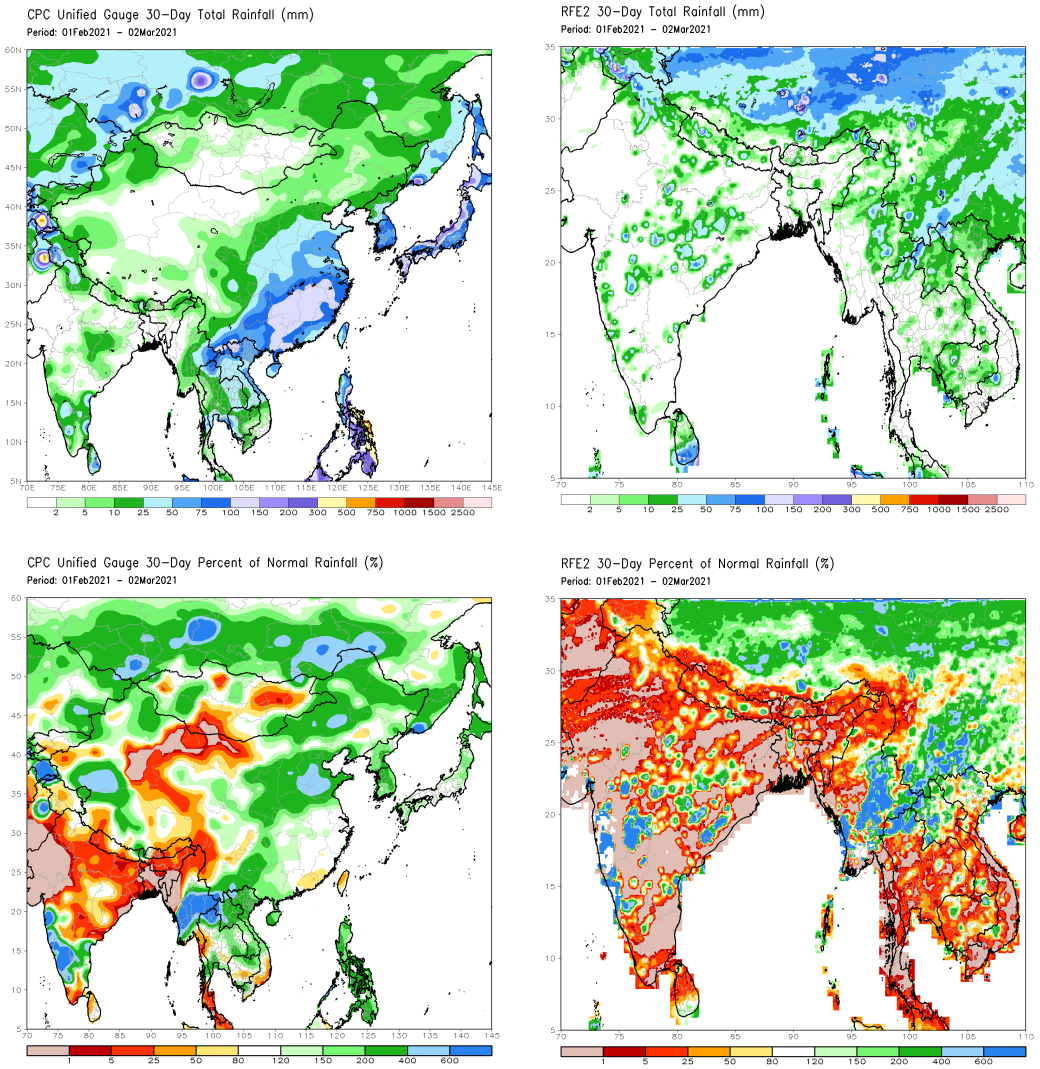
Monthly Rainfall Monitoring

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

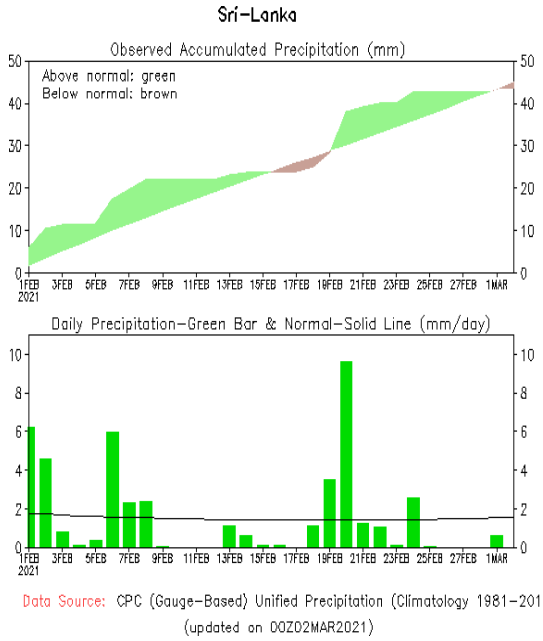


Monthly Average **Monthly Anomaly**

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.

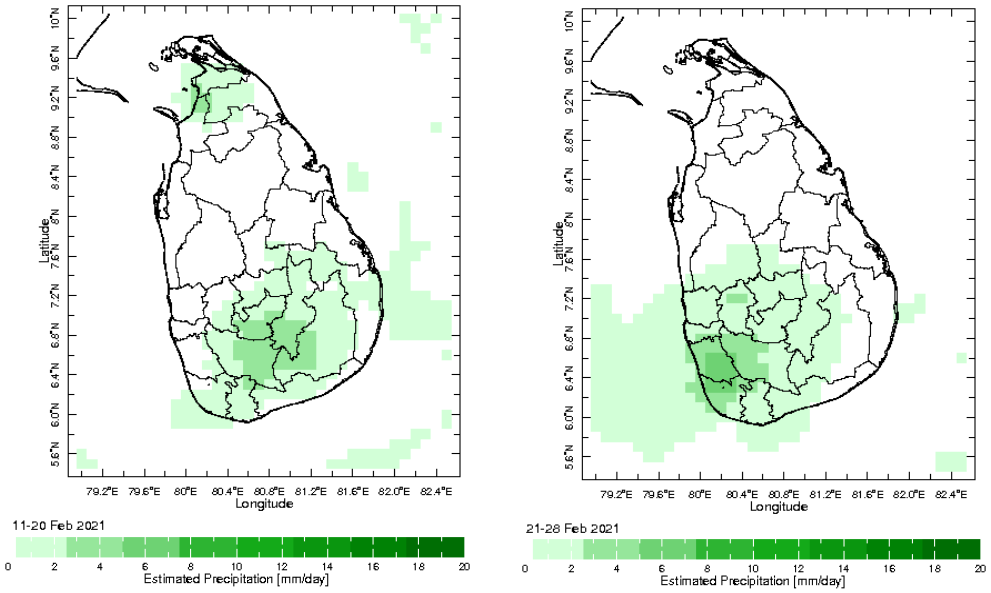


The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.

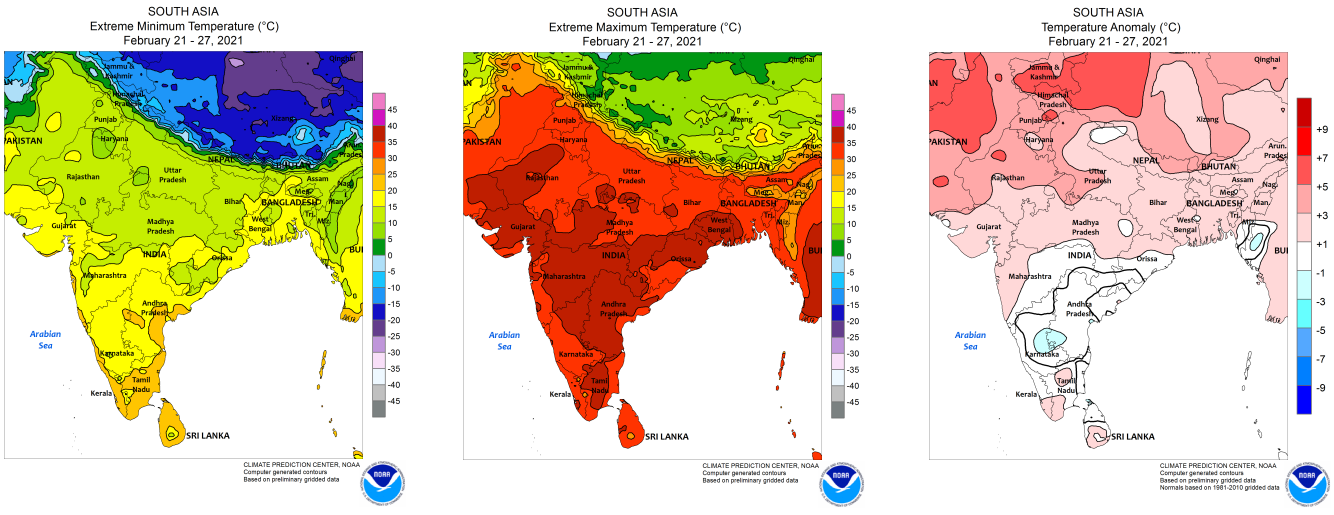


Data Source: CPC (Gauge-Based) Unified Precipitation (Climatology 1981-2010)
(updated on 00Z02MAR2021)

Dekadal (10 Day) Satellite Derived Rainfall Estimates

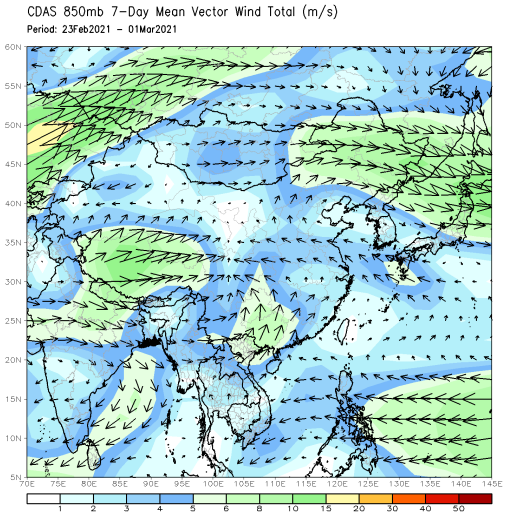


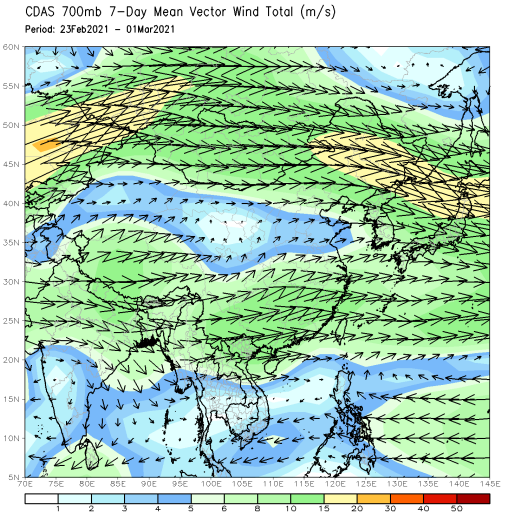
Weekly Temperature Monitoring



Weekly Wind Monitoring

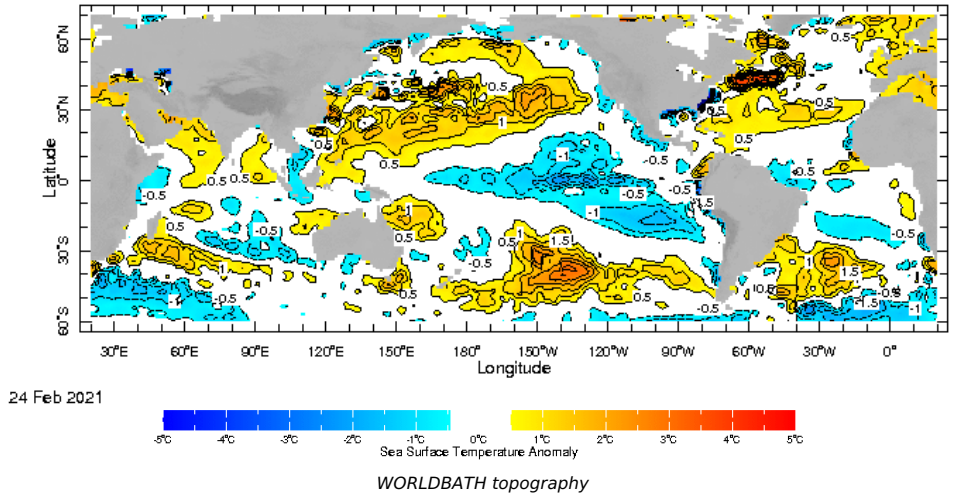
The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



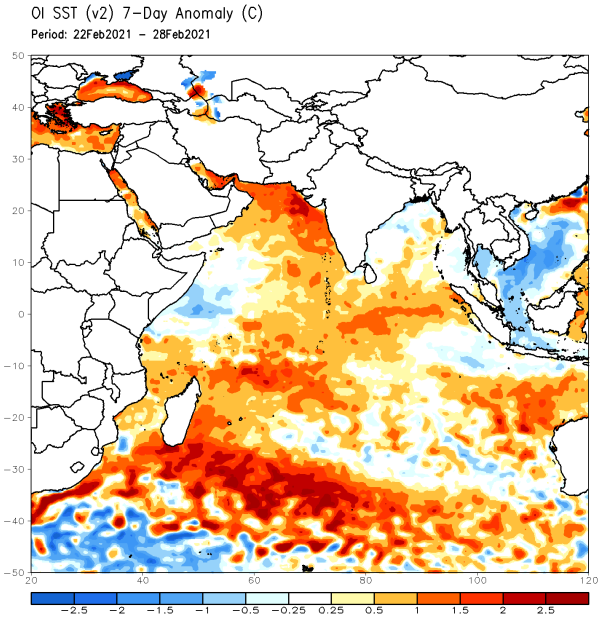


Weekly Average SST Anomalies

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

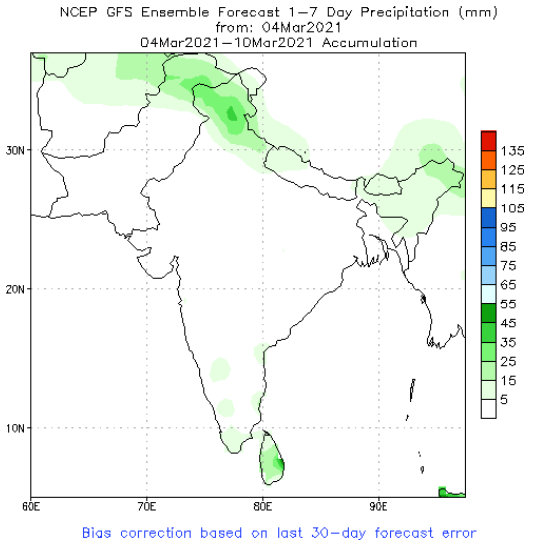


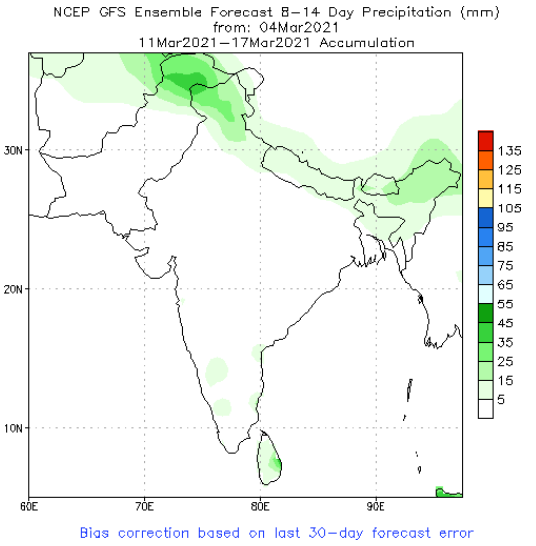
Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC



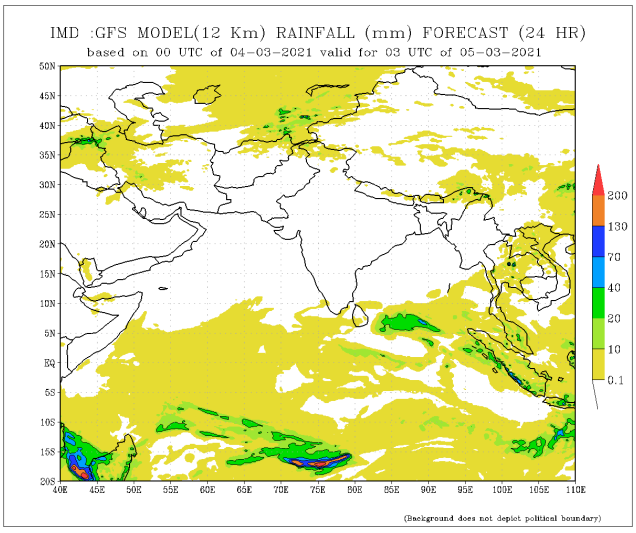
PREDICTIONS

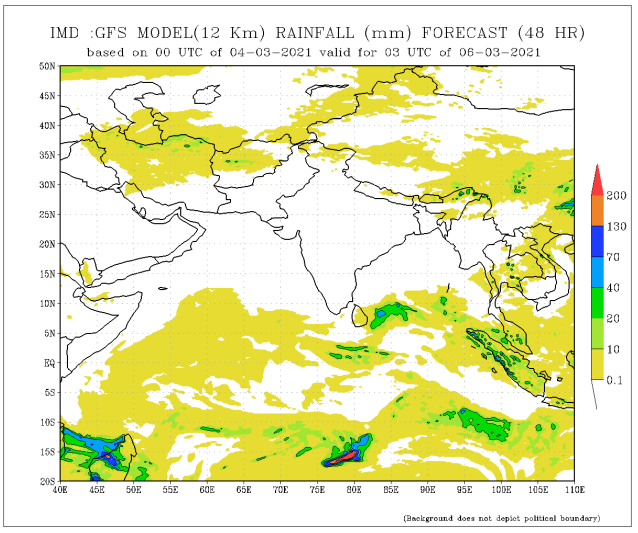
NCEP GFS 1- 14 Day prediction

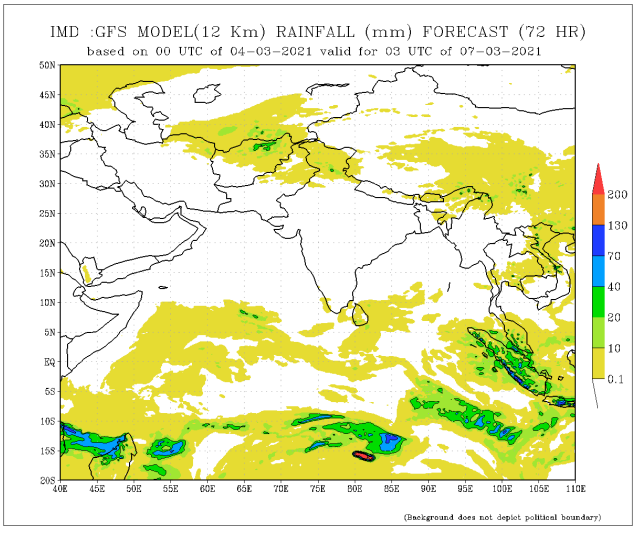


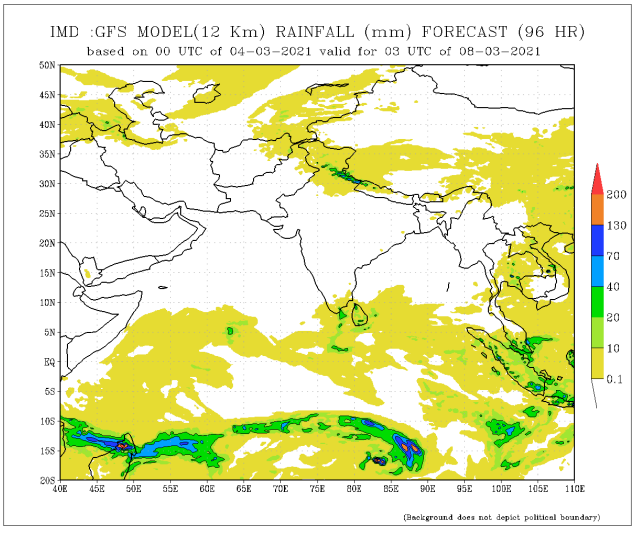


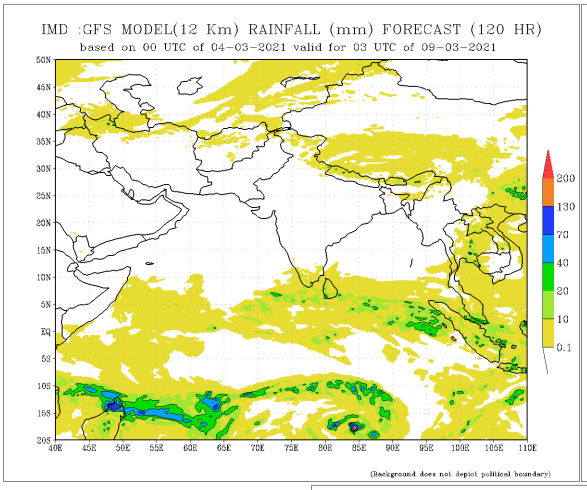
IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India

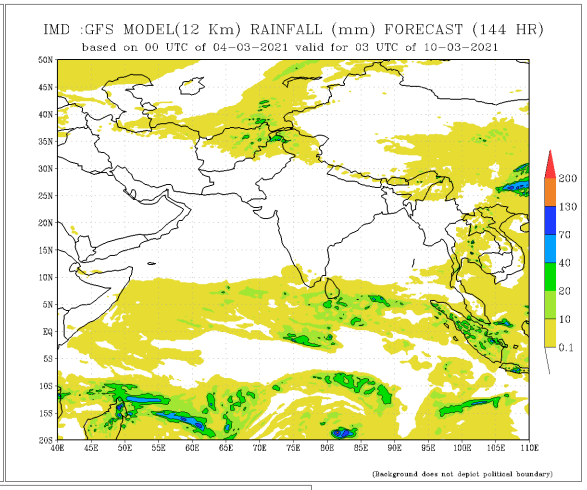


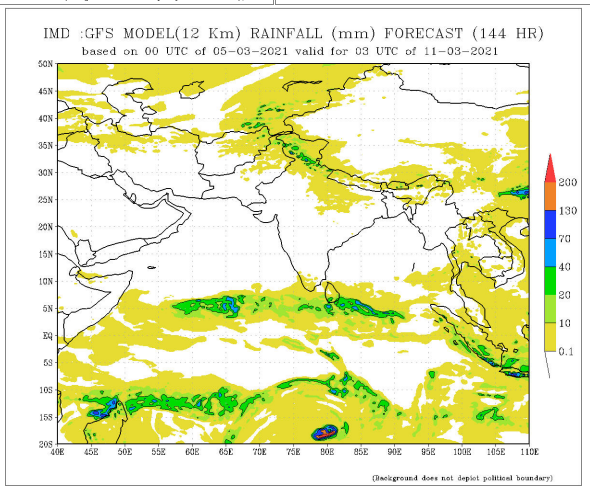






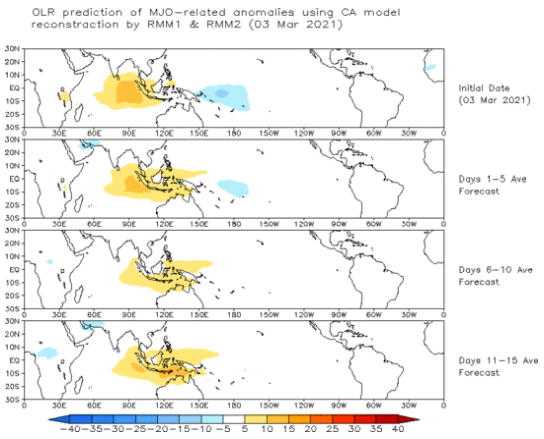






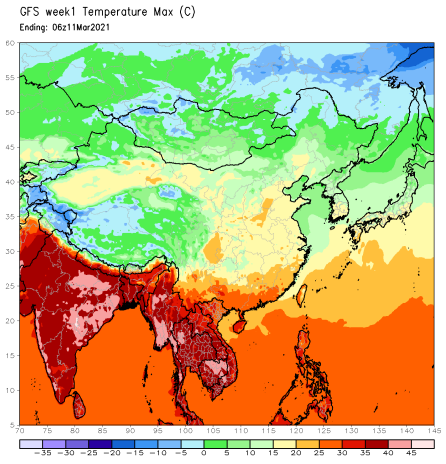
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

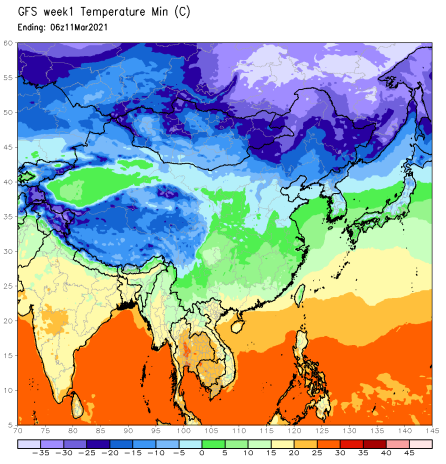
The Outgoing Longwave Radiation (OLR) is a proxy for rainfall. This can be used to identify convective rain clouds based on the MJO phase. Violet and Blue shading indicates enhanced tropical weather and Orange shading indicates suppressed conditions. The following figure shows the forecasts of MJO associated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



Weekly Temperature Forecast

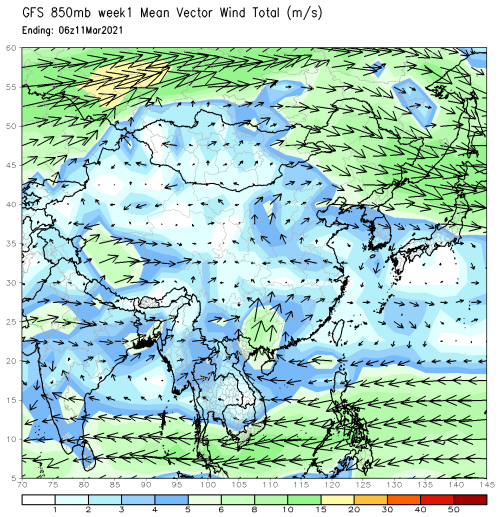
Weekly Minimum and Maximum Temperature prediction from the GFS model (from NOAA CPC)

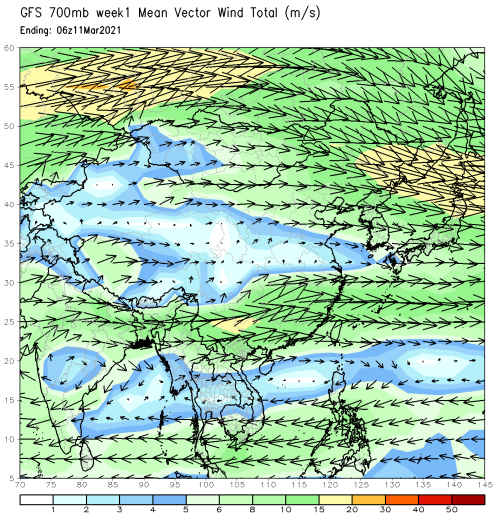




Weekly Wind Forecast

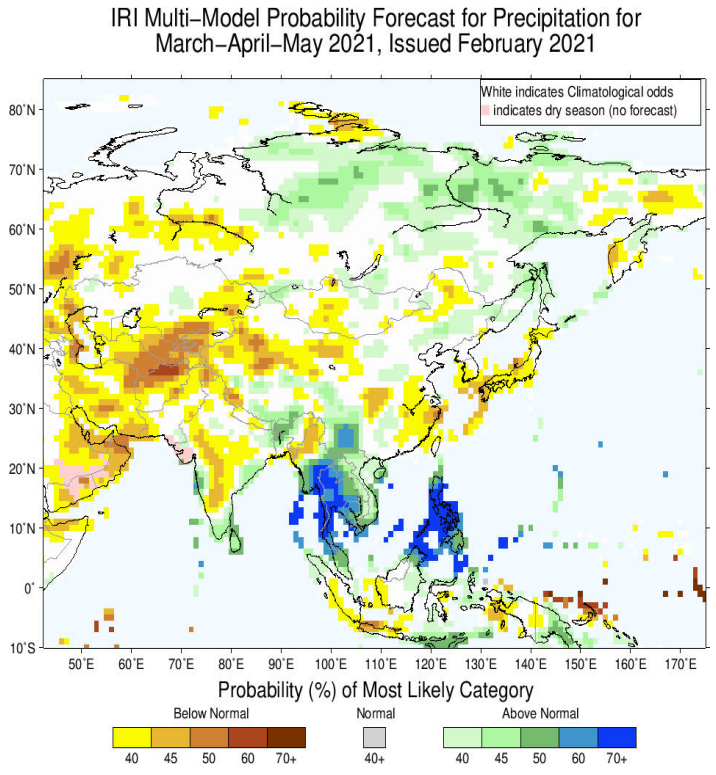
Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)



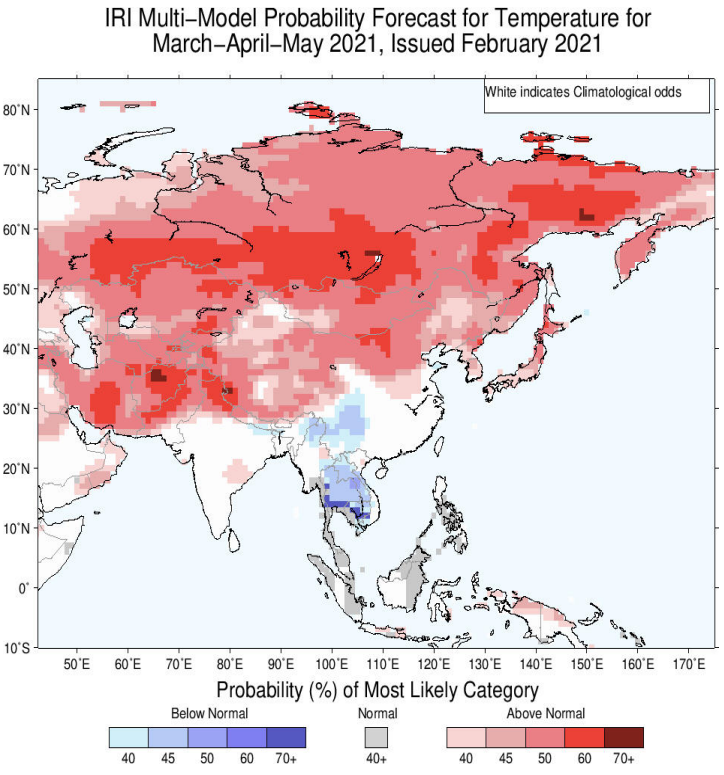


Seasonal Rainfall and Temperature Forecast

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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