



Federation for Environment, Climate and Technology

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Week of
21 - 28 May
2021

CLIMATE MONITORING AND PREDICTION FOR SRI LANKA

By: Nipuni Alahakoon, Sanduni Gammanpila, Ushan Adithya, Azra Munas, Tuan Hadgie, Lareef Zubair and Michael Bell¹ (FECT and IRI²)

HIGHLIGHTS

Rainfall Prediction



- Showers of 145 mm expected in Western, Southern and Sabaragamuwa during 21st May – 1st June.

Monitored Rainfalls



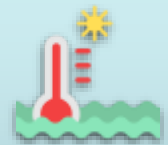
- Last week was wetter than normal in most of SL. Thunder showers in Western province with a maximum of 336 mm in Kalutara on 13th May.

Monitored Wind



- From 11th - 17th May: up to 10 km/h from the West and South were experienced.. Cyclone Takutae travelled along the western part of the Kerala, Maharashtra and Gujarat coasts and there were long-range effects even this week.

Monitored Sea Surface

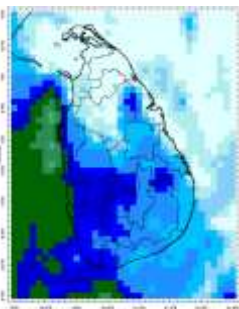


- Sea surface temperature was observed around 0.5 °C above average around the island.

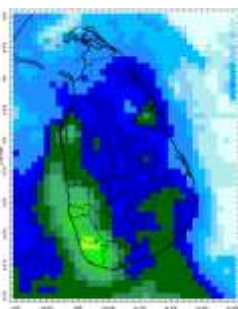
Monitoring

Rainfall

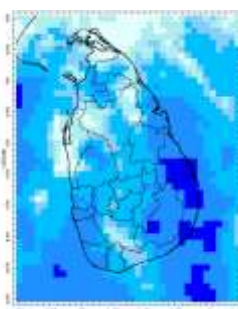
Daily Estimates for Rainfall from 12th – 18th May



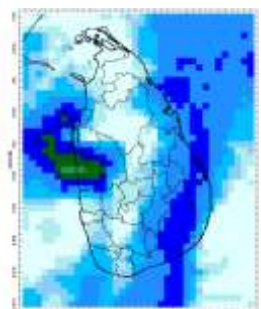
12th May



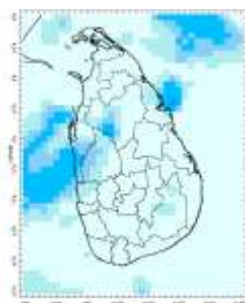
13th May



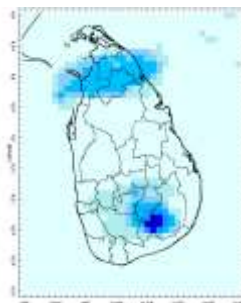
14th May



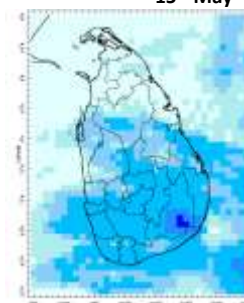
15th May



16th May



17th May



18th May





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

Weekly Rainfall Anomalies by Districts:

Rainfall Excess

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

Monthly Monitoring

During late April and early May, Dekadal Rainfall (mm/day) by Districts:

21st– 30th April:

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

1st– 10th May:

Rainfall	Districts
16 mm	Gampaha, Colombo, Kalutara, Galle, Matara, Hambantota, Kegalle, Ratnapura, Nuwara Eliya, Kandy, Matale, Badulla, Moneragala, Anuradhapura, Mannar, Vavuniya, Mullaitivu, Puttalam, Kurunegala



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14 mm	Ampara, Kilinochchi
12 mm	Polonnaruwa
6 mm	Batticaloa, Trincomalee
4 mm	Jaffna

Ocean State *(Text Courtesy IRI)*

Pacific sea state: May 12, 2021

Equatorial SSTs were mostly below average from the east to the Middle West Pacific Ocean in mid-May 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 around 0.5°C above average around the island.

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 21st – 25th May:

Total rainfall by Provinces:

Rainfall	Provinces
145 mm	Western, Southern, Sabaragamuwa
125 mm	Central
95 mm	North Western
85 mm	Uva
75 mm	North Central
65 mm	Northern, Eastern

From 26th May – 1st June:

Total rainfall by Provinces:

Rainfall	Provinces
145 mm	Southern, Sabaragamuwa
125 mm	Western
105 mm	North Western, Central
95 mm	Uva
55 mm	North Central
45 mm	Northern, Eastern



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MJO based OLR predictions

For the next 15 days:

MJO shall significantly enhance the rainfall during 18th–22nd May, Neutral during 23rd– 27th May and severely suppressed rainfall during 28th May – 1st June.

Interpretation

Monitoring

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

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

Temperatures: The temperature anomalies were slightly less normal for the Eastern provinces the last – driven by the warm SST's.

Predictions

Rainfall: During the next week (21st – 26th 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 normal for May. During 21st–28th May, the temperature remains high especially the Northern and Eastern region.

Teleconnections:

- MJO shall significantly enhance the rainfall during 18th–22nd May, Neutral during 23rd– 27th May and severely suppressed rainfall during 28th May – 1st June.
- La Nina -The SST forecast indicates that the La Niña event has transitioned to ENSO-neutral and will likely remain so through the boreal summer.

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

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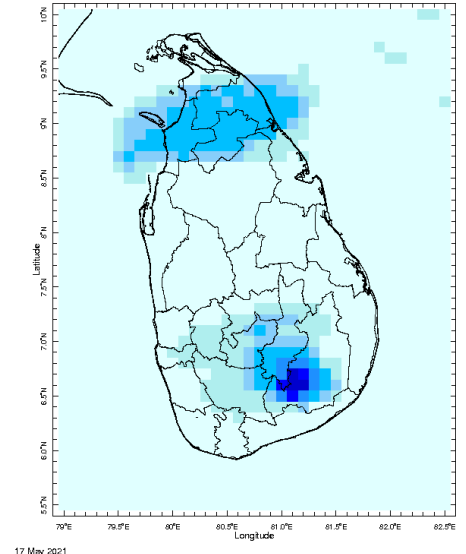
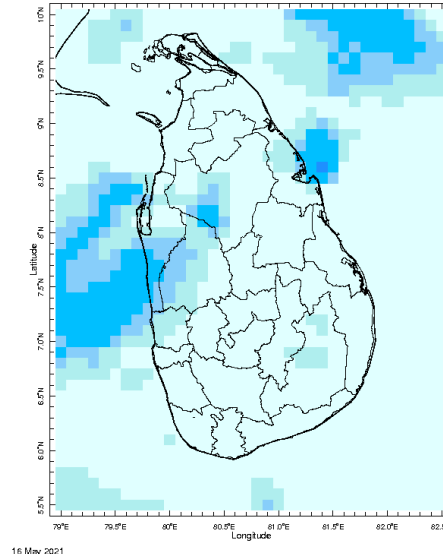
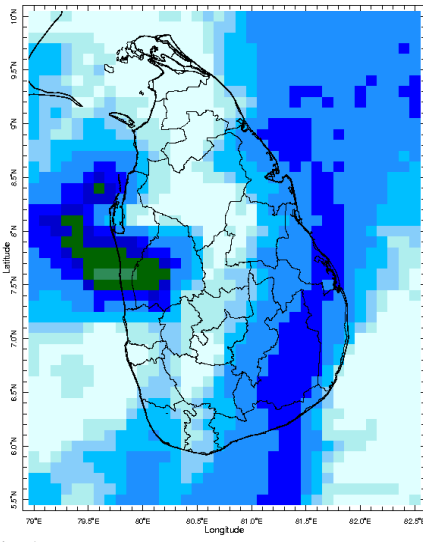
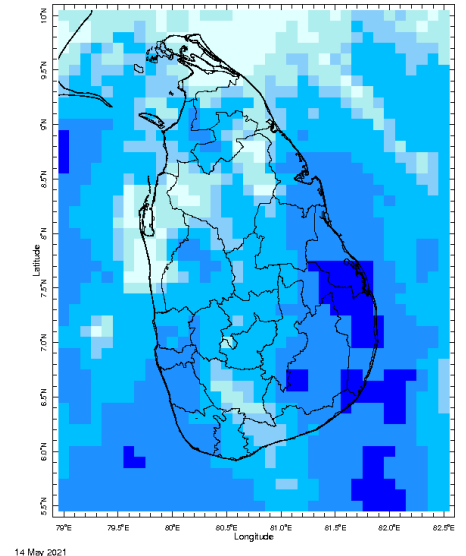
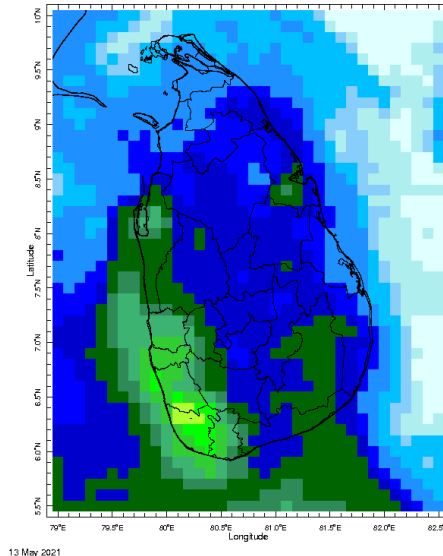
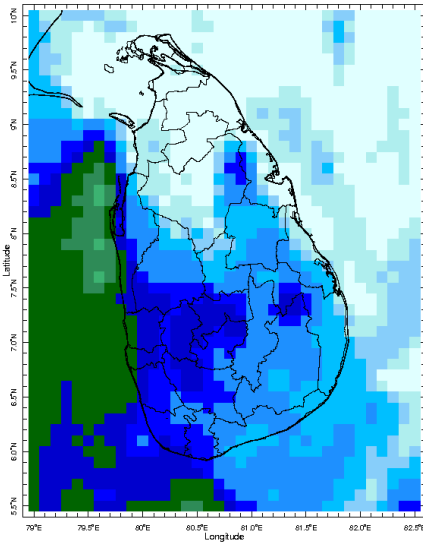
2. Predictions

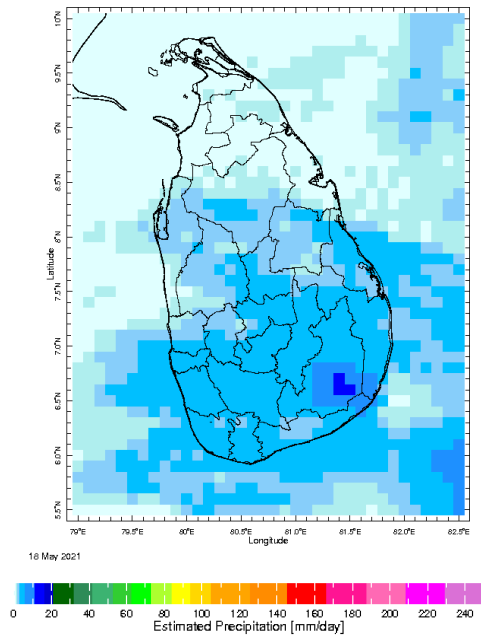
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. GFS (T574) Model Rainfall Forecast from RMSC New Delhi
- c. MJO Related OLR Forecast
- d. Weekly Temperature Forecast
- e. Weekly Wind Forecast
- f. Seasonal Predictions from IRI

MONITORING

Daily Rainfall Monitoring

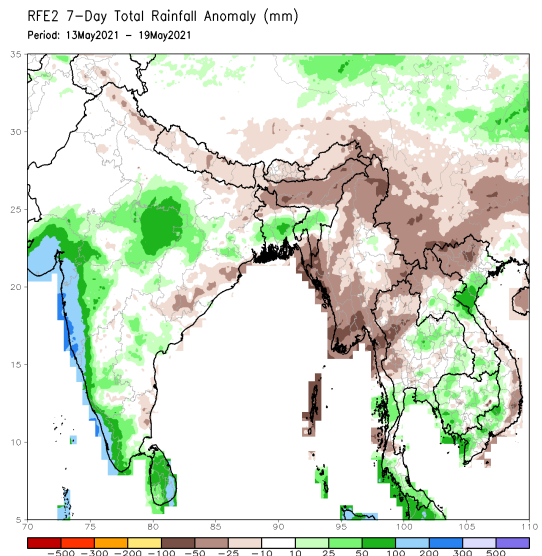
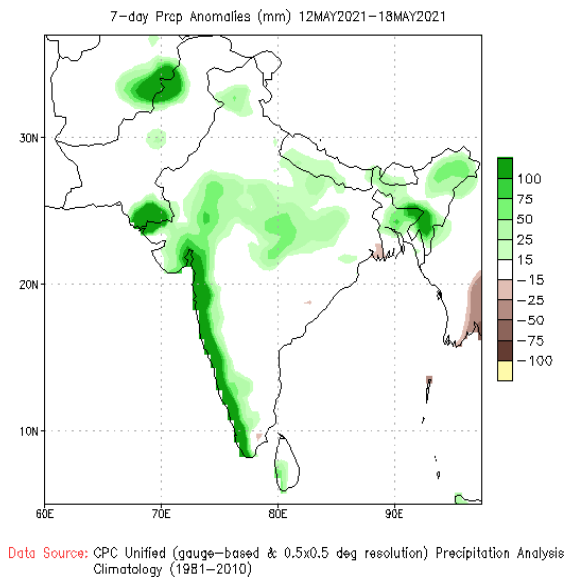
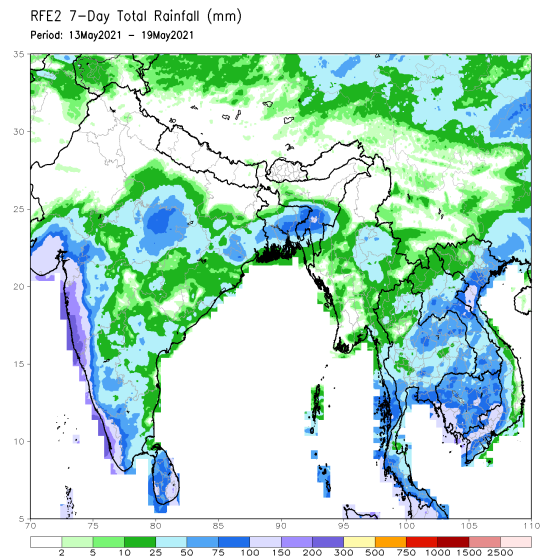
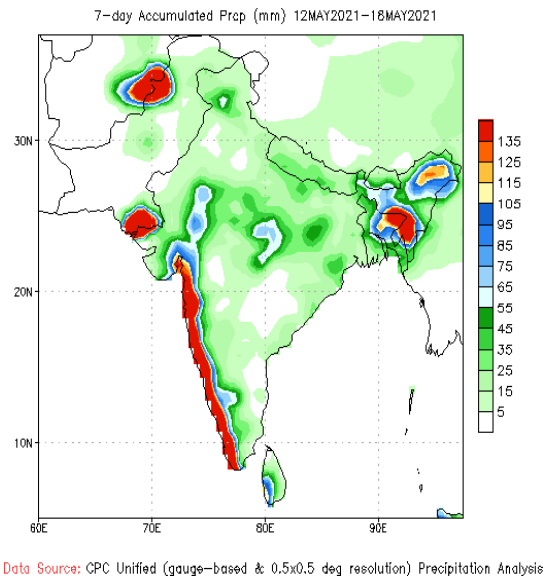
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.





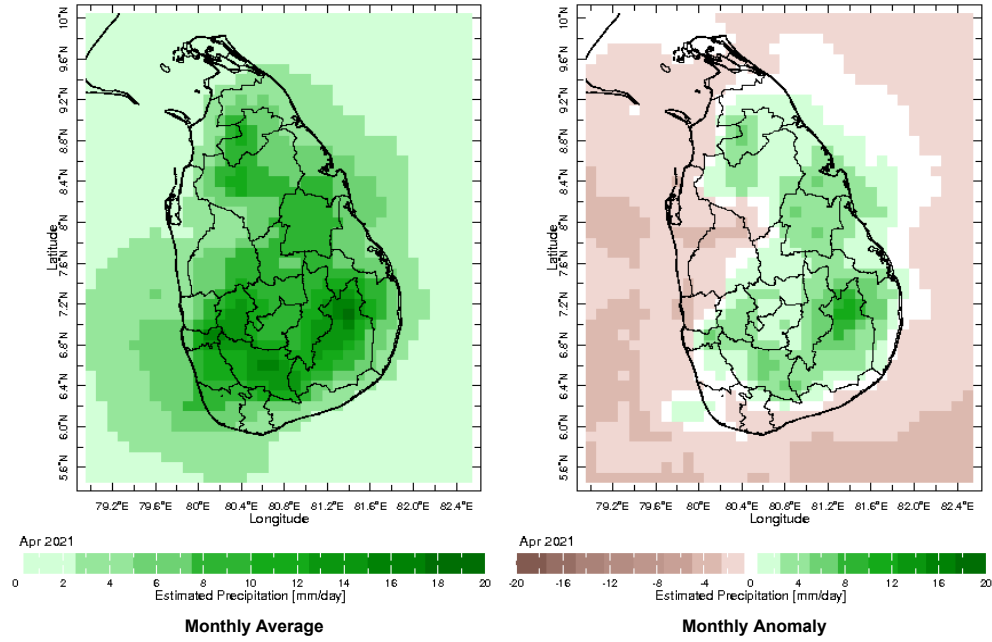
Weekly Rainfall Monitoring

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.

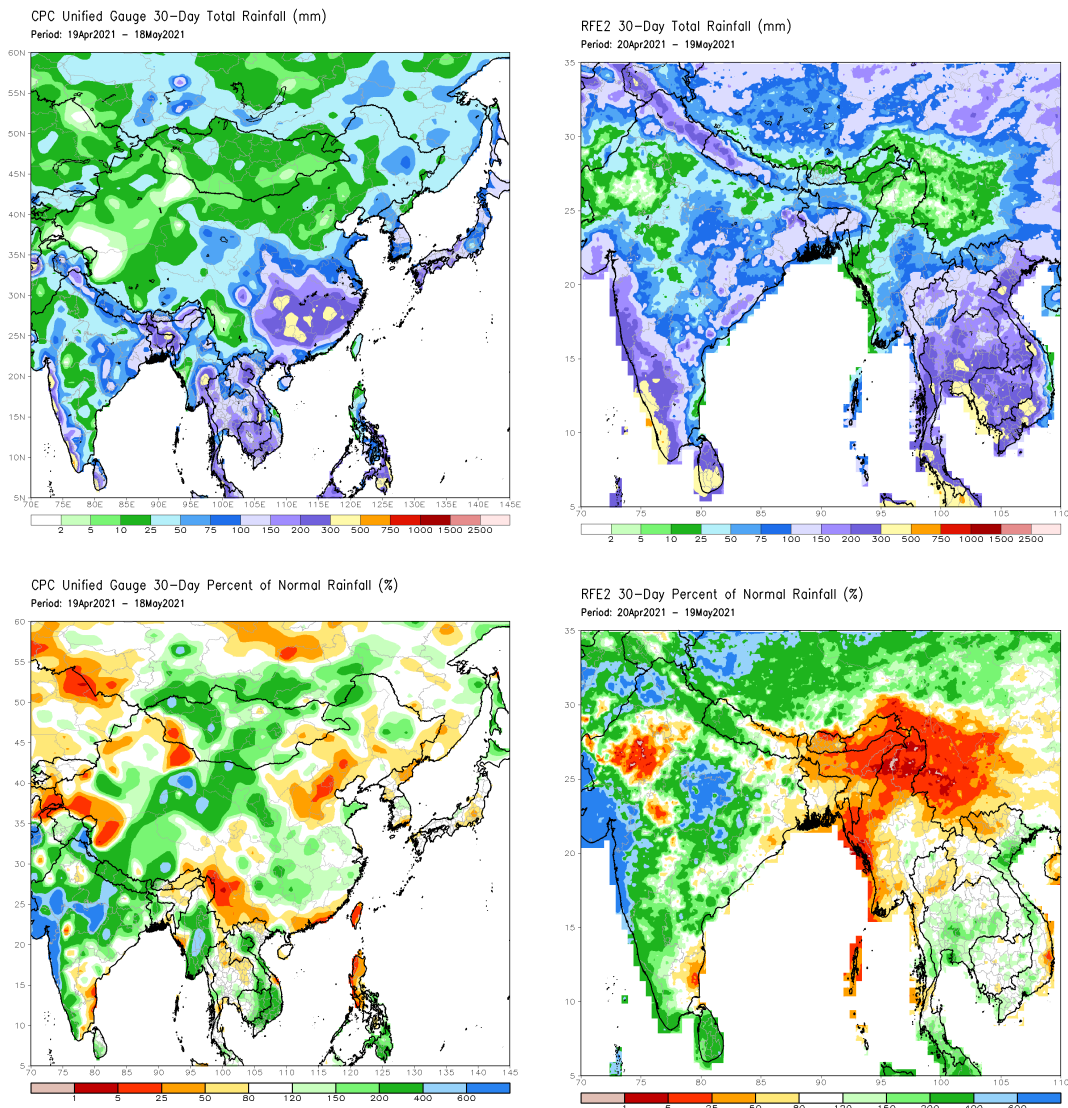


Monthly Rainfall Monitoring

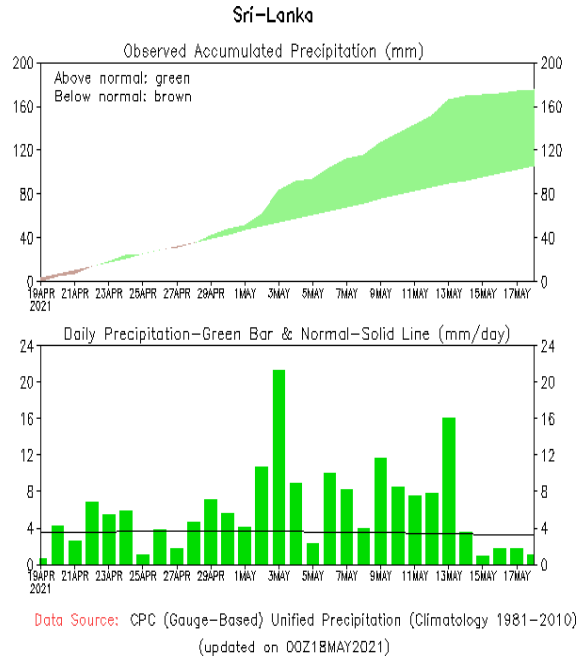
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



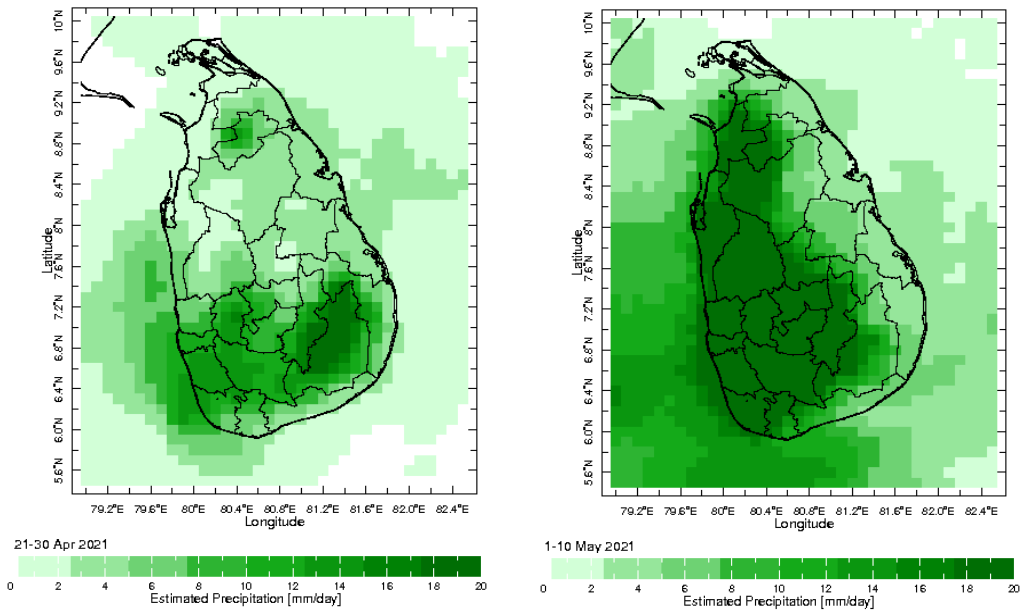
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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



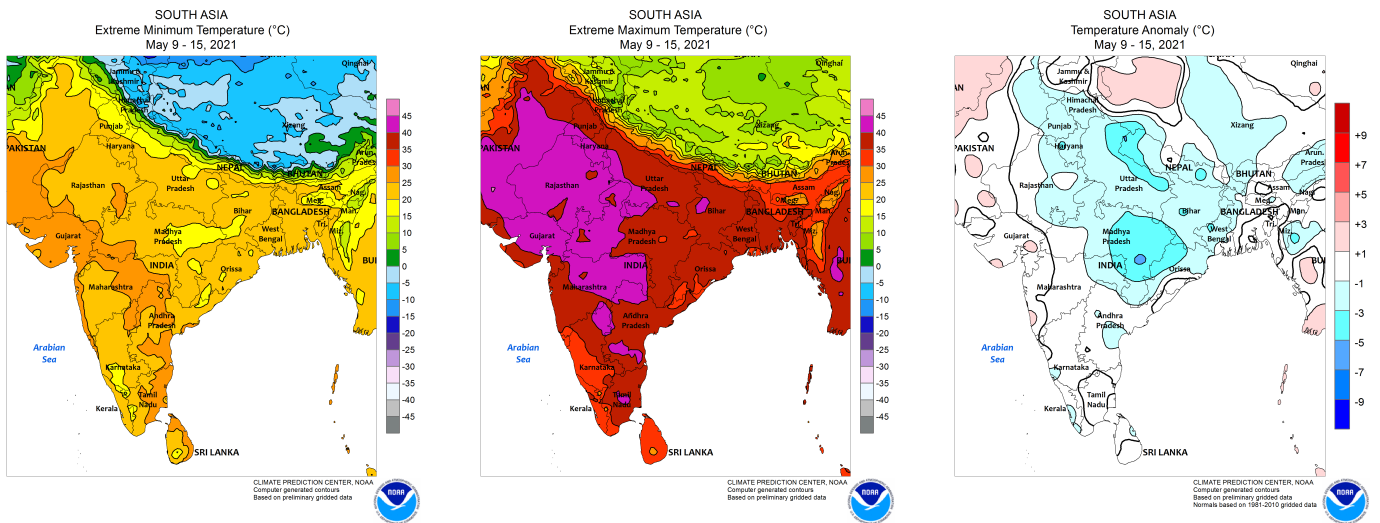
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



Dekadal (10 Day) Satellite Derived Rainfall Estimates

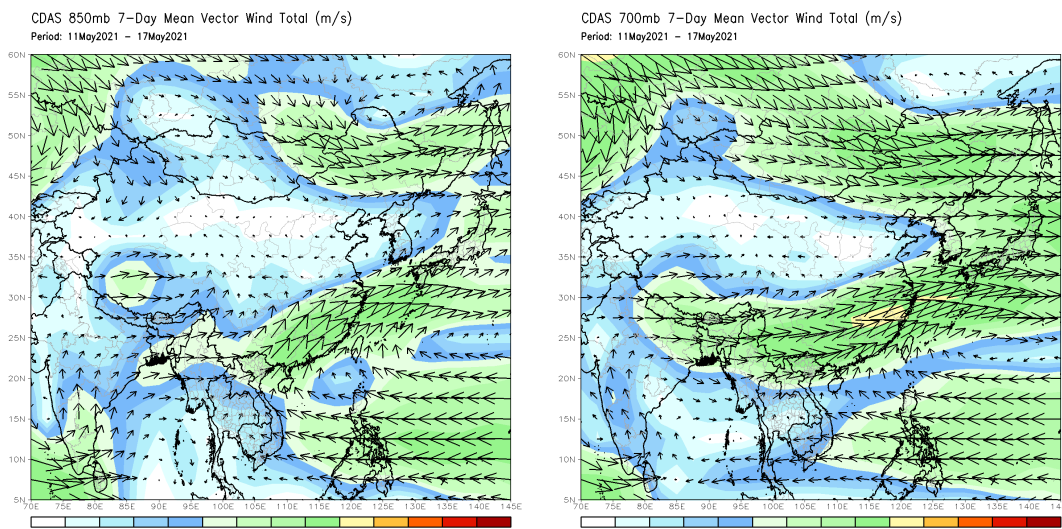


Weekly Temperature Monitoring



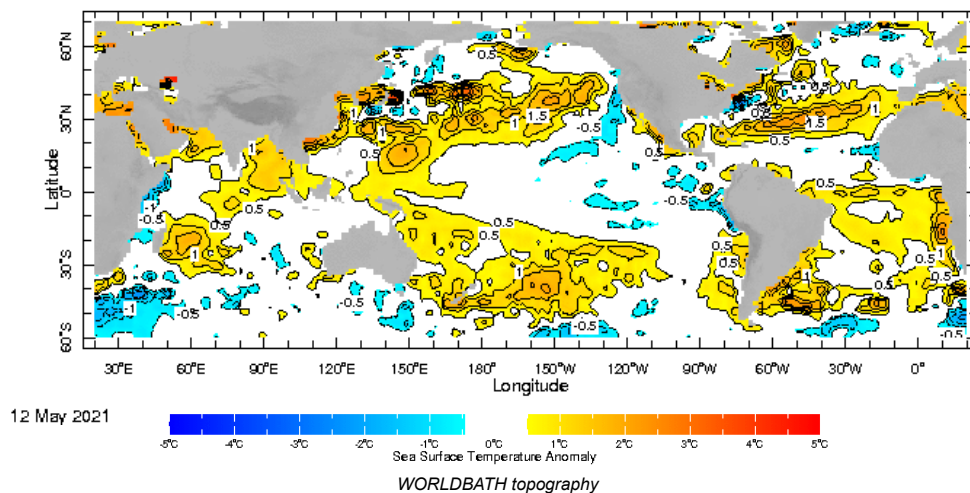
Weekly Wind Monitoring

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.

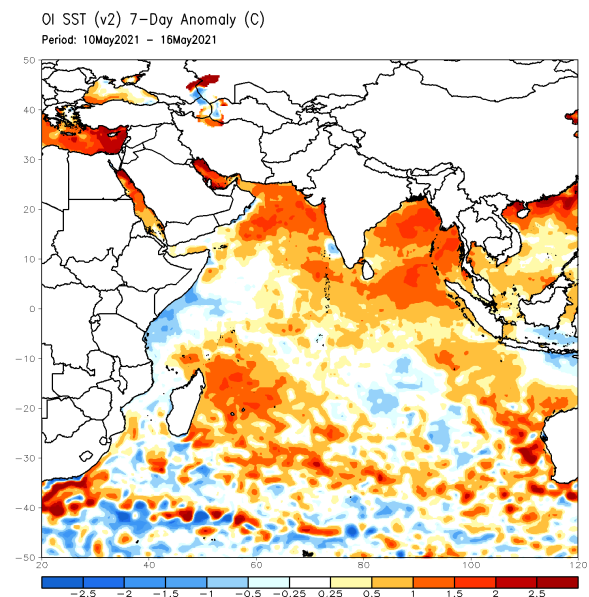


Weekly Average SST Anomalies

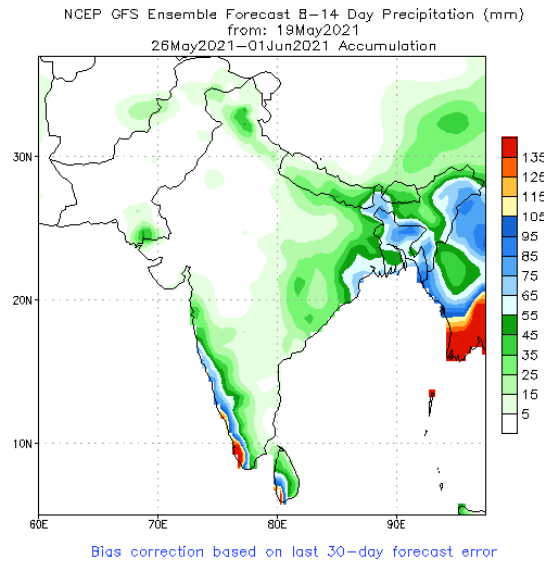
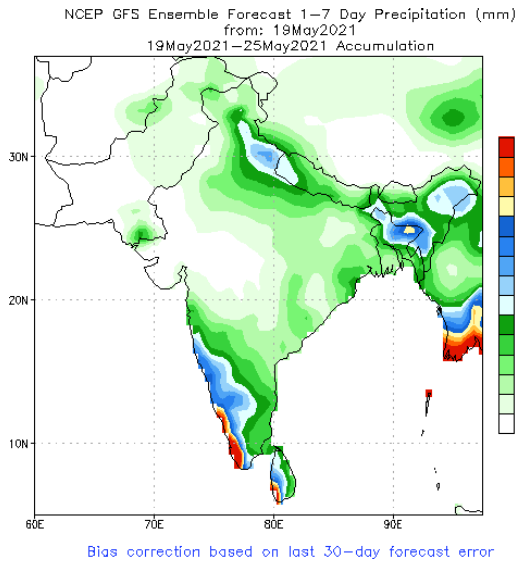
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



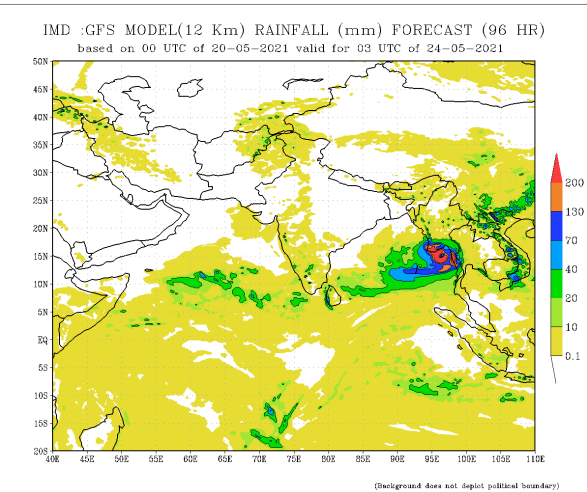
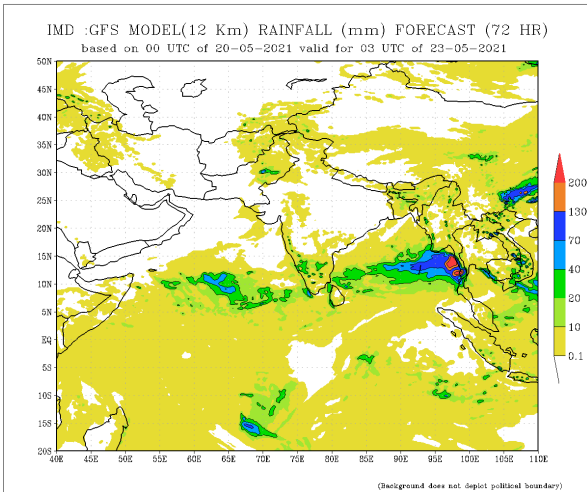
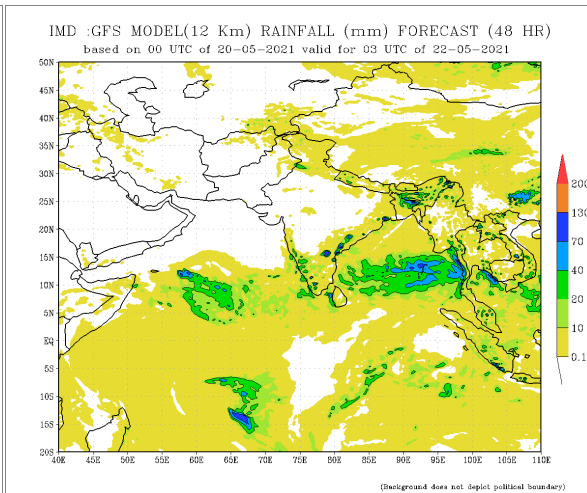
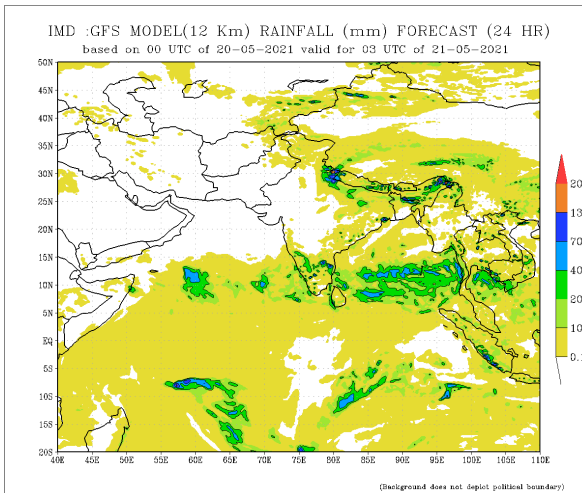
Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC

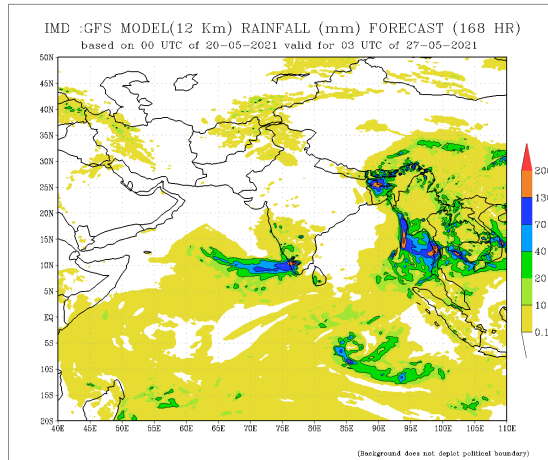
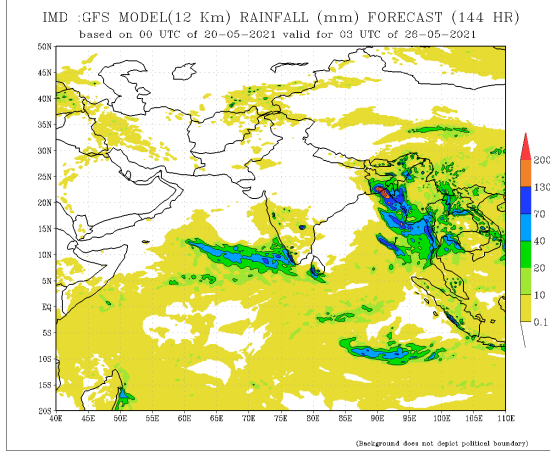
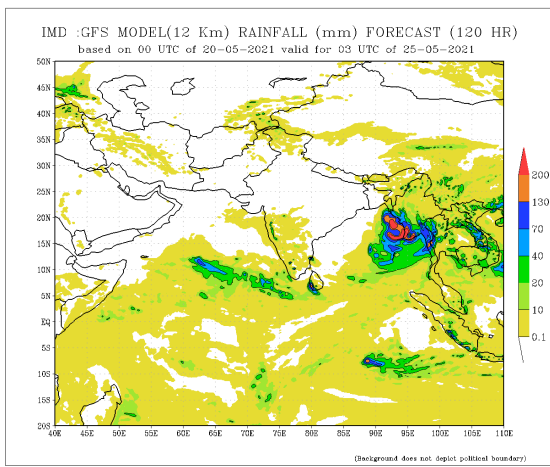


NCEP GFS 1- 14 Day prediction



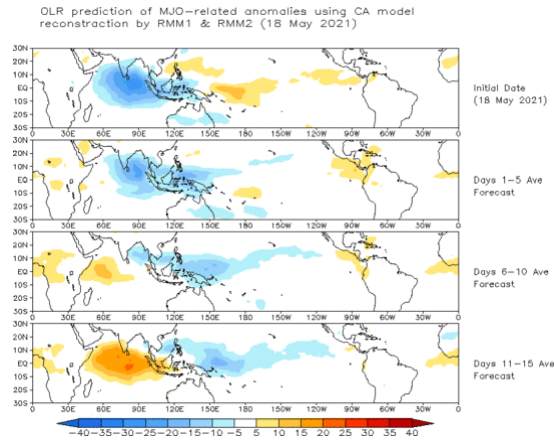
IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India





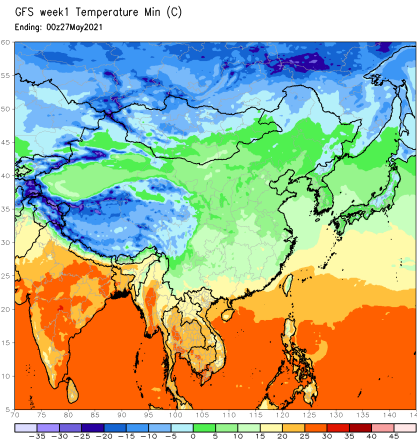
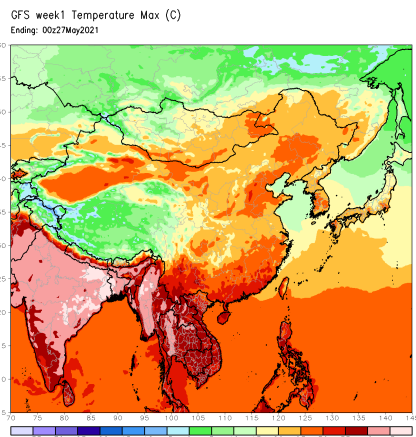
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

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 anomalous OLR for the next 15 days from the Constructed Analogue (CA) model forecasts.



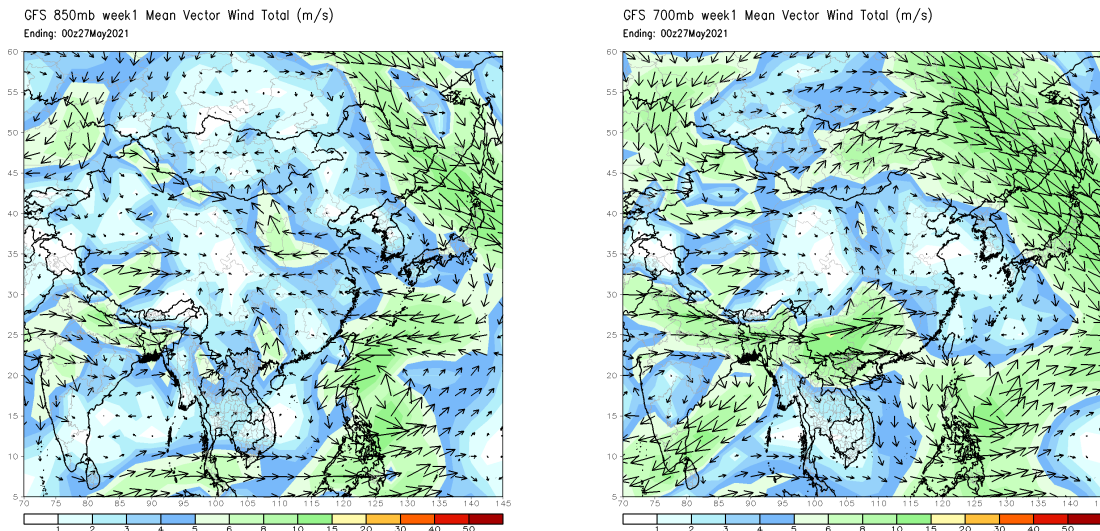
Weekly Temperature Forecast

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



Weekly Wind Forecast

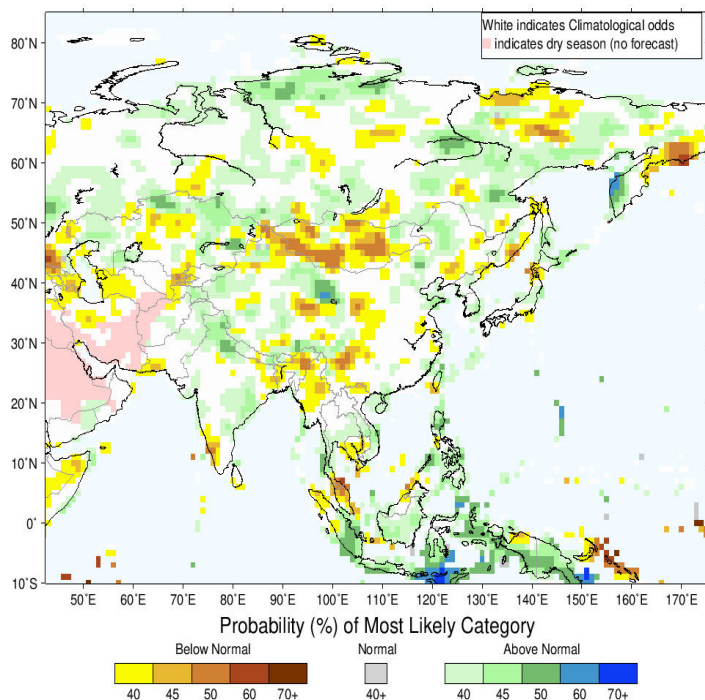
Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)



Seasonal Rainfall and Temperature Forecast

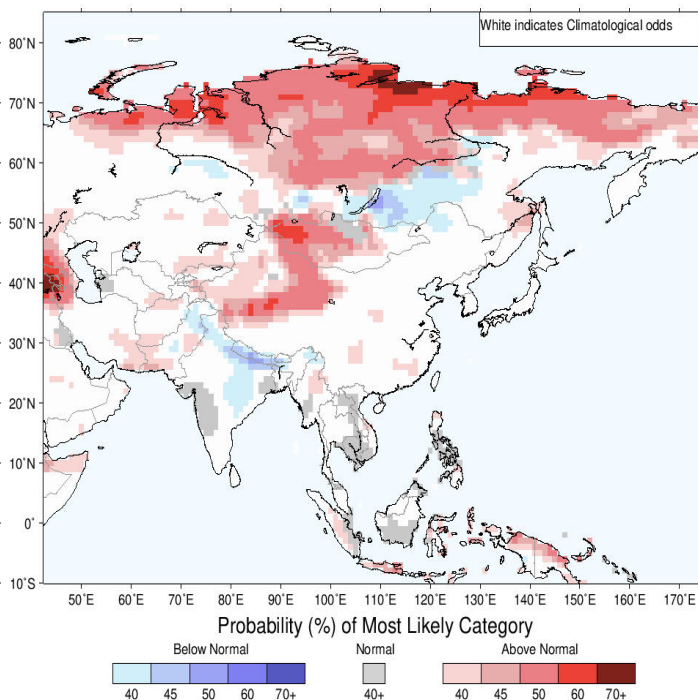
Following is the latest seasonal precipitation and temperature prediction for the next 3 months by the IRI. The color shading indicates the probability of the most dominant tercile – that is, the tercile having the highest forecast probability. The color bar alongside the map defines these dominant tercile 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%).

IRI Multi-Model Probability Forecast for Precipitation for June–July–August 2021, Issued May 2021



Precipitation Forecast

IRI Multi-Model Probability Forecast for Temperature for June–July–August 2021, Issued May 2021



Temperature Forecast

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