Federation for Environment, Climate and Technology

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Week of 30 April - 7 May 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 75 mm expected in Western & Southern during 30th Apr - 4th May and 95 mm expected in Western, Southern, Sabaragamuwa provinces during 5th-11th May.*

Monitored Rainfalls

- *Thunder shower with lightning was experienced in Sabaragamuwa province with a maximum of 160 mm in Ratnapura on 22nd Apr.*

Monitored Wind

- *From 20th - 26th Apr: up to 8 km/h Northeasterly winds were experienced by Northern half of the island.*

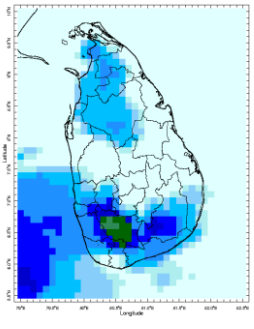
Monitored Sea Surface

- Sea surface temperature was observed above average in Northern and neutral around along Sri Lanka.

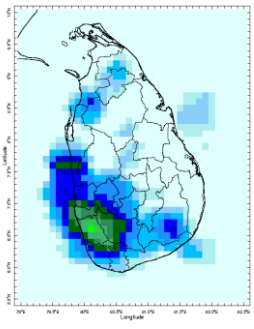
Monitoring

Rainfall

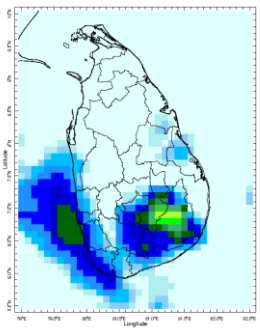
Daily Estimates for Rainfall from 21st – 27th Apr



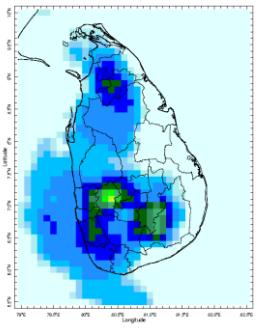
21st April



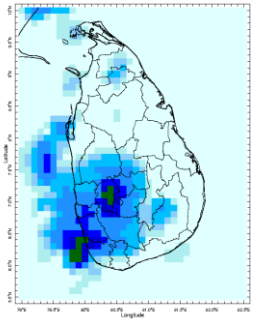
22nd April



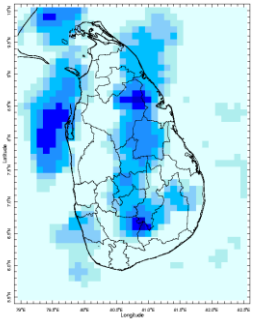
23rd April



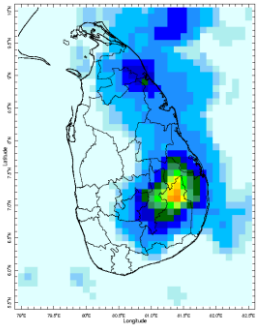
24th April



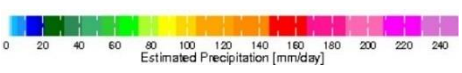
25th April



26th April



27th April



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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
150 – 200 mm	Badulla, Moneragala
100 – 150 mm	Kegalle, Ratnapura, Colombo, Kalutara
75 – 100 mm	Kandy, Nuwara Eliya, Gampaha, Galle, Matara
50 – 75 mm	Hambantota
25 – 50 mm	Kilinochchi, Mullaitivu, Mannar, Vavuniya, Trincomalee, Anuradhapura, Polonnaruwa, Ampara, Puttalam, Kurunegala, Matale
10 – 25 mm	Jaffna, Batticaloa

Weekly Rainfall Anomalies by Districts:

Rainfall Excess

Rainfall	Districts
100 – 200 mm	Badulla, Moneragala
50 – 100 mm	Kalutara
25 – 50 mm	Kandy, Nuwara Eliya, Kegalle, Ratnapura, Colombo
10 – 25 mm	Gampaha, Matara

Rainfall Deficit

Rainfall	Districts
25 – 50 mm	Jaffna, Kilinochchi, Mullaitivu, Vavuniya, Anuradhapura, Polonnaruwa, Puttalam, Kurunegala, Tricomalee, Ampara, Matale, Hambantota
10 – 25 mm	Mannar, Batticaloa

Monthly Monitoring

During middle and late March, Dekadal Rainfall (mm/day) by Districts:

1st– 10th April:

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

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11th– 20th April:

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

Ocean State *(Text Courtesy IRI)*

Pacific sea state: April 21, 2021

Equatorial SSTs were mostly below average from the east to the Middle West Pacific Ocean in late-April and most key atmospheric variables were either ENSO –Neutral or consistent with continued La Niña conditions. A large majority of the model forecasts predict SSTs to be cooler than the threshold of La Niña SST conditions through the winter, dissipating during spring.

Indian Ocean State

Sea surface temperature was observed above average in Northern and neutral around along Sri Lanka.

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 30th April – 04th May:

Total rainfall by Provinces:

Rainfall	Provinces
75 mm	Western, Southern
65 mm	Central, Sabaragamuwa
55 mm	Uva
45 mm	Eastern, North Central, North Western
35 mm	Northern

From 5th – 11th May:

Total rainfall by Provinces:

Rainfall	Provinces
95 mm	Western, Southern, Sabaragamuwa

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75 mm	Central, Uva
65 mm	North Western
55 mm	North Central, Eastern
45 mm	Northern

MJO based OLR predictions

For the next 15 days:

MJO shall slightly suppress the rainfall during 30th April – 1st May, slightly enhanced during 2nd–11th May.

Interpretation

Monitoring

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

Wind: Northeastly winds prevailed in the sea area and around the island.

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 (30th April – 5th May), showers is predicted for Western, Southern and Sabaragamuwa region. A drop in rainfall is predicted over the rest of the country.

Temperatures: The temperature remains slightly above in Northern, North Central, Eastern and Southern.

Teleconnections:

- MJO shall slightly suppress the rainfall during 30th April – 1st May, slightly enhanced during 2nd–11th May
- 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 season.

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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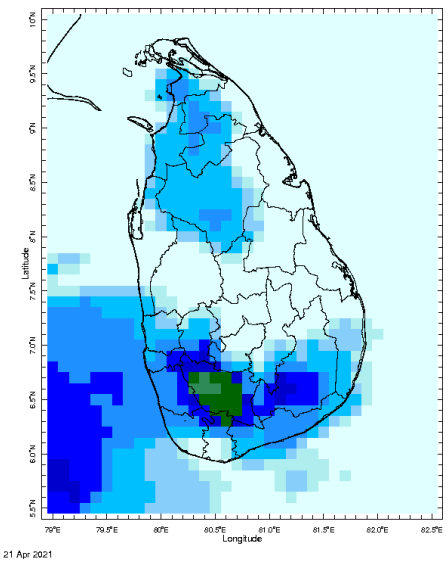
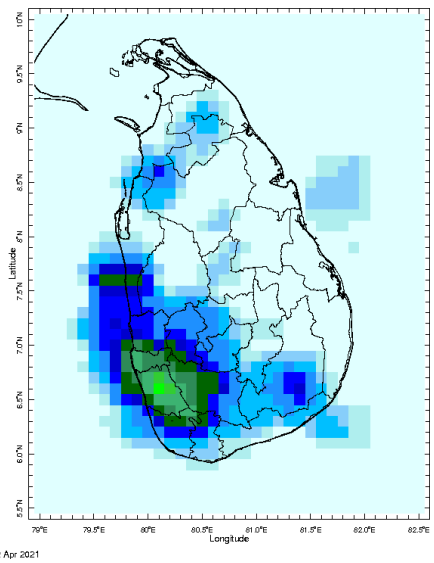
MONITORING

Daily Rainfall Monitoring

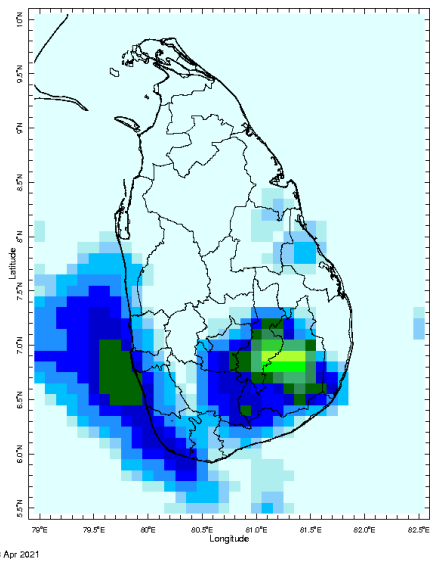
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



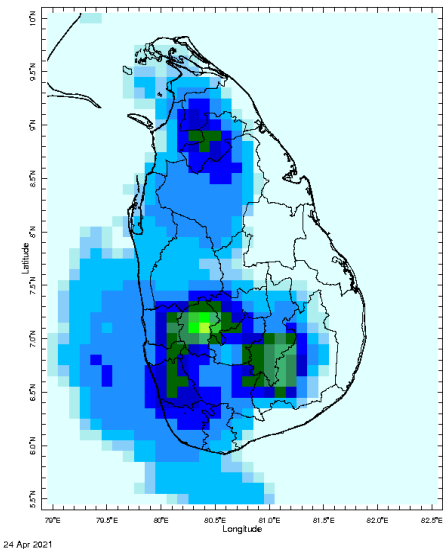
21 Apr 2021



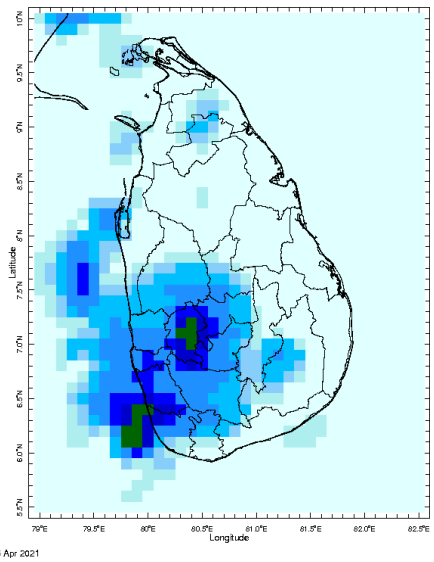
22 Apr 2021



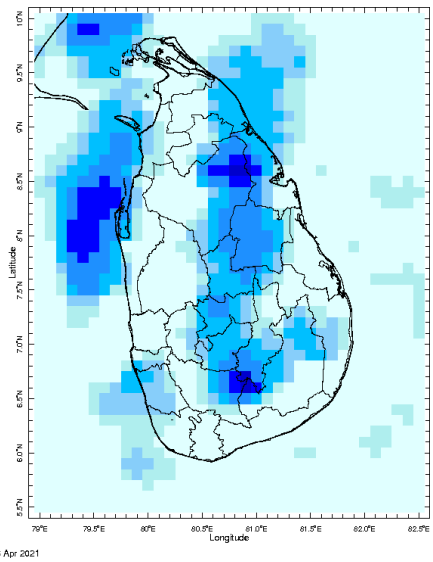
23 Apr 2021



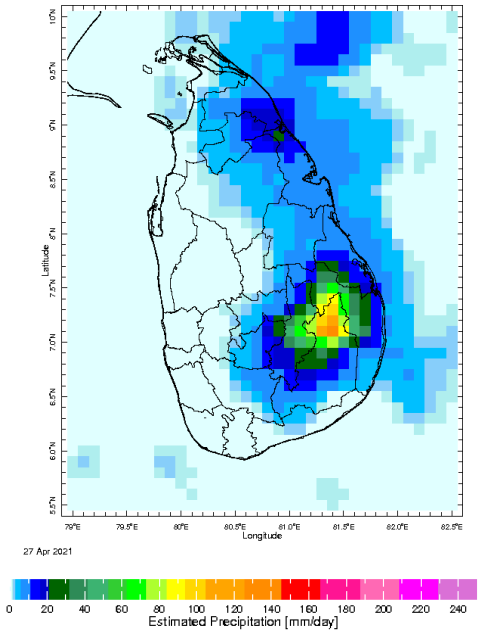
24 Apr 2021



25 Apr 2021

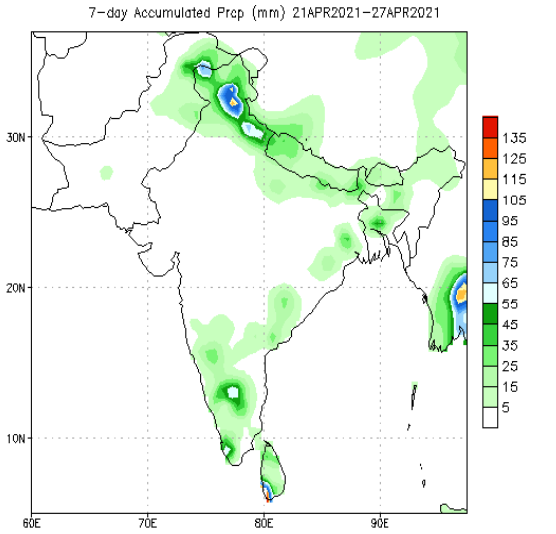


26 Apr 2021

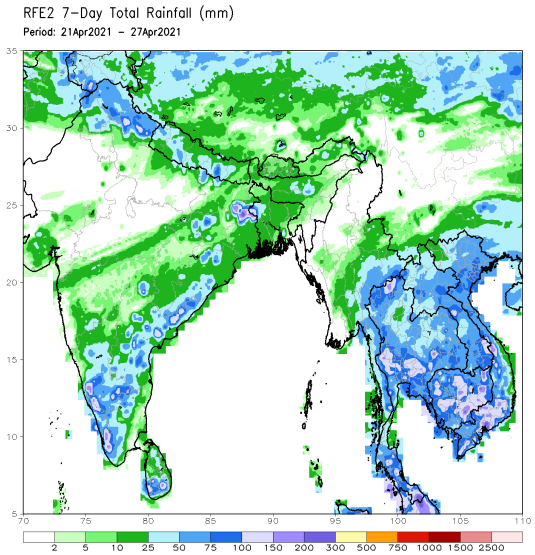


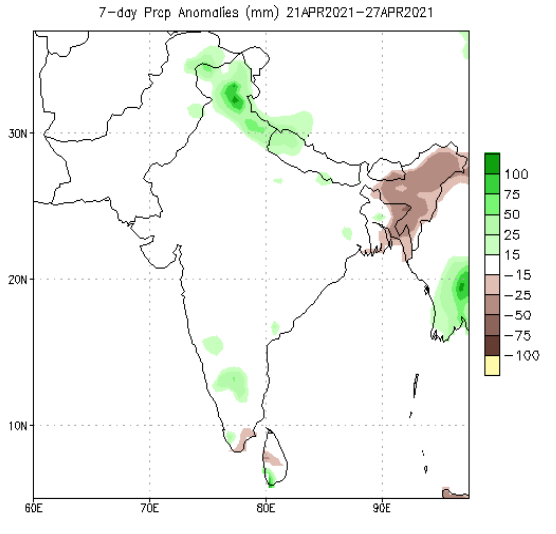
Weekly Rainfall Monitoring

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.

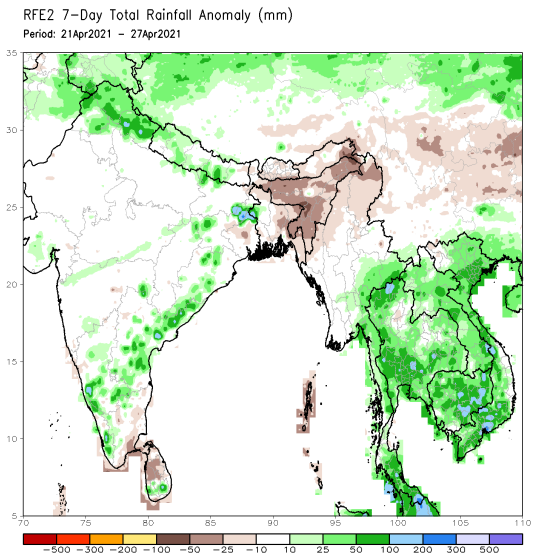


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis



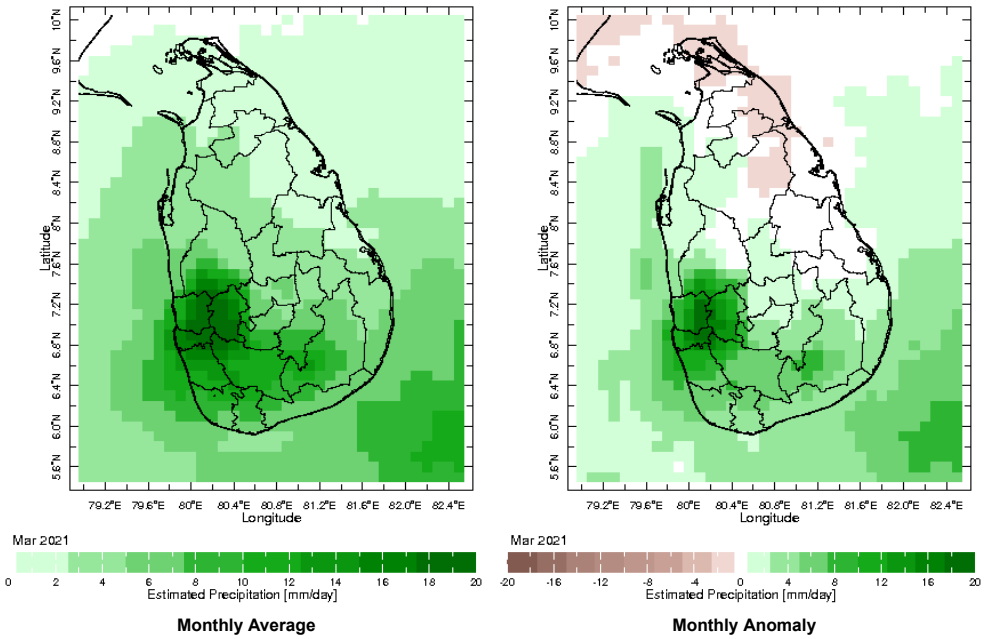


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis Climatology (1981-2010)



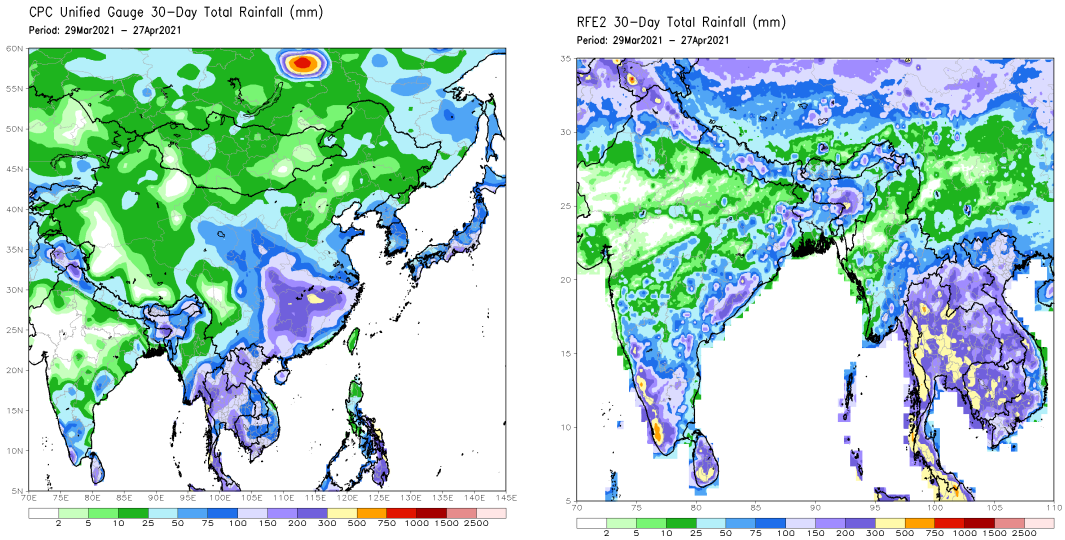
Monthly Rainfall Monitoring

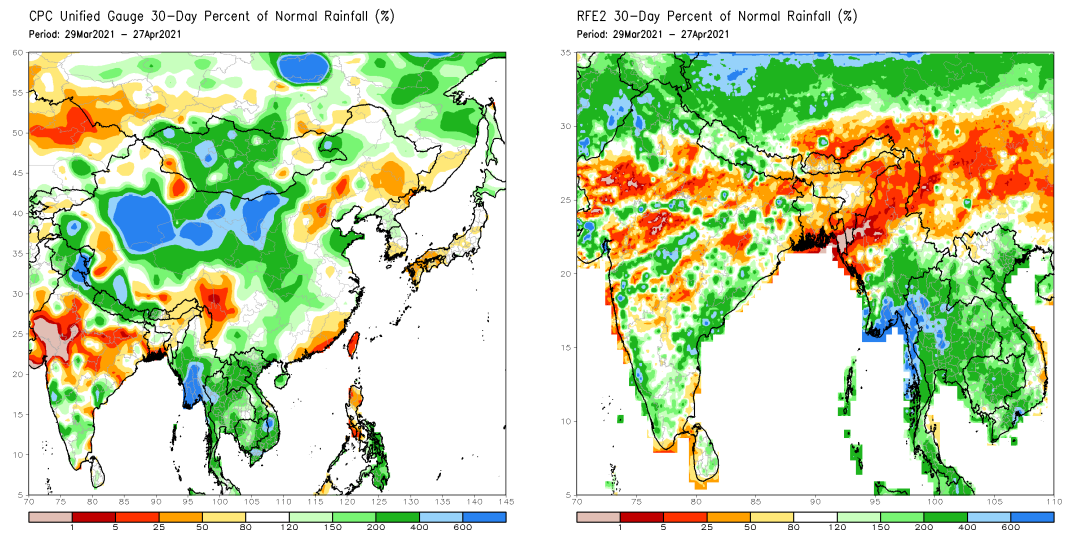
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



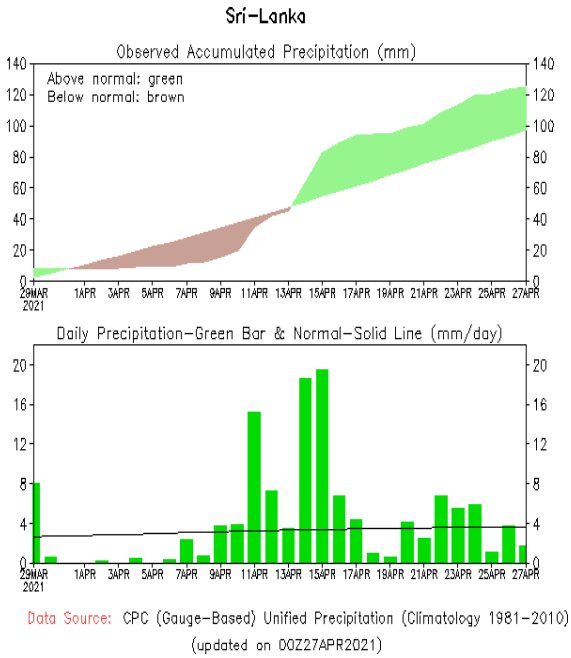
Monthly Average **Monthly Anomaly**

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.



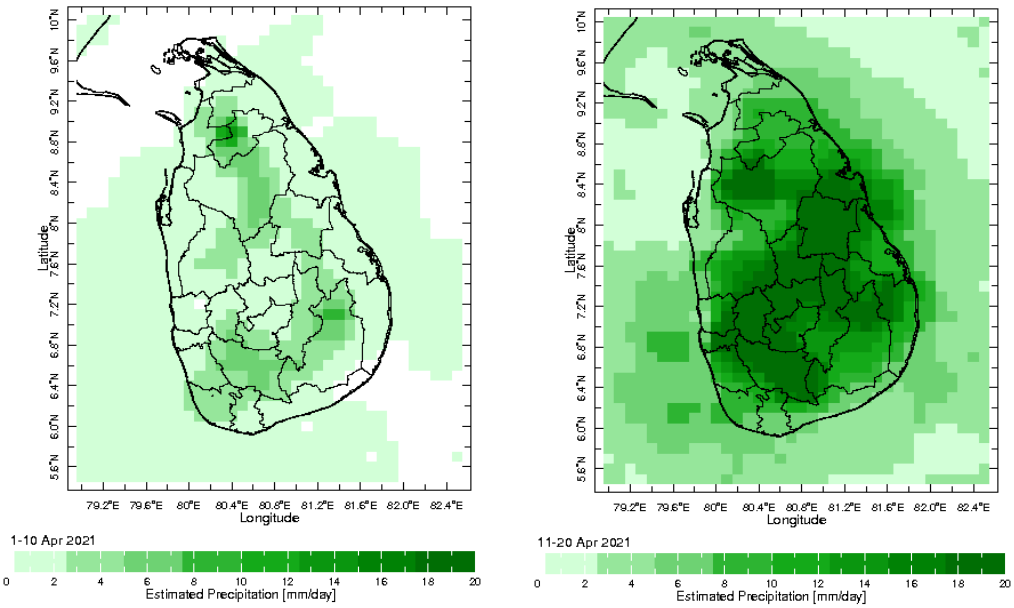


The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.

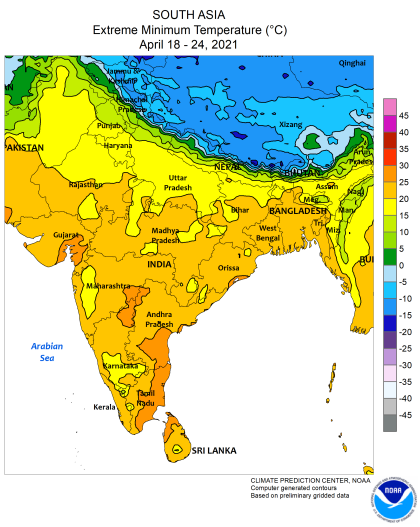


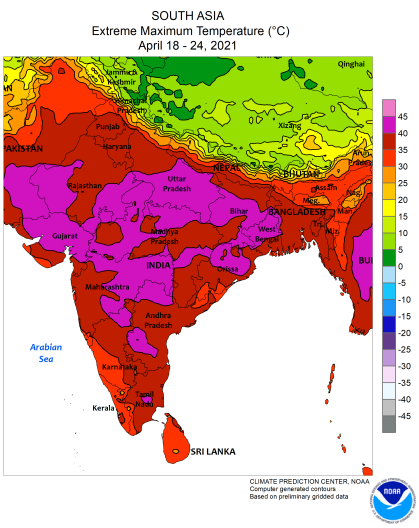
Data Source: CPC (Gauge-Based) Unified Precipitation (Climatology 1981-2010)
(updated on 00Z27APR2021)

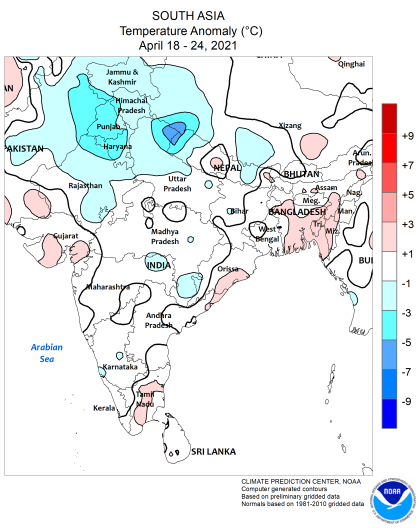
Dekadal (10 Day) Satellite Derived Rainfall Estimates



Weekly Temperature Monitoring

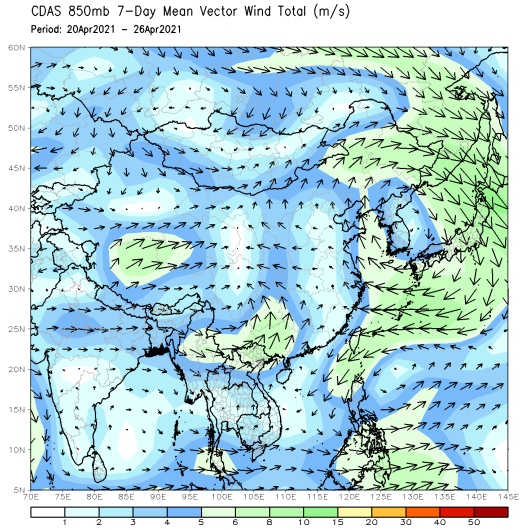


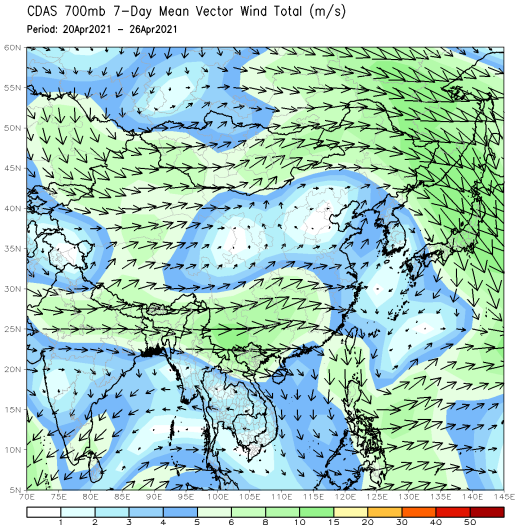




Weekly Wind Monitoring

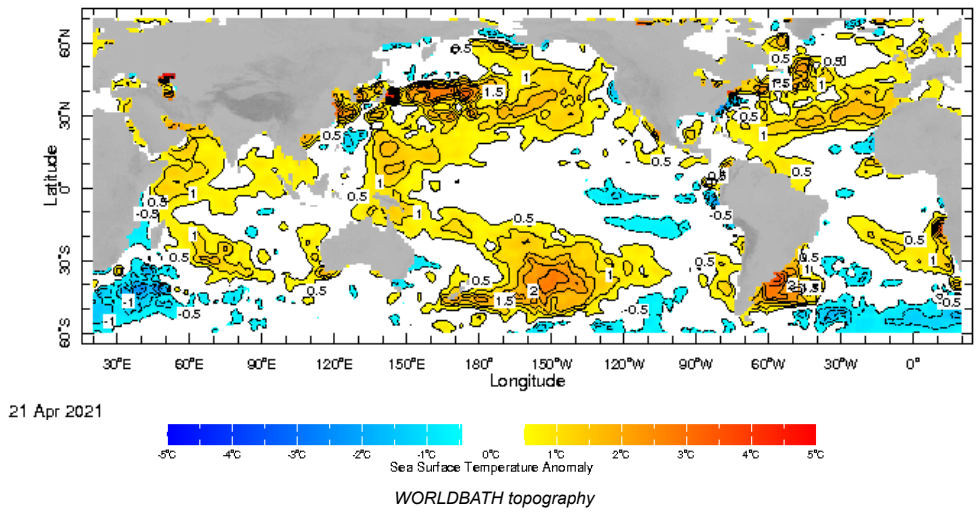
The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



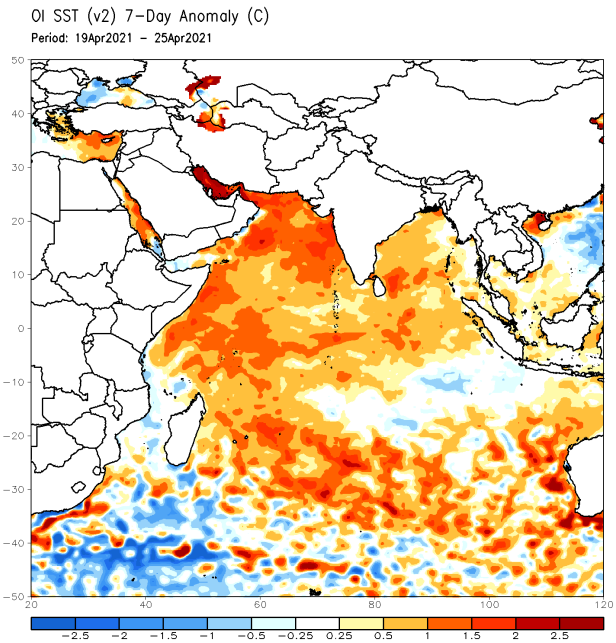


Weekly Average SST Anomalies

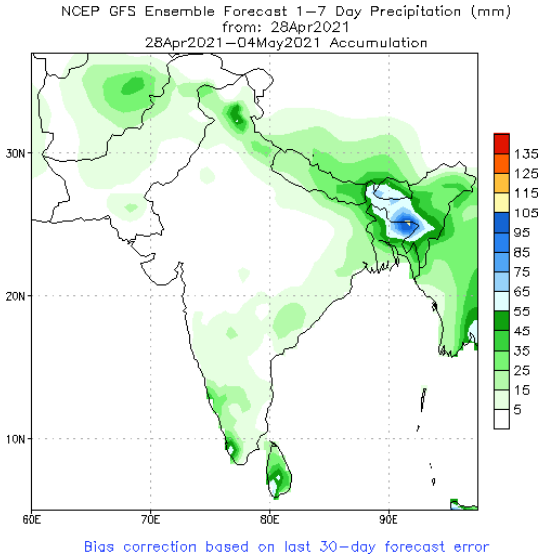
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP

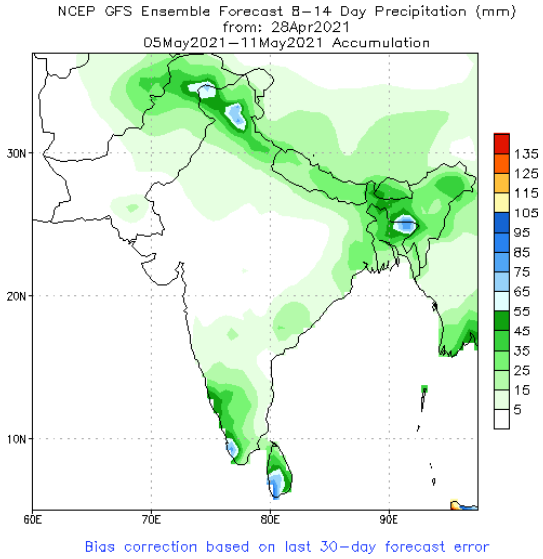


Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC

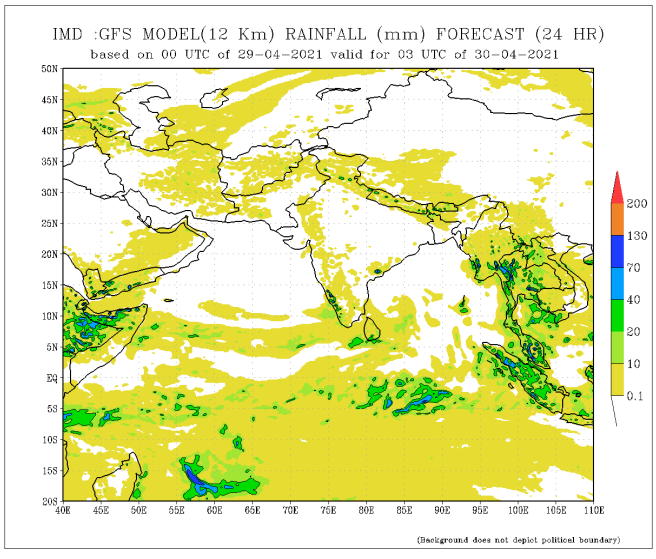


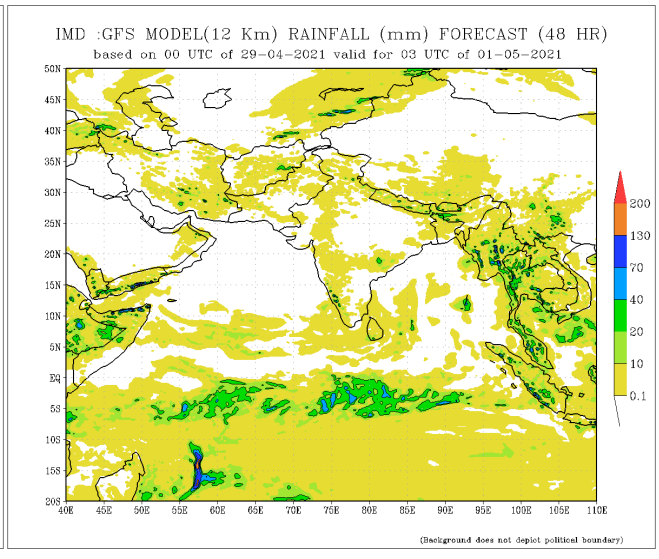
NCEP GFS 1- 14 Day prediction

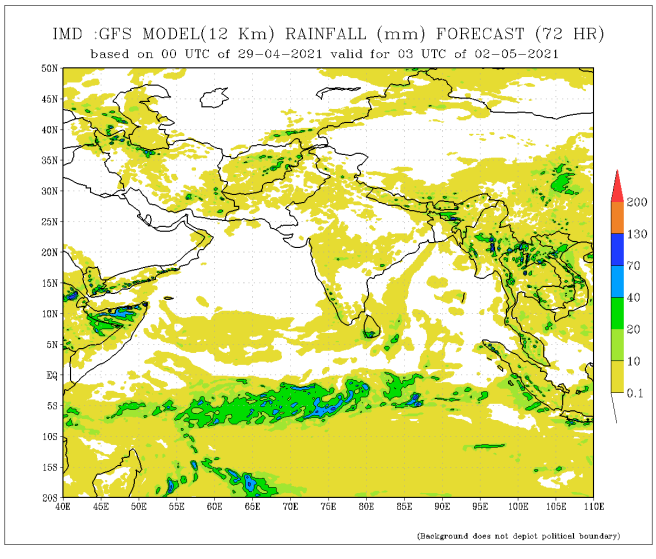


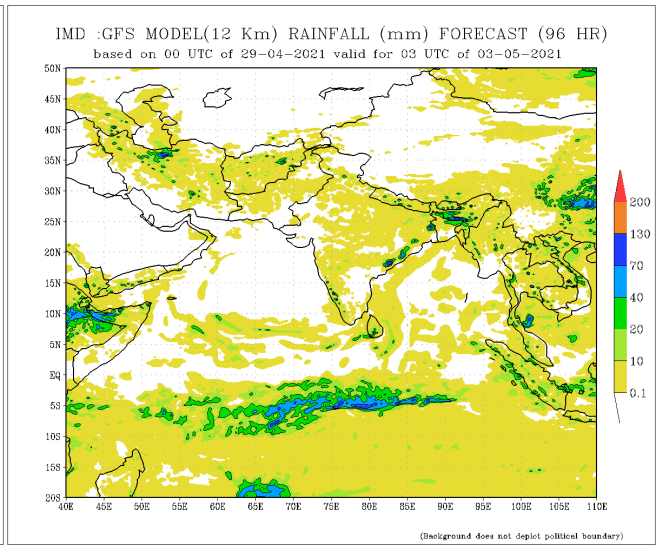


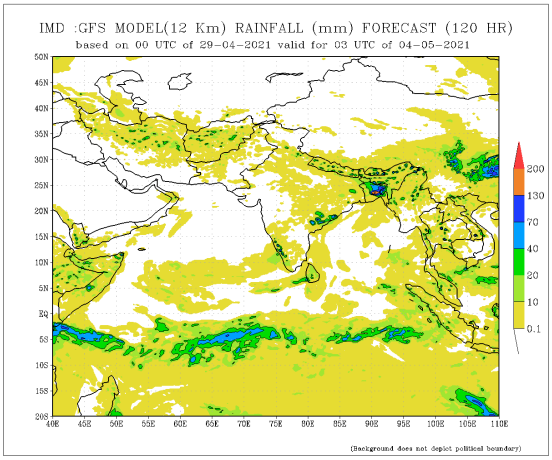
IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India

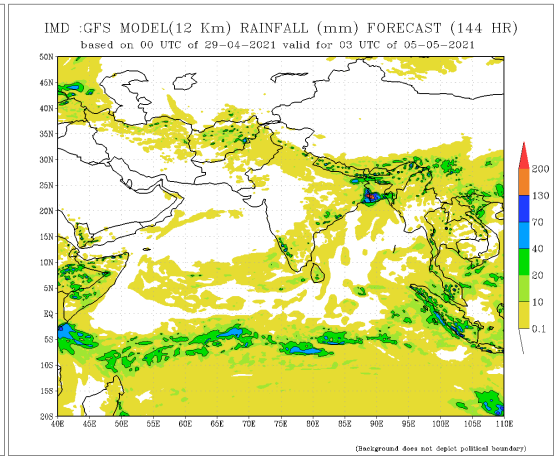


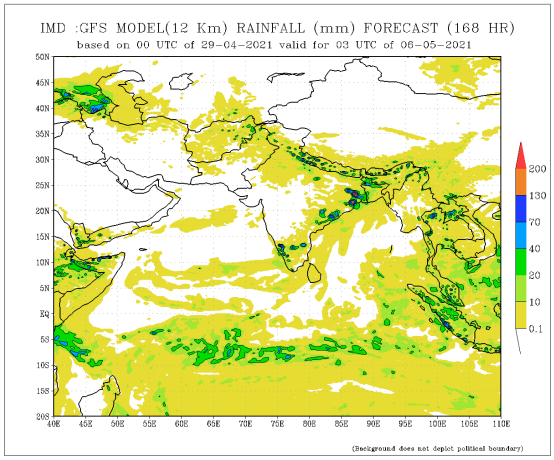






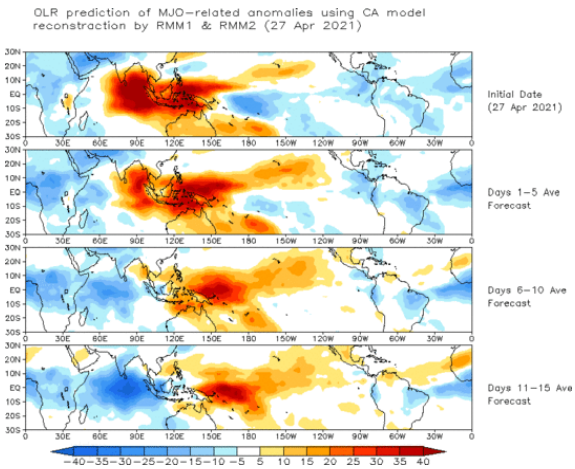






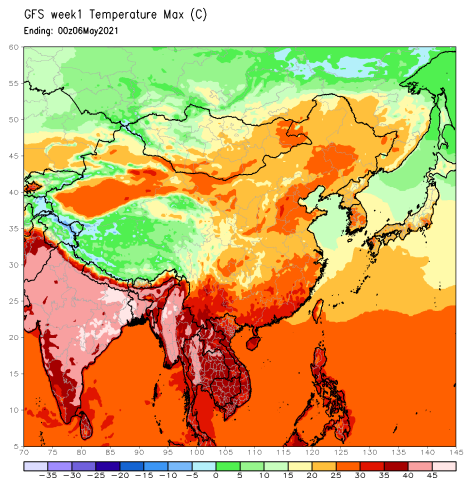
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

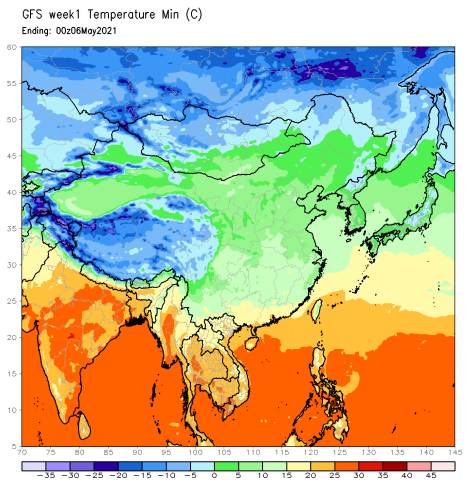
The Outgoing Longwave Radiation (OLR) is a proxy for rainfall. This can be used to identify convective rain clouds based on the MJO phase. Violet and Blue shading indicates enhanced tropical weather and Orange shading indicates suppressed conditions. The following figure shows the forecasts of MJO associated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



Weekly Temperature Forecast

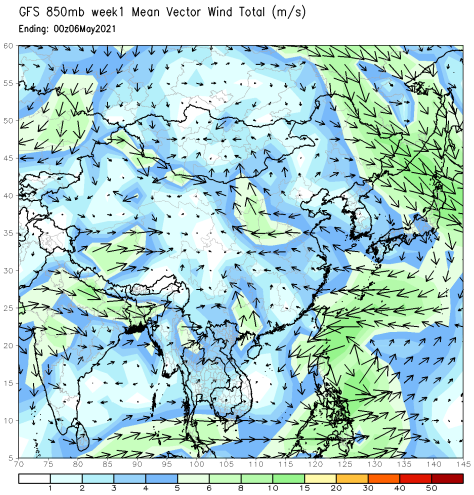
Weekly Minimum and Maximum Temperature prediction from the GFS model (from NOAA CPC)

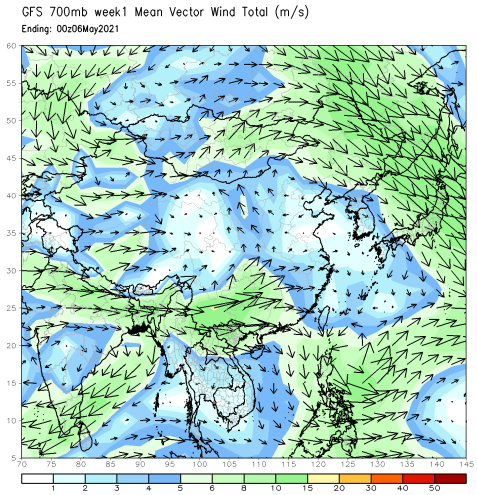




Weekly Wind Forecast

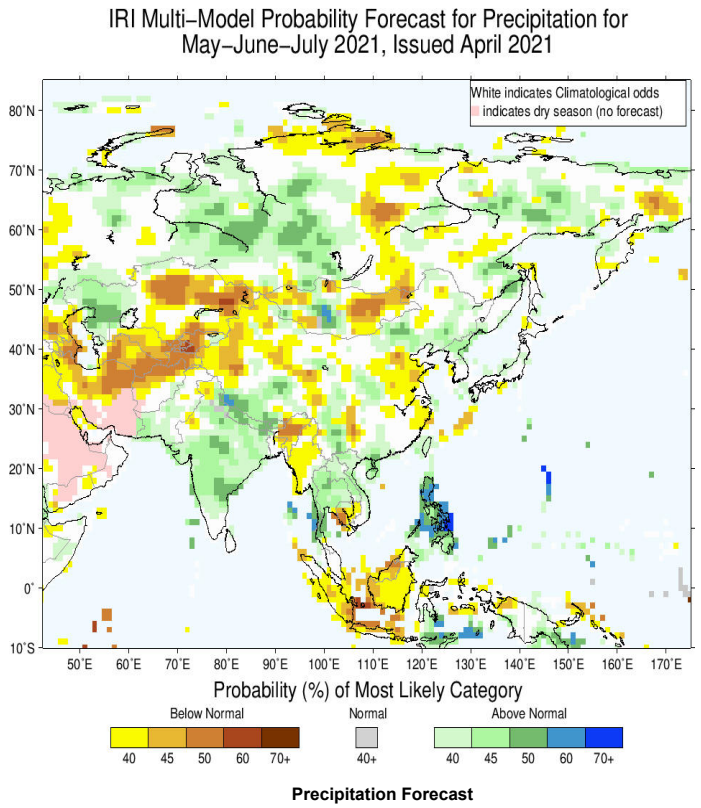
Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)



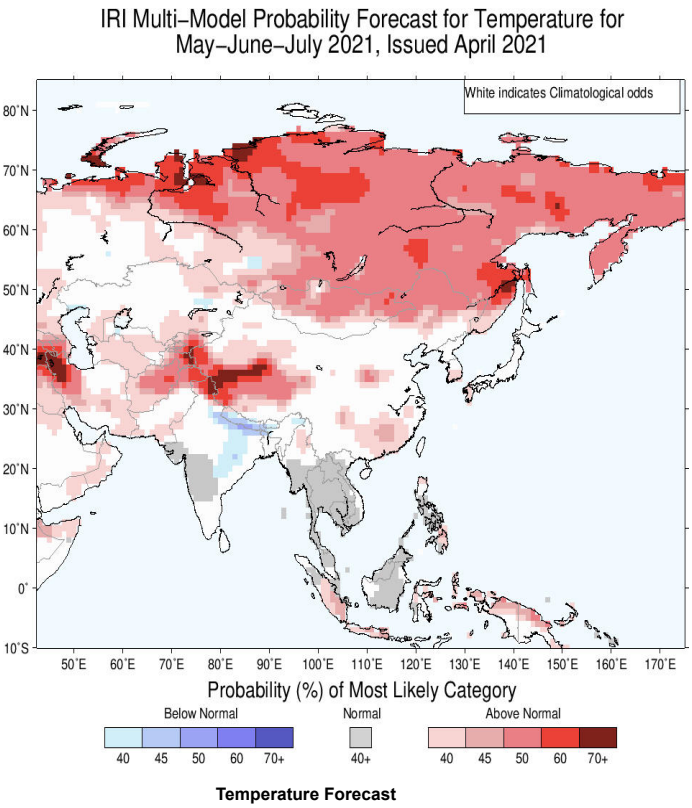


Seasonal Rainfall and Temperature Forecast

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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