

**Week of
4 - 11 Dec
2020**

CLIMATE MONITORING AND PREDICTION FOR SRI LANKA

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HIGHLIGHTS

Rainfall Prediction



• Between 3rd-9th Dec: high rainfall over the Eastern Province the drop in rainfall over the rest of the country.

Monitored Rainfalls



• Between 26th Nov - 2nd Dec: up to 180 mm in Kilinochchi district on 2nd Dec.

Monitored Wind



• From 25th Nov- 1st Dec: up to 4 km/h distributed winds were experienced the entire island.

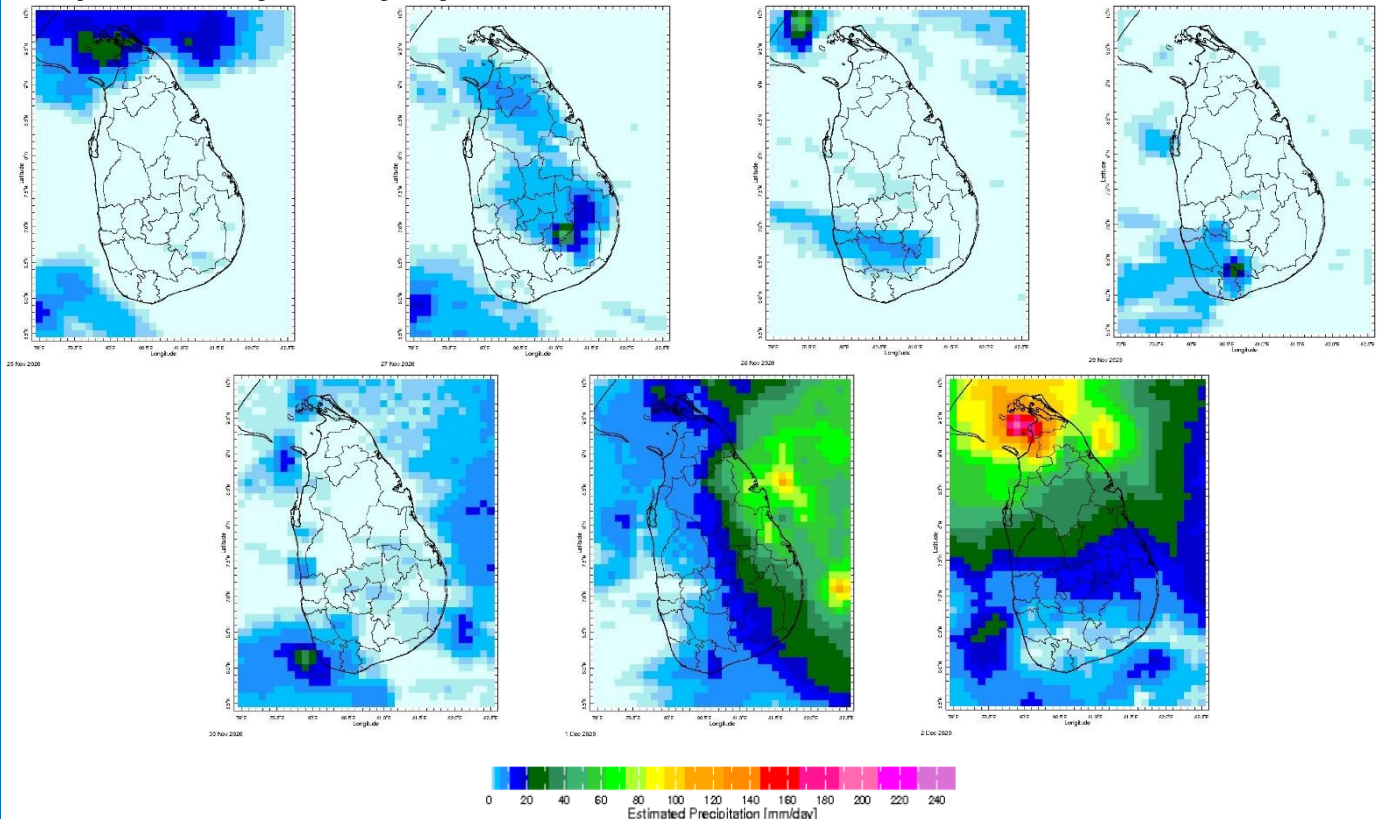
Monitored Sea Surface



• 0.5^oC above average sea surface temperature was observed in the seas around Sri Lanka.

**Monitoring
Rainfall**

Daily Estimates for Rainfall from 26th November – 2nd December





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Total Rainfall for the Past Week

The RFE 2.0 tool shows total up to 200 – 300 mm in Kilinochchi district; up to 150 – 200 mm in Jaffna and Mannar districts; up to 100 -150 mm in Mullaitivu, Vavuniya, Trincomalee and Anuradhapura districts; up to 75 – 100 mm in Polonnaruwa, Batticaloa and Badulla districts; up to 50 -75 mm Puttalam, Matale, Ampara and Moneragala districts; up to 25 – 50 mm in Kurunegala, Kandy, Nuwara Eliya, Hambantota, Matara and Ratnapura districts and up to 10 – 25 mm in Gampaha, Colombo, Kalutara, Galle and Kegalle districts.

Above rainfall average up to 100 – 200 mm in Jaffna, Kilinochchi and Mannar districts; up to 50 – 100 mm in Mullaitivu, Vavuniya, Trincomalee, Anuradhapura and Polonnaruwa districts; up to 25 – 50 mm in Puttalam, Ampara, Badulla and Batticaloa districts; up to 10 – 25 mm Kurunegala and Moneragala districts; Below rainfall average up to 50 – 100 mm in Galle, Kalutara and Ratnapura districts; up to 25 – 50 mm in Gampaha, Colombo, Kegalle, Nuwara Eliya and Hambantota districts and up to 10 – 25 mm in Kandy, Matara and Matale districts.

Monthly Monitoring

Overall, November had been wettest as usual. However, as November is the wettest month in Sri Lanka, the rainfall was high. During November; Above average rainfall conditions up to 8 mm in Kurunegala, Puttalam, Badulla, Moneragala, Colombo, Gampaha and Ratnapura districts; up to 6 mm in Mullaitivu, Vavuniya, Anuradhapura, Trincomalee, Kegalla, Galla, Matara and Kalutara districts; up to 4 mm in Jaffna, Kilinochchi, Mannar, Matale, Kandy, Nuwara Eliya, Hambantota and Polonnaruwa districts; up to 2 mm in Ampara district and Below average rainfall up to 4 mm in Batticaloa district.

Ocean State (Text Courtesy IRI)

Pacific sea state: November 25, 2020

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

Indian Ocean State

0.5 °C above average sea surface temperature was observed in the seas around Sri Lanka.

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 3rd – 9th December: Total rainfall up to 105 mm in Eastern provinces; up to 95 mm in Northern, province; up to 85 mm in North central, North western and Western provinces; up to 75 mm in Southern, Sabaragamuwa, and Uva provinces and up to 65 mm in Central province.

From 10th – 16th December: Total rainfall up to 75 mm in Eastern province; up to 55 mm in Northern and Western provinces; up to 45 mm in North central, Southern, Sabaragamuwa and Uva provinces and up to 35 mm in Central and North western provinces.



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NOAA Model Forecast:

From 24th – 29th September: Total rainfall up to 75 mm in Badulla district; up to 50 mm in Ampara, Moneragala, Ratnapura, Nuwara Eliya, Kandy, Matale, Polonnaruwa, Anuradhapura, Batticaloa, Trincomalee, Vavuniya, Mullaitivu, Kilinochchi and Jaffna districts; and up to 25 mm in Mannar, Puttalam, Kurunegala, Kegalle, Gampaha, Colombo, Kalutara, Galle, Matara and Hambantota districts.

MJO based OLR predictions

For the next 15 days:

MJO shall slightly enhance the rainfall during 2nd – 6th Dec; neutral during 7th- 11th Dec and significantly suppresses during 12th -16th Dec over Sri Lanka.

Interpretation

Monitoring

Rainfall: During the last two weeks, there had been high rainfall over the Jaffna, Kilinochchi and Mullaitivu districts. Northern Province with significant rainfall over the North central and Eastern Provinces. November is a month which typically has the highest rainfall in Sri Lanka

Wind: As was typical for late November the wind direction had distributed surrounding seas. The cyclonic circulation pattern in the southern Bay of Bengal influenced the North-Easterly coast of Sri Lanka to the end of the November.

Temperatures: were cooling from the highs in the previous month as was seasonable – still the temperature anomalies were above normal for the Southern half the last – driven by the warm SST's.

Predictions

Rainfall: During the next two weeks, heavy rainfall predicted on the Eastern coast in Sri Lanka.

Temperatures: During 18th Nov –10th Dec, the temperature remains high especially the Western, Eastern and Southern coast.

Teleconnections: MJO- is in phases that slightly enhance the rainfall during 2nd – 6th Dec; neutral during 7th- 11th Dec

La Nina has set in as assessed by IRI on October 20. The SST in the Indian Ocean is reacting slowly and is still warmer by 0.5 degree than is seasonable. Usually with La Nina, the rainfall from October to December is suppressed but this is not getting picked up in enough models because the rest of the SST is not typical for the La Nina.

Cyclonic Storm “BUREVI”

In less than a week after Cyclone Nivar swept past Tamil Nadu and Andhra Pradesh, another cyclone started to brew over the Bay of Bengal 30th November 2020.

Track of “BUREVI”

A low-pressure area formed off the coast of Aceh on 28th Nov. It gradually intensified into a depression on November 30. The JTWC then issued a Tropical Cyclone Formation Alert on the system, that same day.



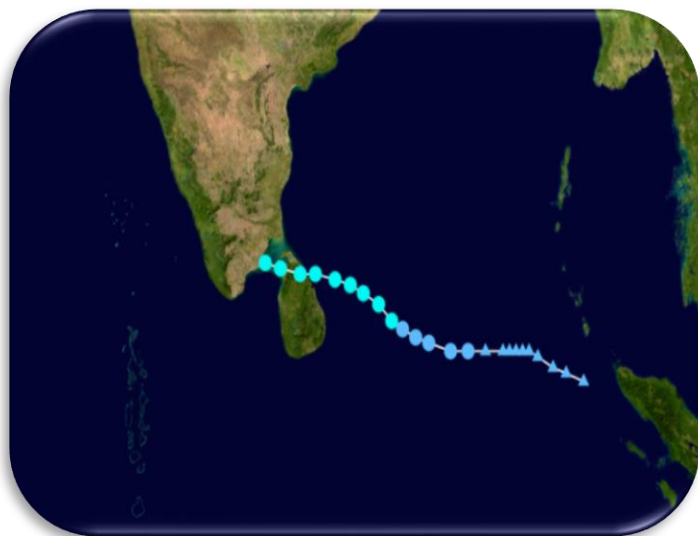
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30 Nov: The low-pressure area lingering over the Bay intensified into a depression during early hours of Monday the system was intensified into a 'deep depression' by Monday night.

1 Dec: At 3:00 UTC on 1st Dec, the depression was upgraded into a deep depression. At 15:00 UTC, both IMD and JTWC upgraded to cyclonic storm and tropical storm respectively and named as *Burevi* suggested by the Maldives. It had named 'Burevi' as per the naming guidelines set by the World Meteorological Organization (WMO).

Dec 2: At 15:00 UTC on 2nd Dec, Burevi reached its peak intensity with 1-minute sustained winds of around 45 miles per hour (72 km/h) and a barometric pressure of 996 mbar. Shortly afterwards, Burevi made landfall along the east coast of Sri Lanka.

Dec 3: The cyclonic storm was moving away from Sri Lanka 3rd of Dec with a wind speed of 70-80 kmph gusting up to 90 kmph is very likely to move west- Northwest wards. After weakening over Sri Lanka, Burevi exited into the Gulf of Manar, early on 3rd Dec.

Dec 4:

The cyclonic storm has weakened into a Deep depression and located about 143 km to the west-northwest of Mannar at around 02.30 a.m on December 4. It is moving further away from the country. Hence the influence of this system is expected to be gradually reduced. Heavy rainfall above 100 mm can be expected at some places in Northern, and North-western provinces and in Anuradhapura district. Wind speed can be up to 40-50 kmph at times in Northern, North-Central and north-western, provinces on 4th Dec.

Impacts in Sri Lanka

1,009 families in the North and 551 families in Trincomalee was affected. Only Mannar and Mullaitivu Districts in the North and the Trincomalee District in the East had reported damage. The number of affected people district wise is as follows:

- Mannar - 7,749 people in 2,236 families
- Jaffna - 2,986 people in 829 families affected
- Killinochchi - 41 people in 10 families affected
- Mullaitivu - 1,149 people in 405 families affected
- Vavuniya - 236 people in 74 families affected
- Trincomalee - 91 people in 21 families affected

¹ International Research Institute for Climate and Society, Columbia University Water Center, Earth Institute at Columbia University, New York.



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Weekly Climate Bulletin for Sri Lanka

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2. Predictions

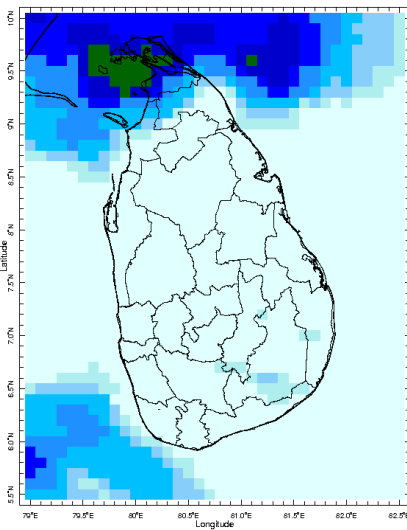
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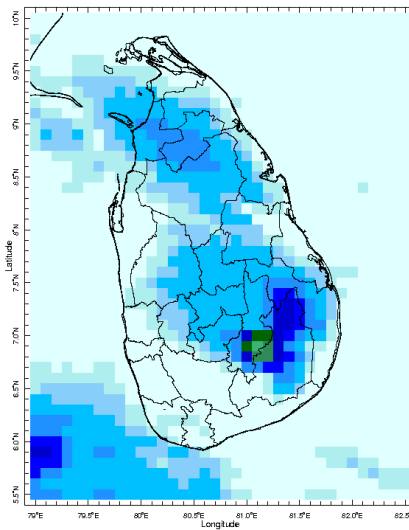
MONITORING

Daily Rainfall Monitoring

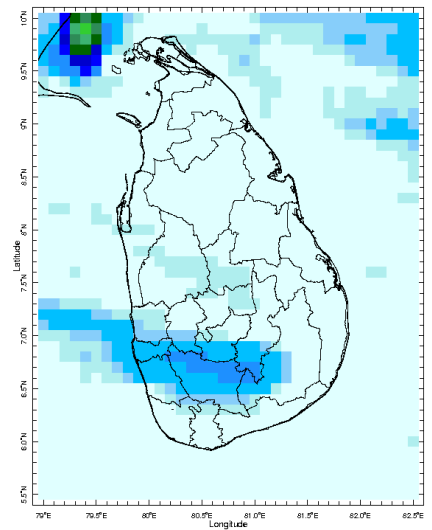
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



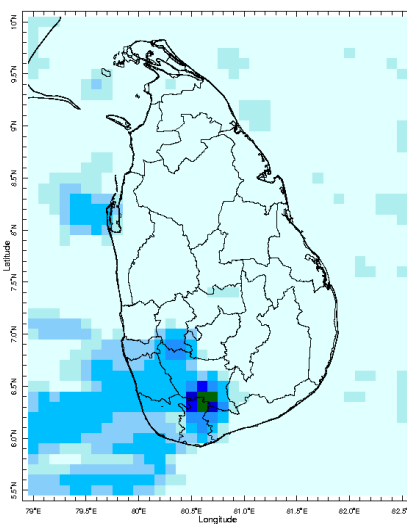
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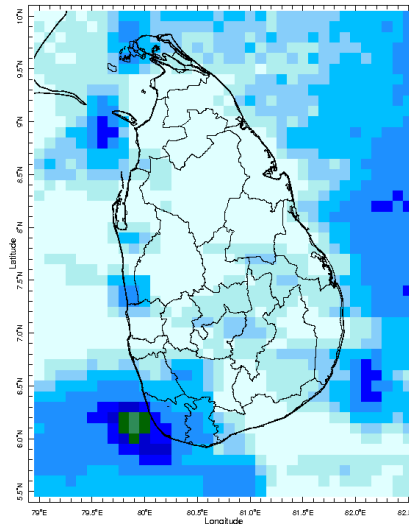
27 Nov 2020



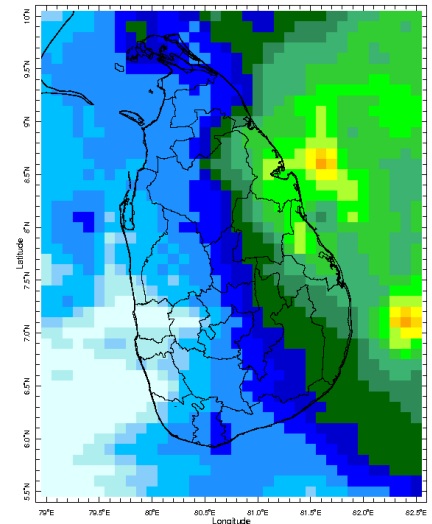
28 Nov 2020



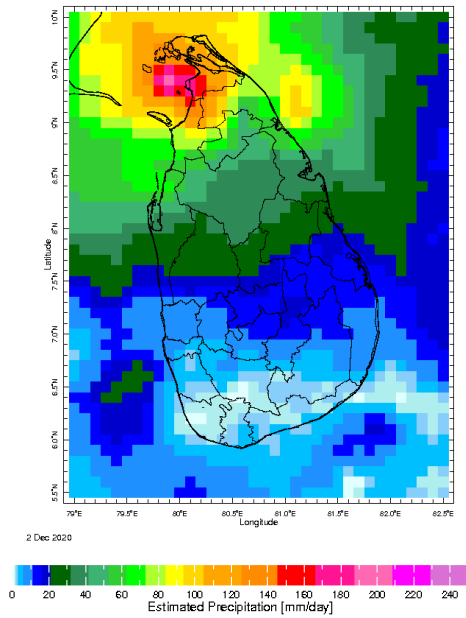
29 Nov 2020



30 Nov 2020

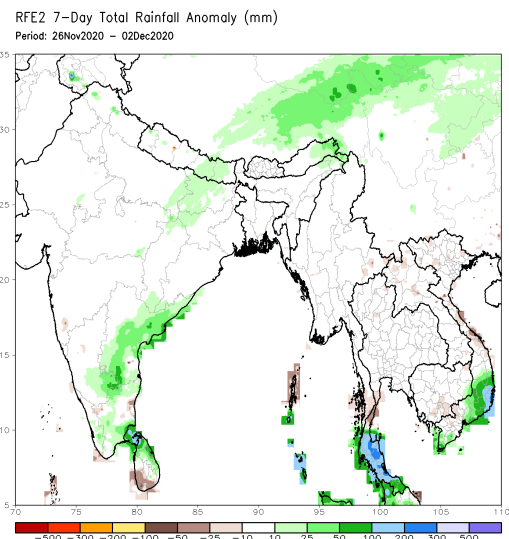
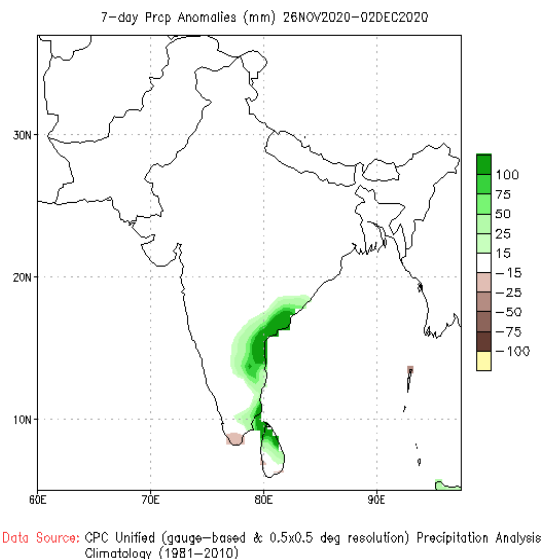
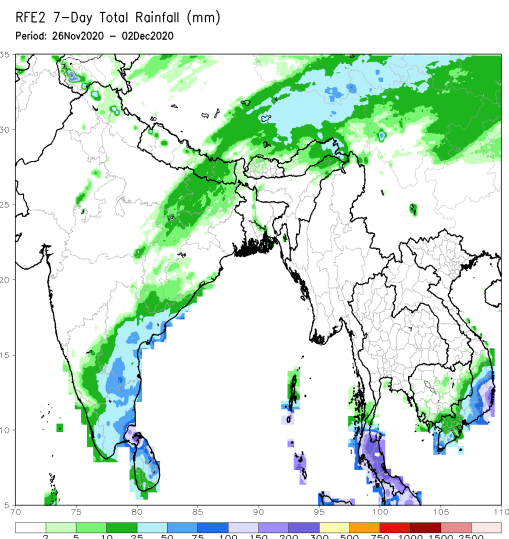
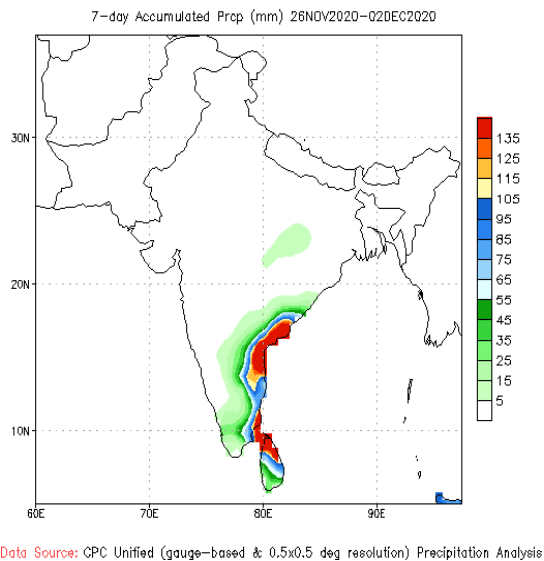


1 Dec 2020



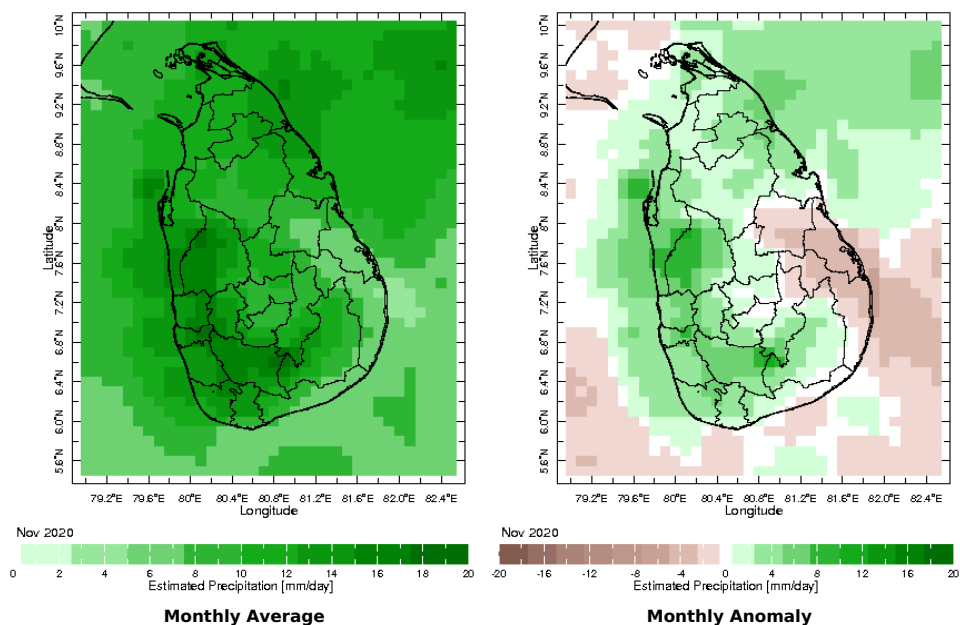
Weekly Rainfall Monitoring

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.

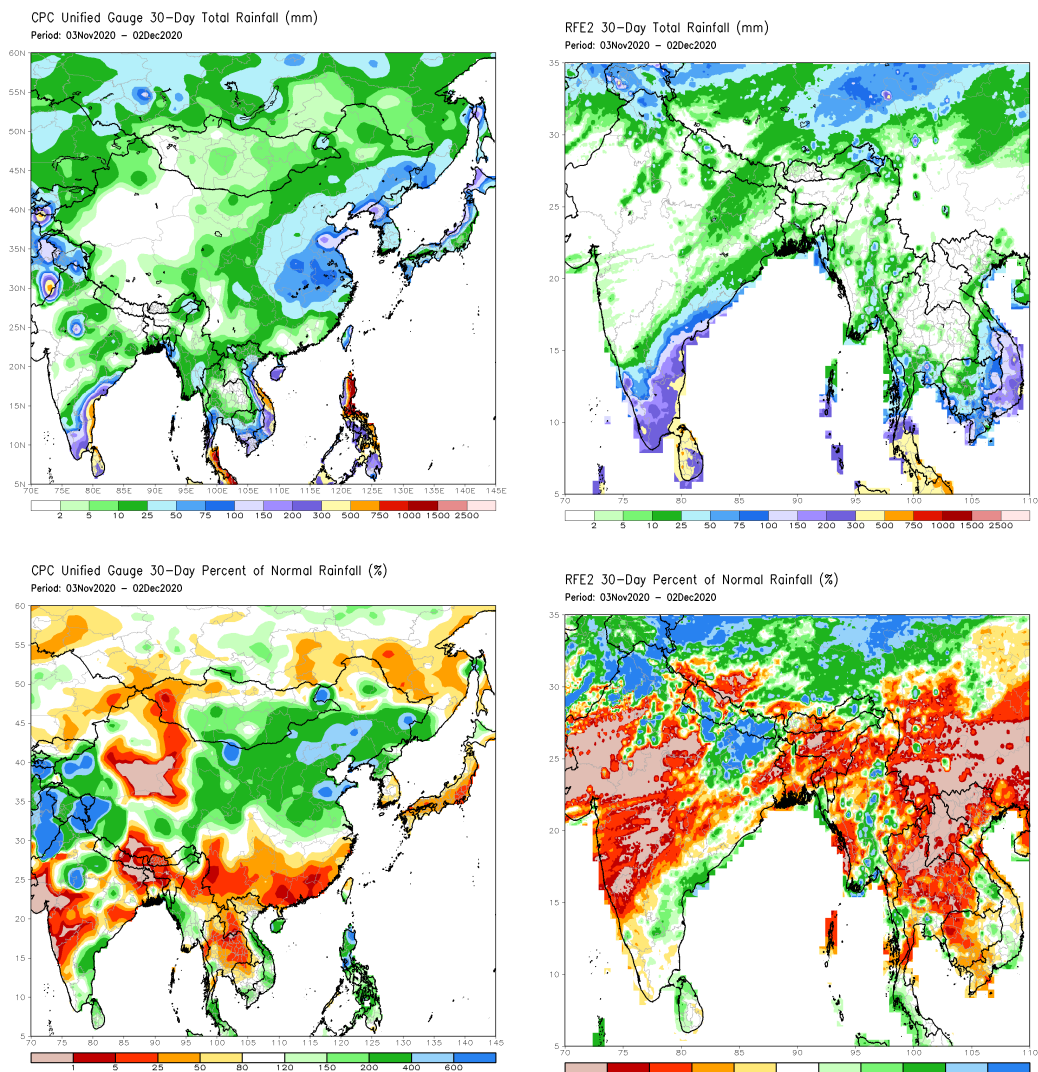


Monthly Rainfall Monitoring

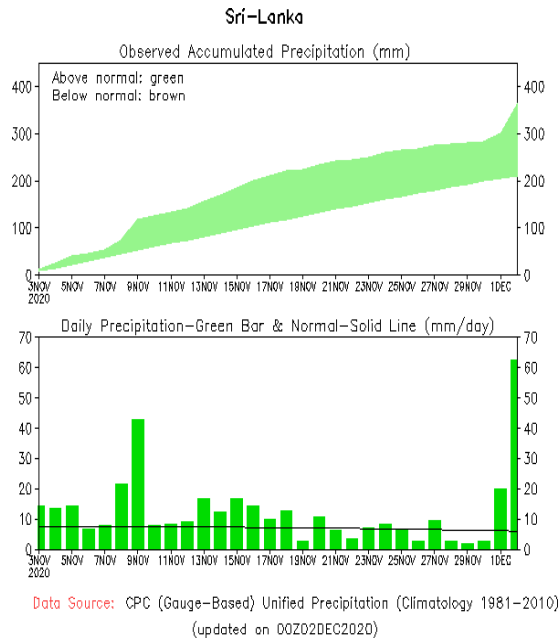
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



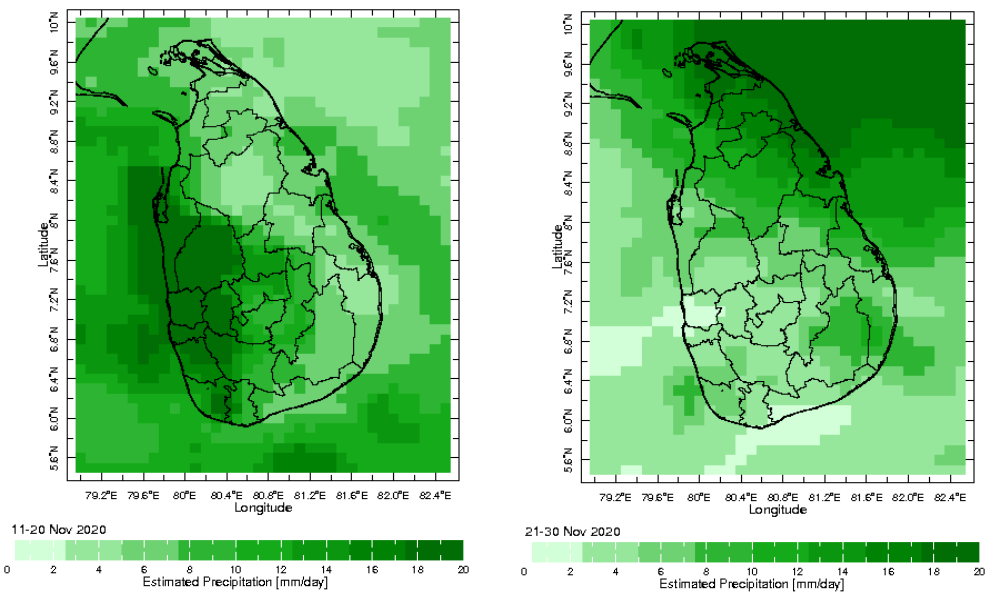
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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



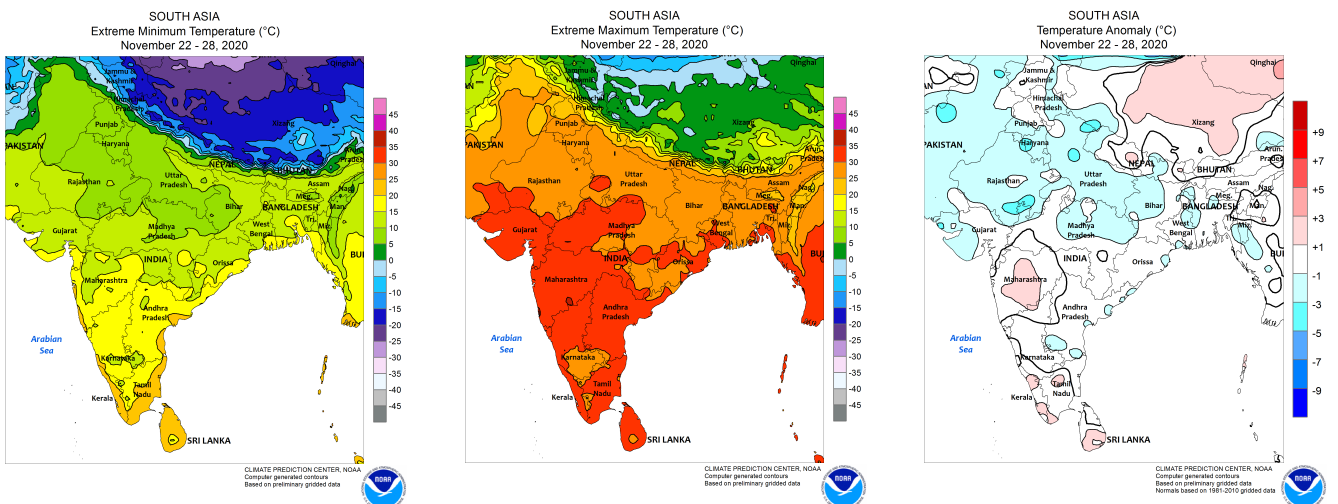
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



Dekadal (10 Day) Satellite Derived Rainfall Estimates

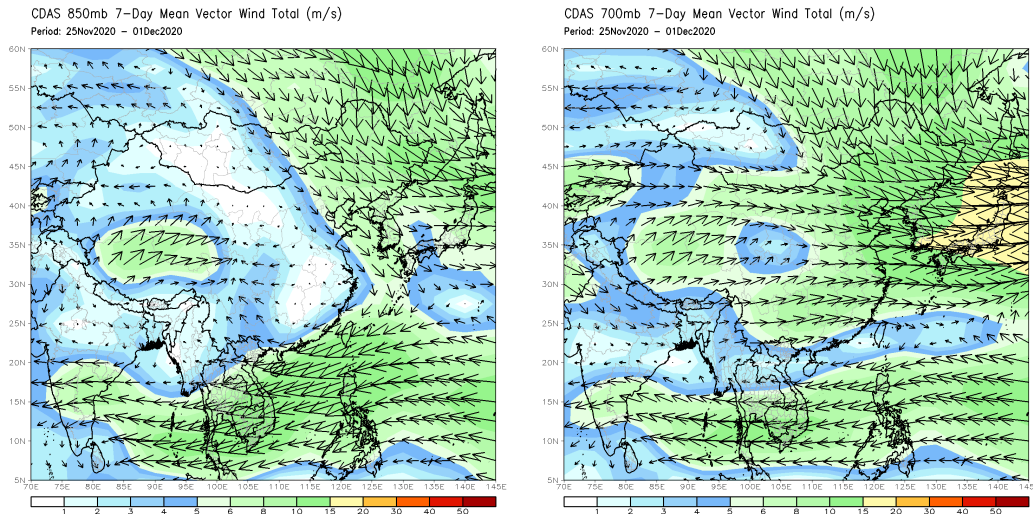


Weekly Temperature Monitoring



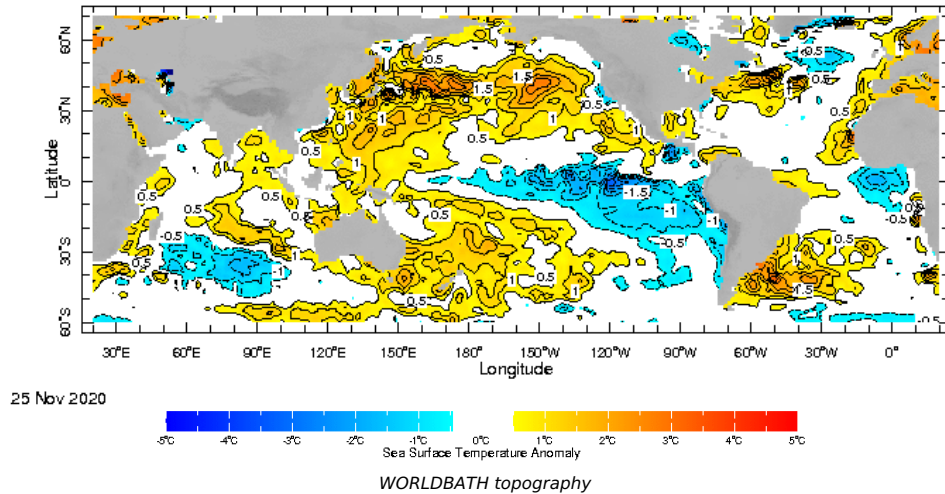
Weekly Wind Monitoring

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.

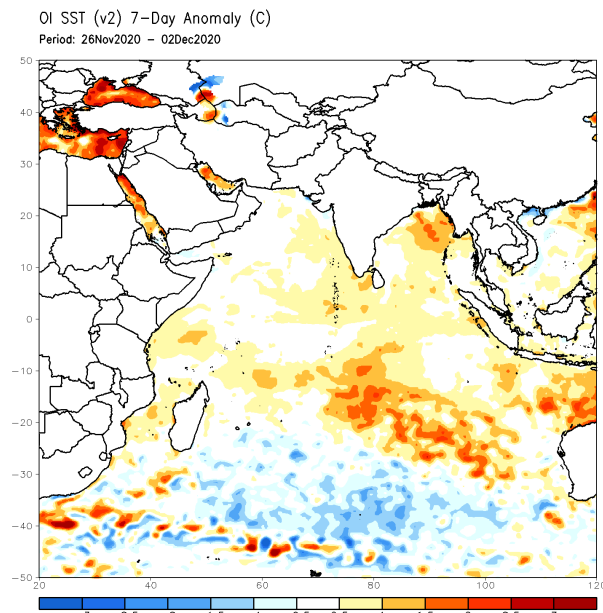


Weekly Average SST Anomalies

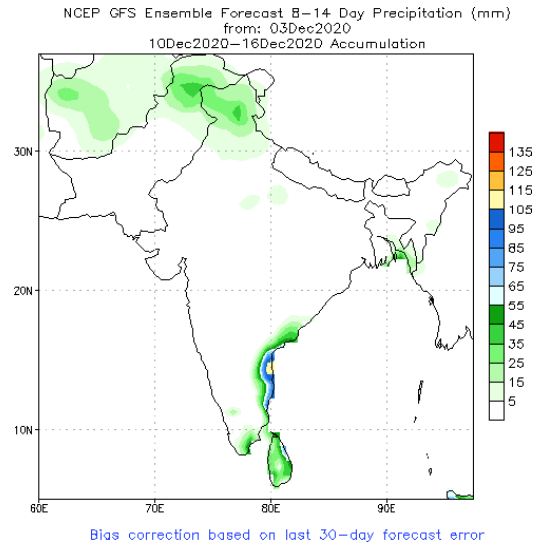
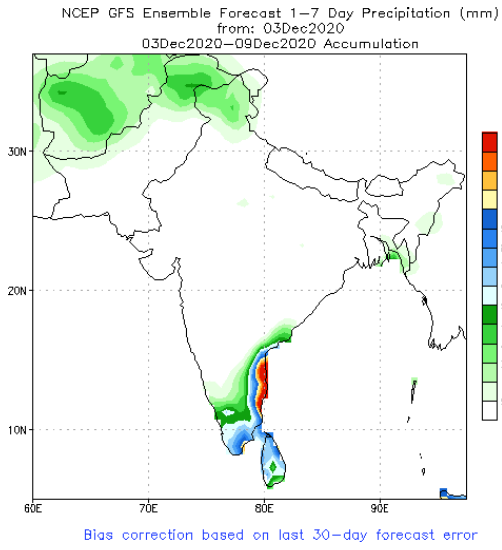
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



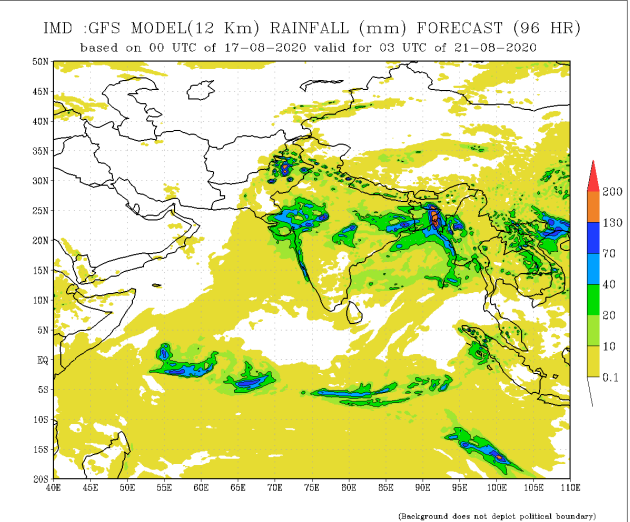
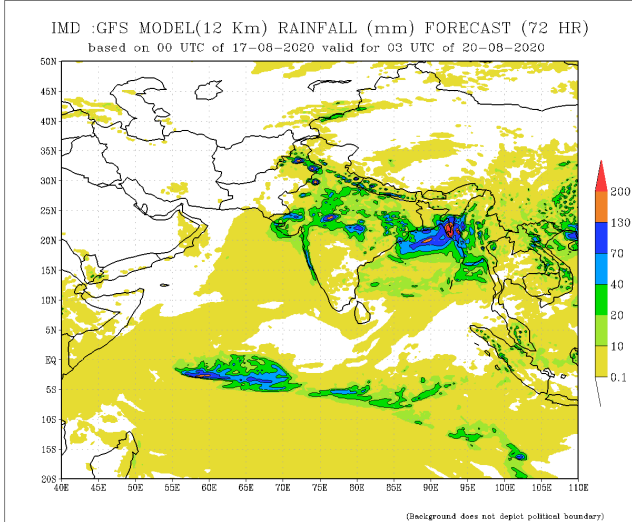
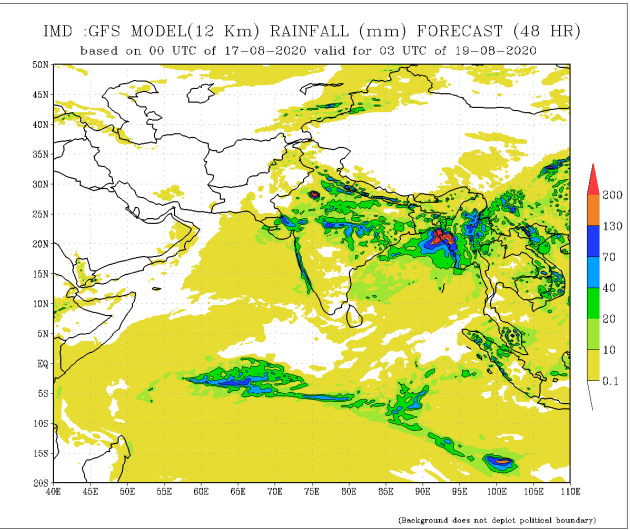
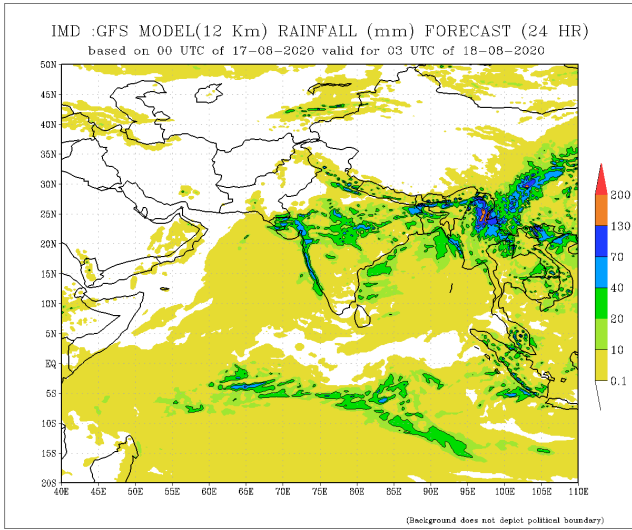
Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC

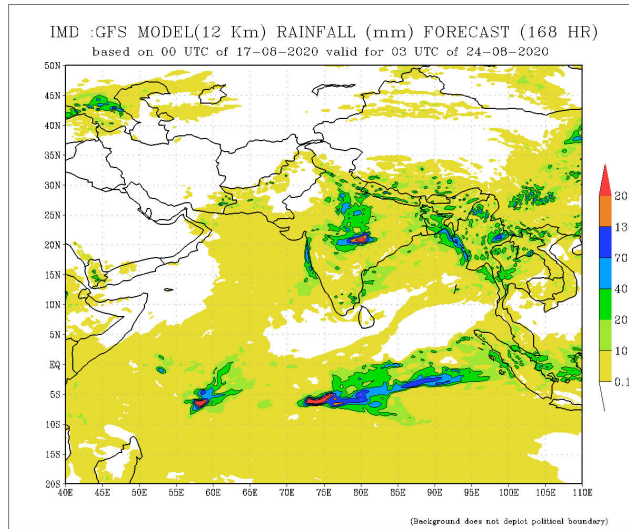
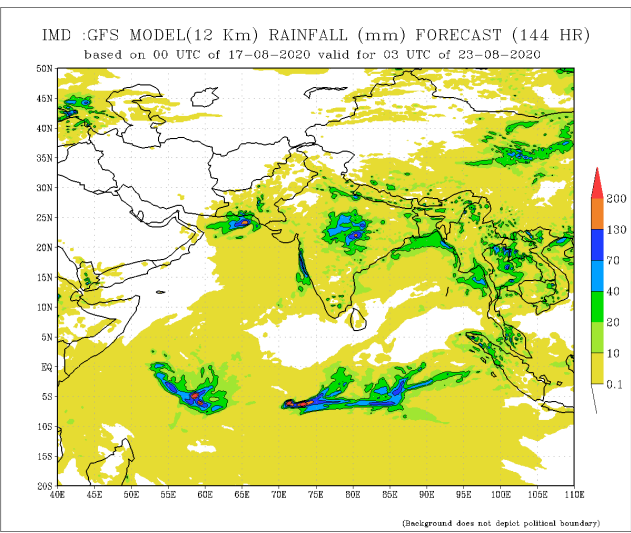
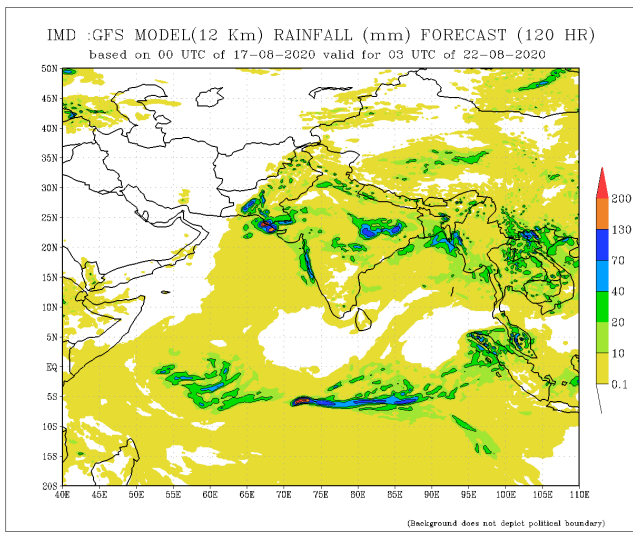


NCEP GFS 1- 14 Day prediction



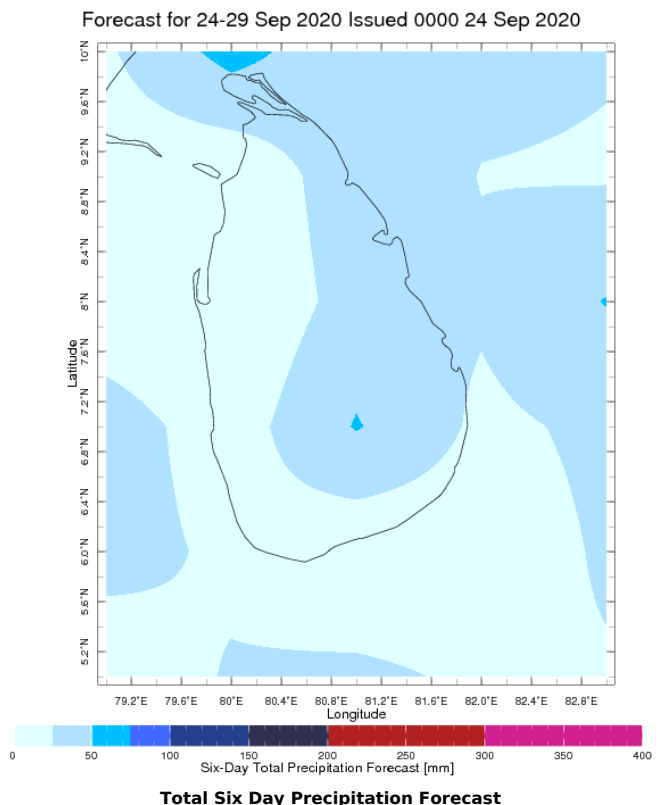
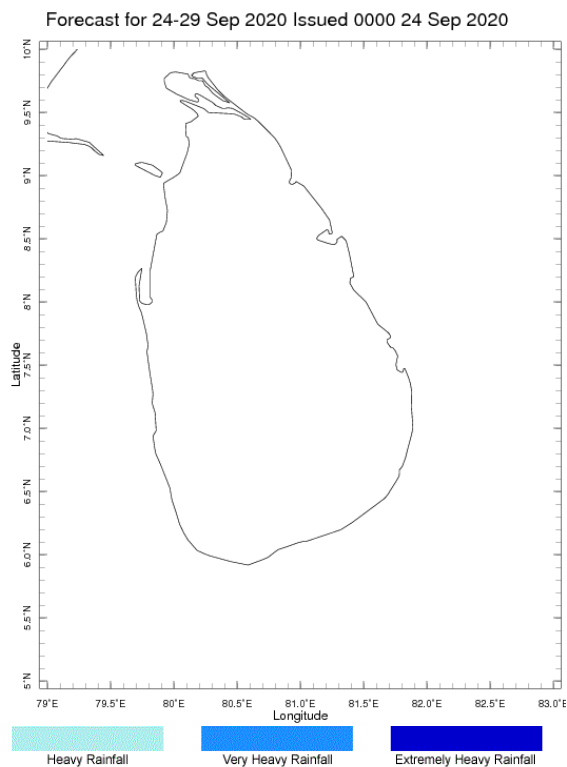
IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India





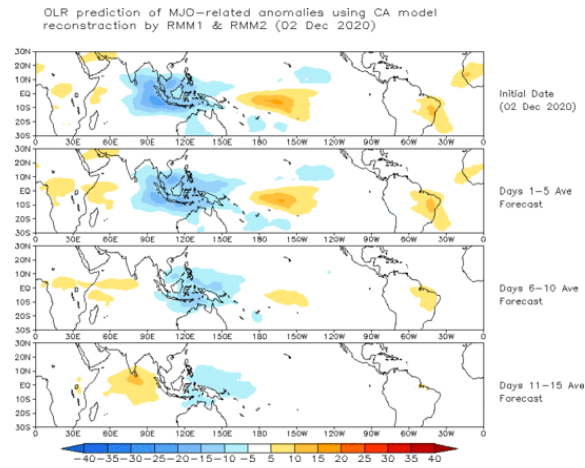
Weekly Rainfall Forecast from IRI

Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.



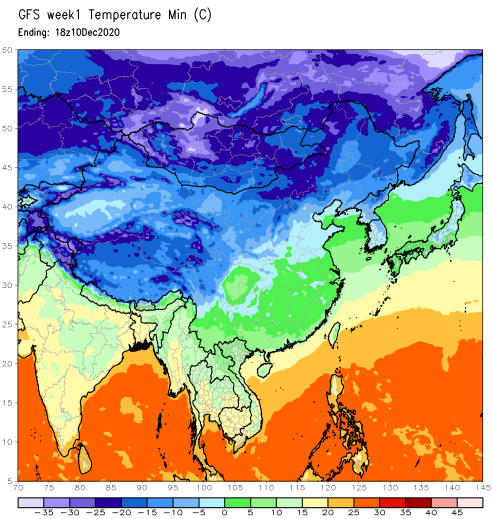
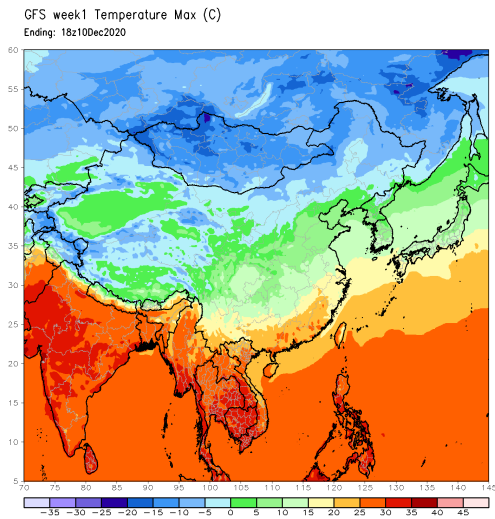
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

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.



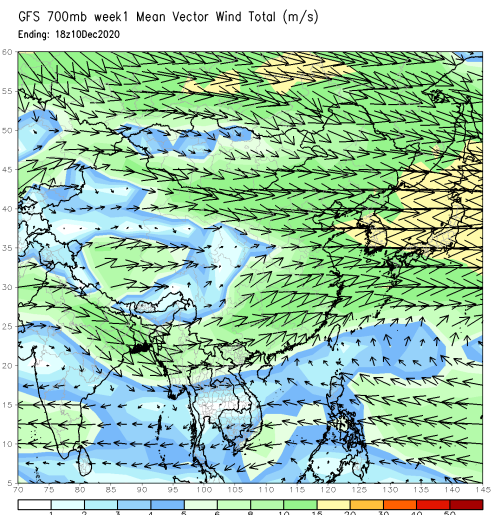
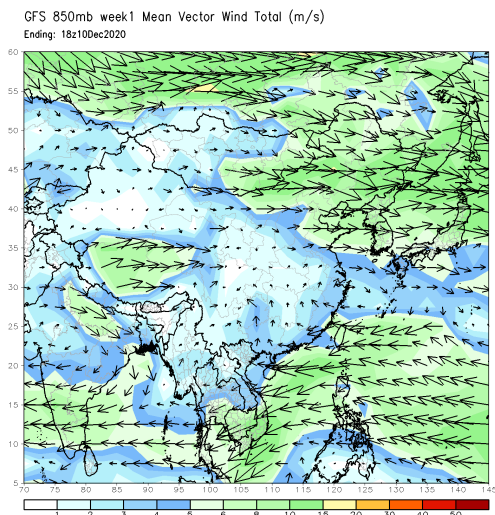
Weekly Temperature Forecast

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



Weekly Wind Forecast

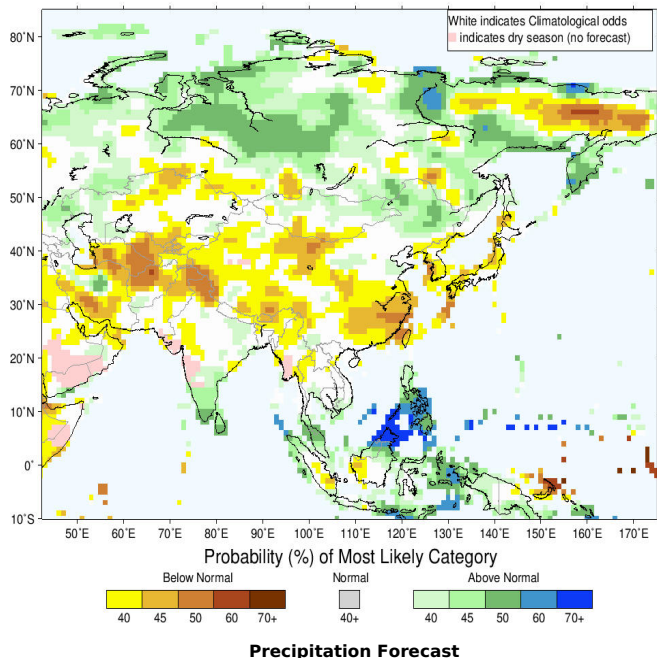
Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)



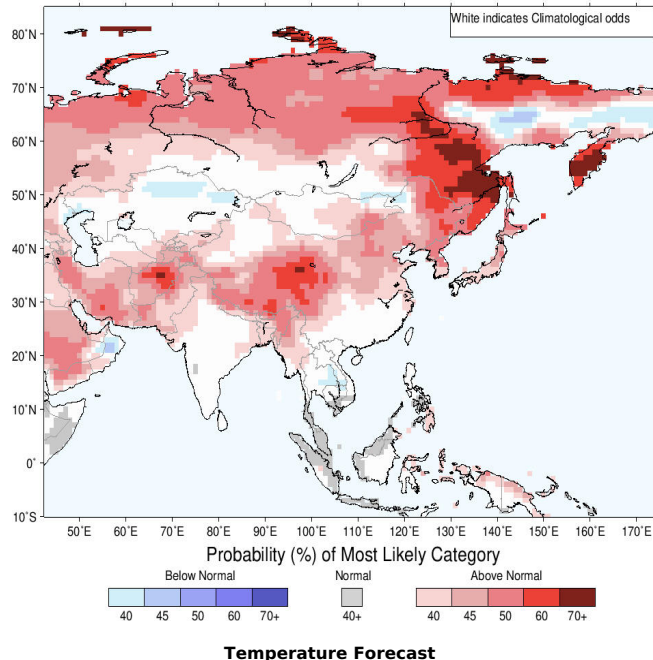
Seasonal Rainfall and Temperature Forecast

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 December-January-February 2021, Issued November 2020



IRI Multi-Model Probability Forecast for Temperature for December-January-February 2021, Issued November 2020



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