

**Week of 13 -19  
November  
2020**

**CLIMATE MONITORING AND PREDICTION FOR SRI LANKA**

By: Nipuni Alahakoon, Ushan Adithya, Azra Munas, Tuan Hadgie, Lareef Zubair and Michael Bell<sup>1</sup> (FECT and IRI<sup>1</sup>)

**HIGHLIGHTS**

**Rainfall Prediction**



- Between 11<sup>th</sup>-17<sup>th</sup> Nov: very high rainfall over the Eastern and Southern Provinces the drop in rainfall over the rest of the country.

**Monitored Rainfalls**



- Between 3<sup>rd</sup> - 9<sup>th</sup> Nov: up to 240 mm in Ratnapura and Moneragala districts on 9<sup>th</sup> Nov.

**Monitored Wind**



- From 3<sup>rd</sup> - 9<sup>th</sup> Nov: up to 6 -8 km/h northeasterly winds were experienced by the Northern of the island.

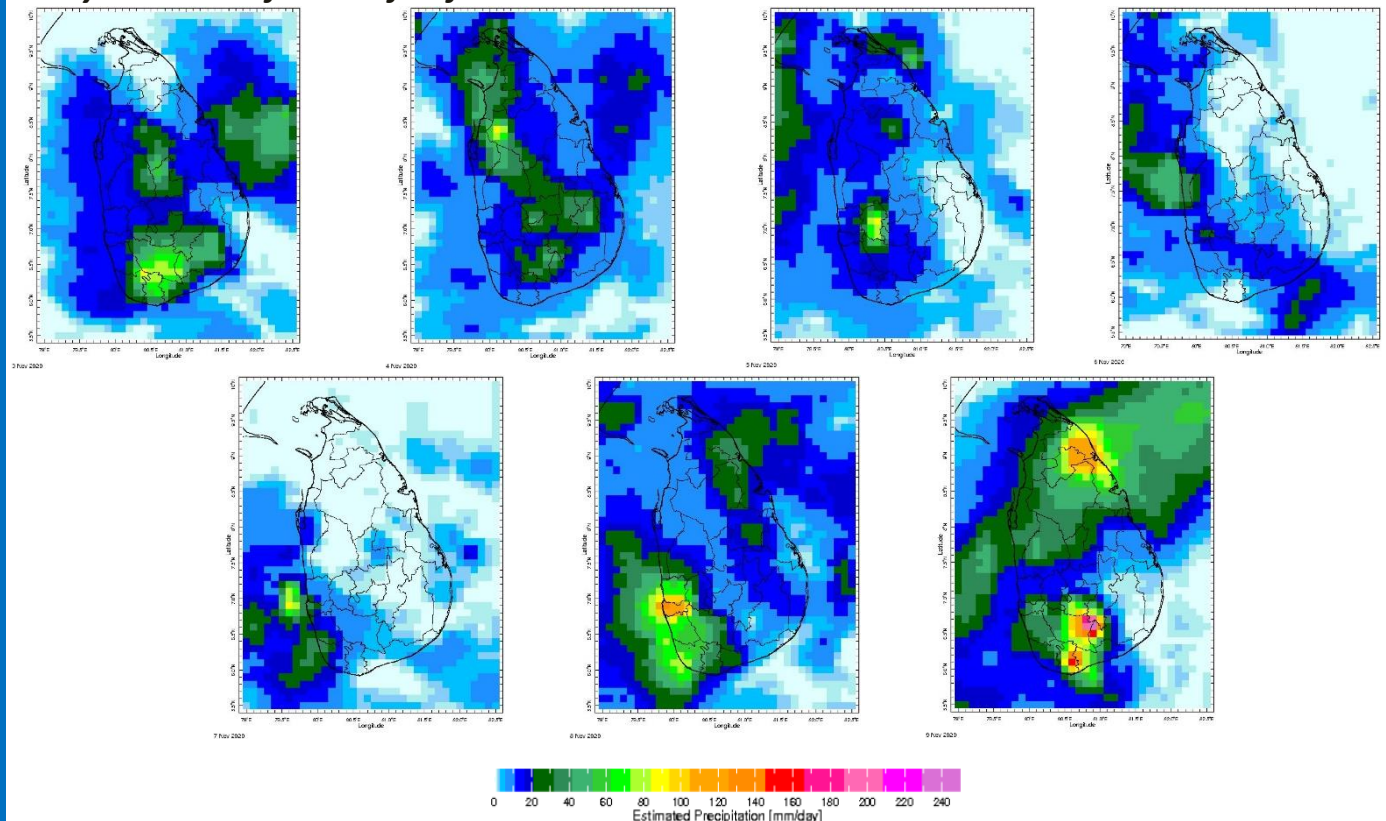
**Monitored Sea Surface**



- 0.5<sup>o</sup>C above average sea surface temperature was observed in the seas around Sri Lanka.

**Monitoring  
Rainfall**

**Daily Estimates for Rainfall from 3<sup>rd</sup> – 9<sup>th</sup> November**





## Federation for Environment, Climate and Technology

c/o, Maintenance Office, Mahaweli Authority, Digana Village, Rajawella, Sri Lanka.

Phone (+94) 81-2376746, (+94) 81-2300415

E mail: [fectsl@gmail.com](mailto:fectsl@gmail.com)

Web Site <http://www.climate.lk>

### **Total Rainfall for the Past Week**

The RFE 2.0 tool shows total up to 300 – 500 mm in Ratnapura and Moneragala districts; up to 200 – 300 mm in Badulla, Colombo, Kalutara, Gampaha and Matara districts; up to 150 – 200 mm in Kegalle, Galle, Nuwara Eliya, Hambantota, Mullaitivu, Vavuniya, Anuradhapura, Trincomalee districts; up to 100 – 150 mm in Kilinochchi, Puttalam, Kurunegala and Kandy districts; up to 75 – 100 mm in Matale, Mannar, Polonnaruwa and Jaffna districts; up to 50 – 75 mm in Batticaloa and Ampara districts.

Above rainfall average up to 200 – 300 mm in Moneragala and Ratnapura districts; up to 100 – 200 mm in Hambantota, Badulla and Matara, Gampaha, Colombo, Kalutara, Mullaitivu, Vavuniya, Anuradhapura, and Trincomalee districts; up to 50 – 100 mm in Galle, Kegalle and Nuwara Eliya districts; up to 25 – 50 mm in Puttalam, Mannar, Kilinochchi and Jaffna districts; up to 10 – 25 mm in Kurunegala district; Below rainfall average up to 25 – 50 mm in Ampara, Batticaloa, Polonnaruwa, Matale and Kandy districts.

### **Monthly Monitoring**

During October – Above average rainfall conditions up to 4 mm in Vavuniya, Anuradhapura, Badulla, Ampara and Moneragala districts; up to 2 mm in Mannar, Batticaloa, Ratnapura and Hambantota districts; Below average rainfall up to 8 mm in Galle, Kalutara and Colombo district; up to 6 mm in Matara, Gampaha, Kegalle, Nuwara Eliya, Kandy, Kurunegala, Puttalam, Jaffna districts; up to 4 mm in Kilinochchi, Mullaitivu, Polonnaruwa, Matale and Trincomalee districts.

## **Ocean State (Text Courtesy IRI)**

### **Pacific sea state: November 4, 2020**

Equatorial Eastern Pacific SST reached La Niña threshold in early-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 11<sup>th</sup> – 17<sup>th</sup> November:** Total rainfall up to 140 mm in East, South and Southwest of the island; up to 125 mm rainfall in Southeast and Central of the island; up to 115 mm rainfall in West and Northeast of the island and up to 105 mm in North and Northwest of the island.

**From 18<sup>th</sup> – 24<sup>th</sup> November:** Total rainfall up to 140 mm in East of the island; up to 135 mm rainfall in Central and Southwest of the island; up to 125 mm in South, Southeast and Northeast of the island; up to 105 mm in Northern and Western of the islands and up to 95 mm in Northwest of the island.



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### **NOAA Model Forecast:**

**From 24<sup>th</sup> – 29<sup>th</sup> 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 10<sup>th</sup> – 14<sup>th</sup> Nov and significantly enhance during 15<sup>th</sup> - 24<sup>th</sup> Nov over Sri Lanka.

## Interpretation

### **Monitoring**

**Rainfall:** There has been high rainfall over the Mullaitivu, Vavuniya, Ratnapura and Matara districts. Southern Province with significant rainfall over the Northern and Western Provinces. November is a month which typically has the highest rainfall in Sri Lanka.

**Wind:** As is typical for early November the wind direction is changing to coming from North-East, North and North-West.

**Temperatures:** are cooling from the highs in the previous month as is seasonable – still the temperature anomalies are above normal for the month – driven by the warm SST's.

### **Predictions**

**MJO:** is in phases that enhances rainfall from 10-14<sup>th</sup> and more intensively from 15<sup>th</sup> to 24<sup>th</sup>.

**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.

<sup>1</sup> 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

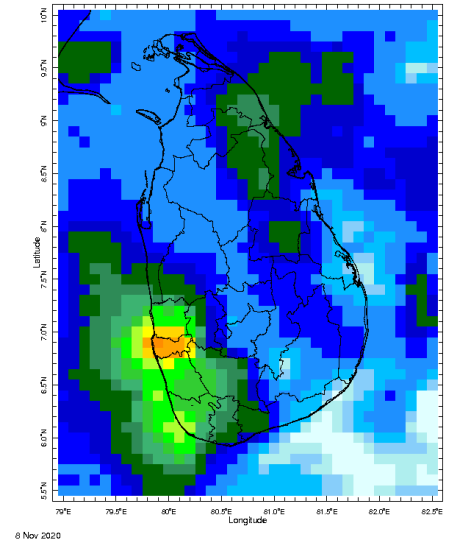
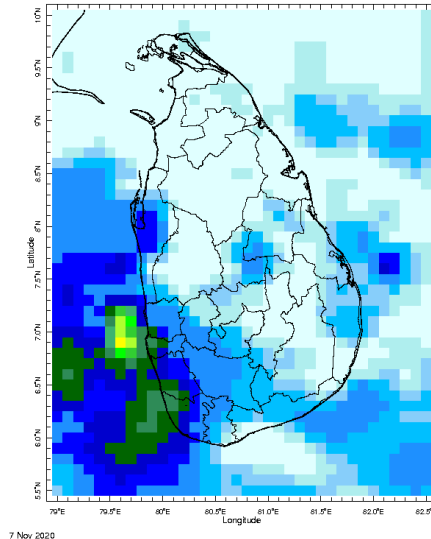
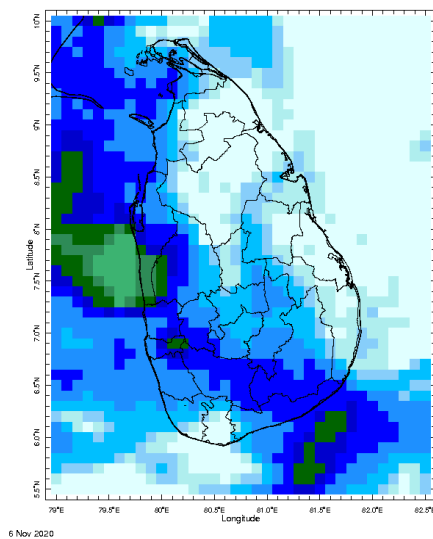
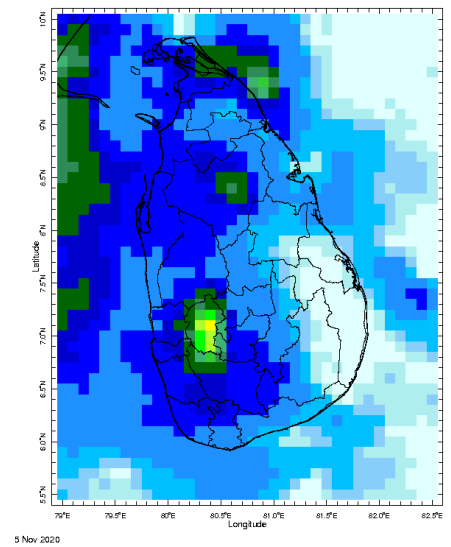
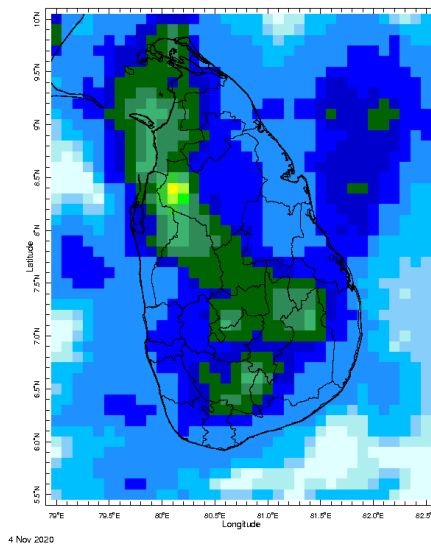
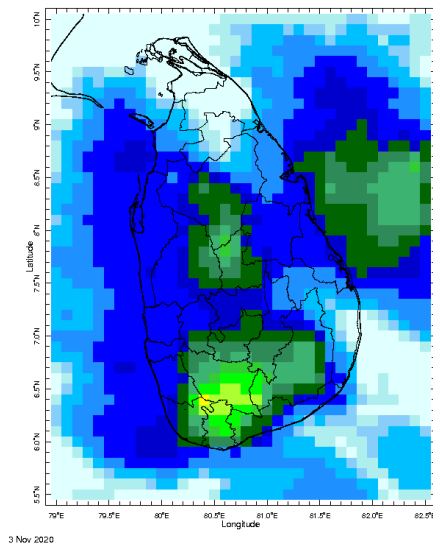
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
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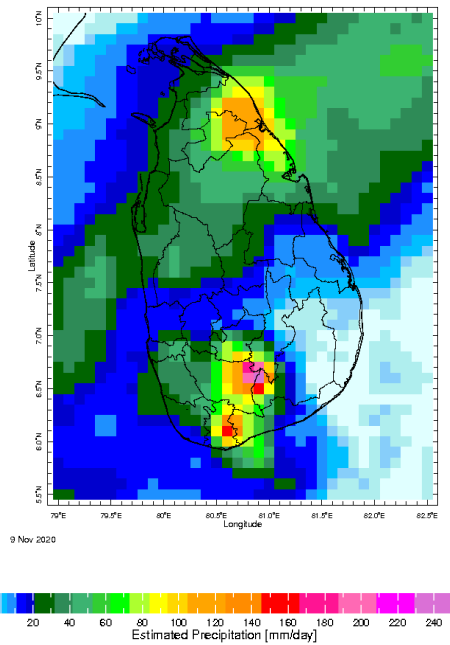


### MONITORING

#### Daily Rainfall Monitoring

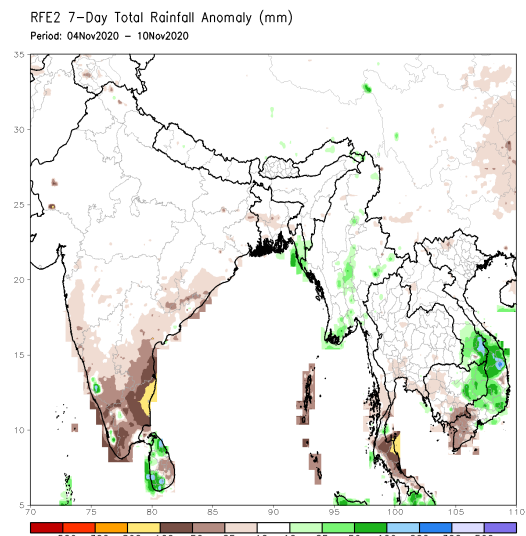
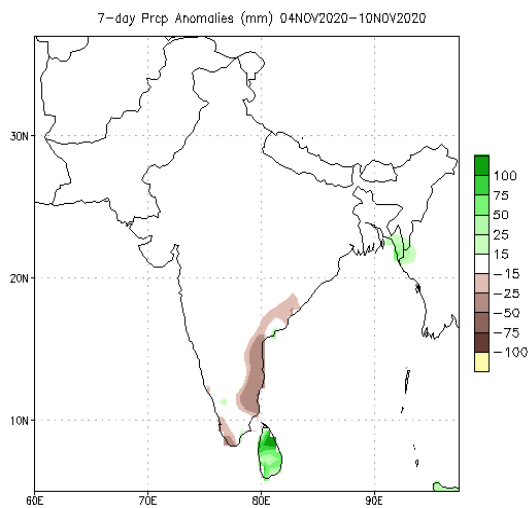
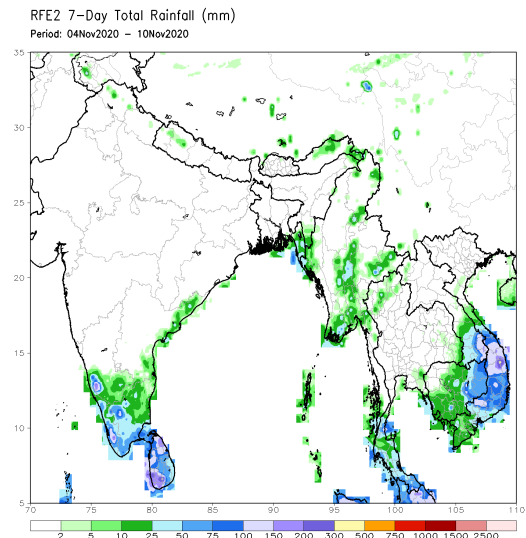
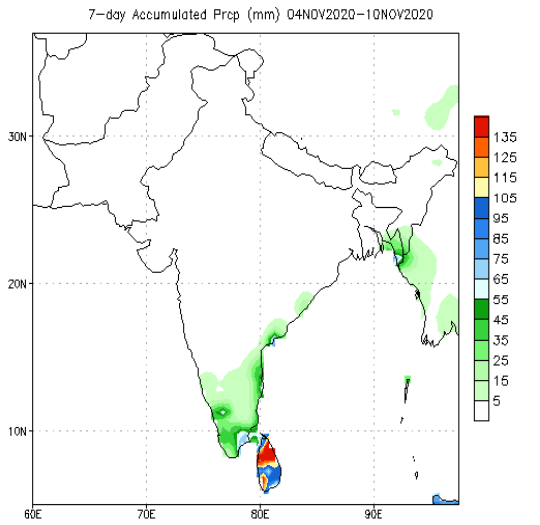
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.





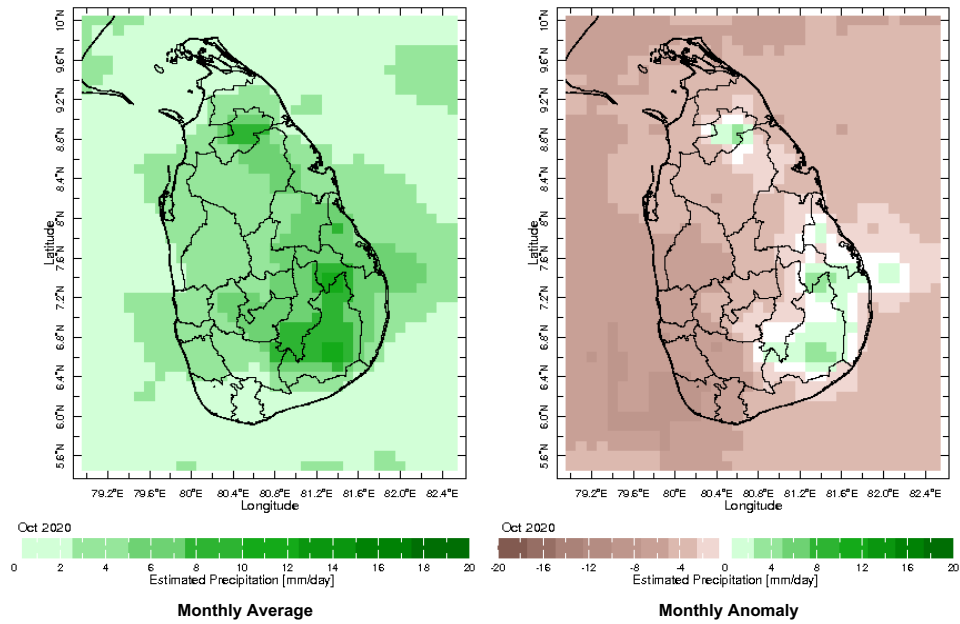
## Weekly Rainfall Monitoring

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.

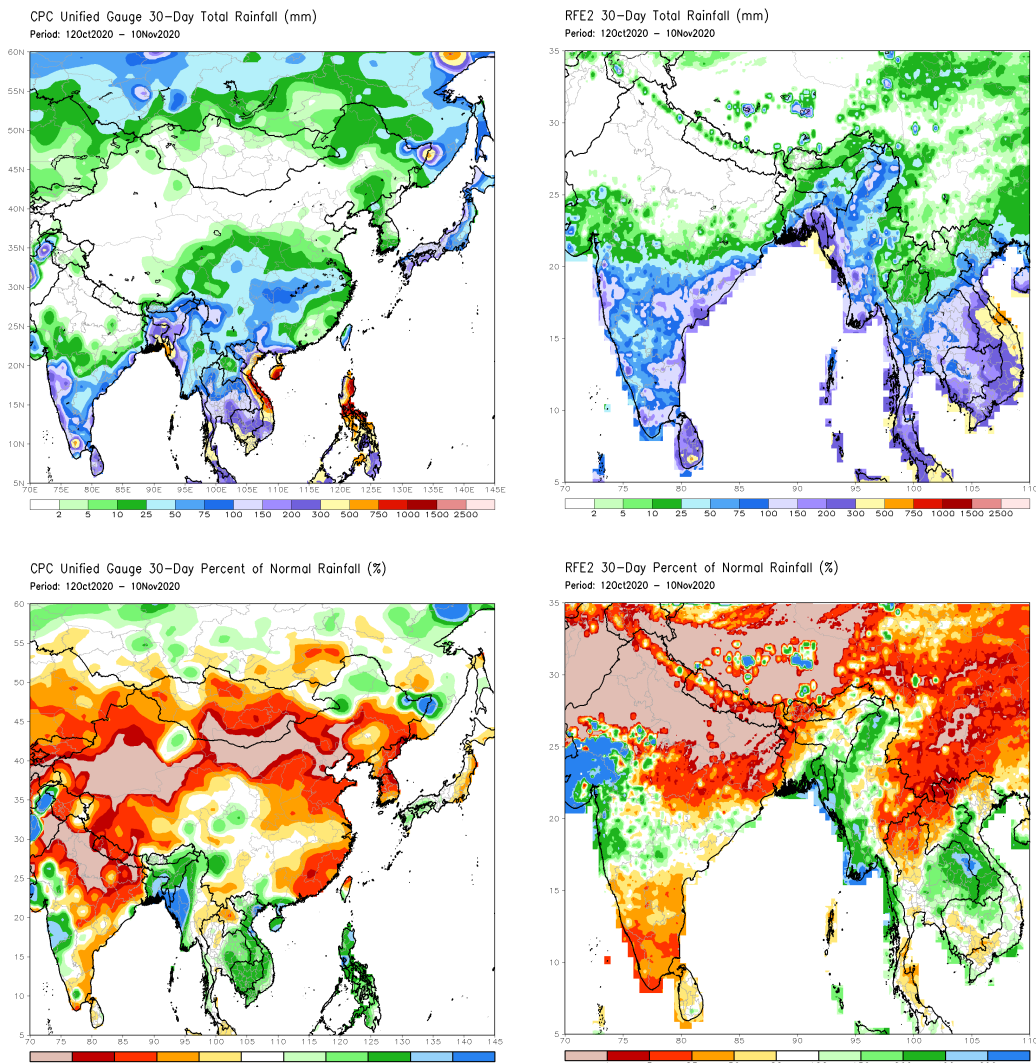


## Monthly Rainfall Monitoring

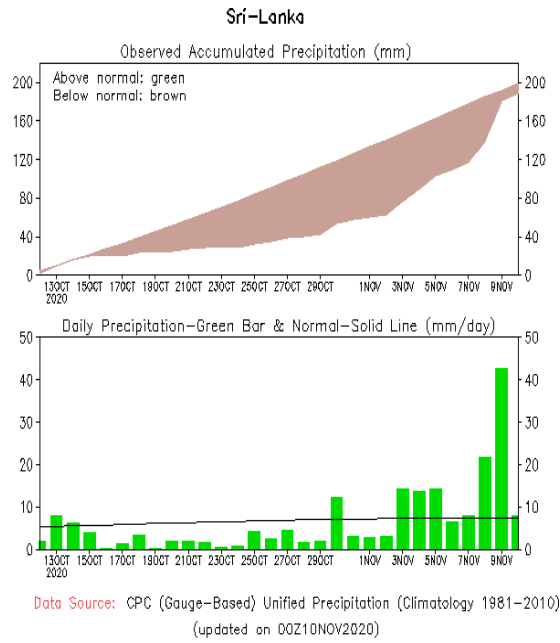
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



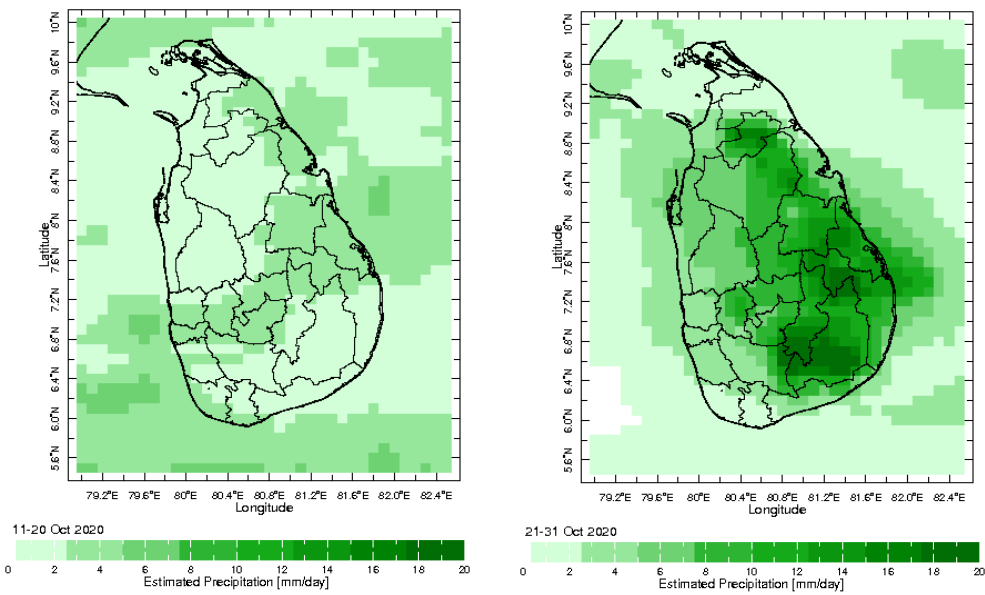
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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



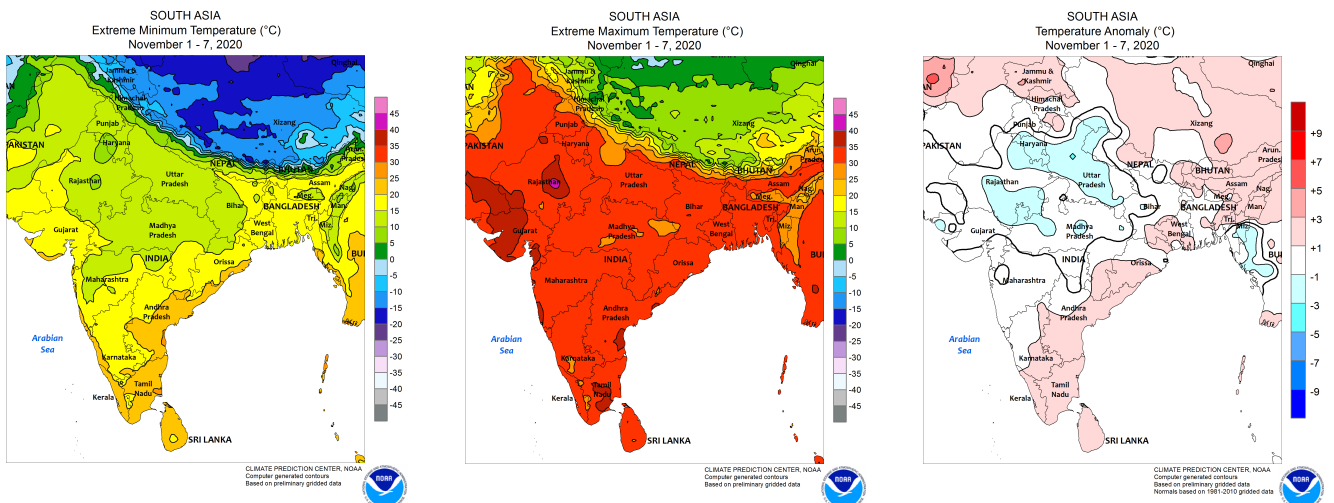
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



**Dekadal (10 Day) Satellite Derived Rainfall Estimates**

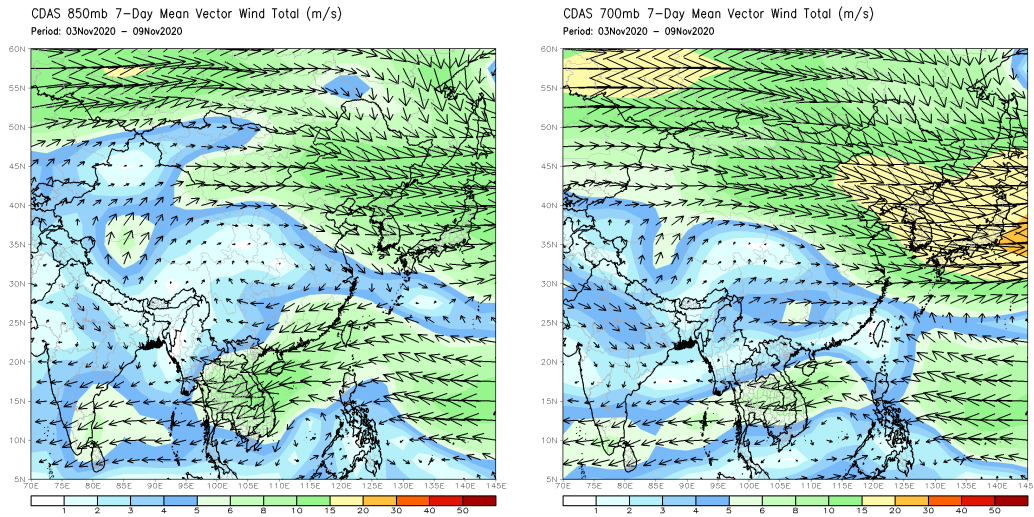


**Weekly Temperature Monitoring**



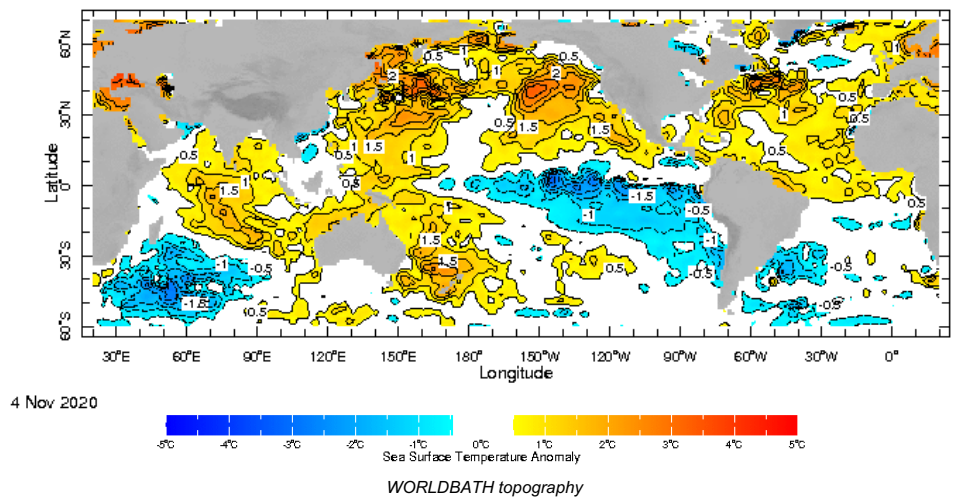
## Weekly Wind Monitoring

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.

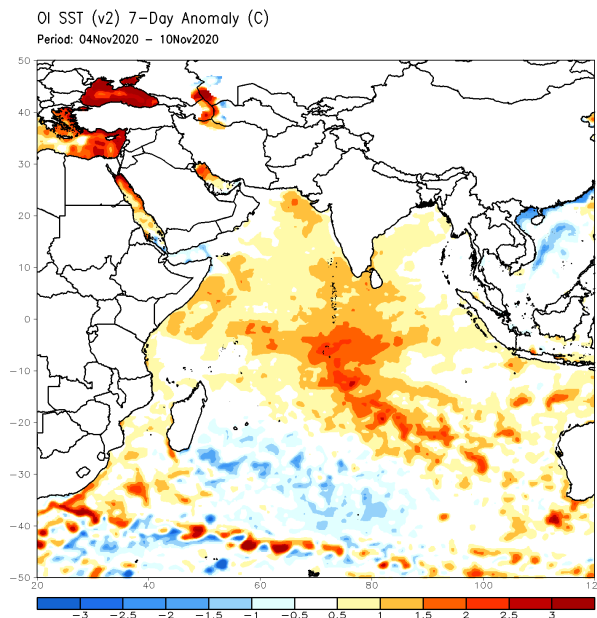


## Weekly Average SST Anomalies

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



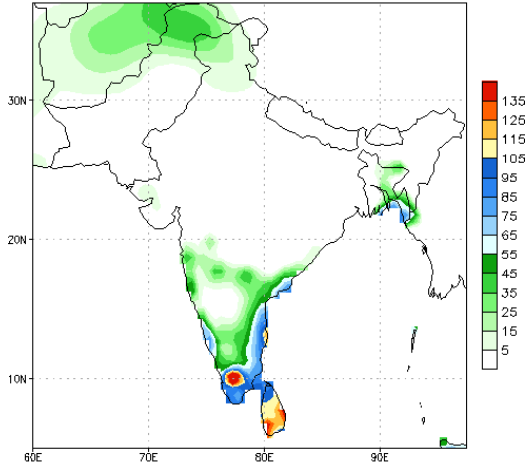
Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC





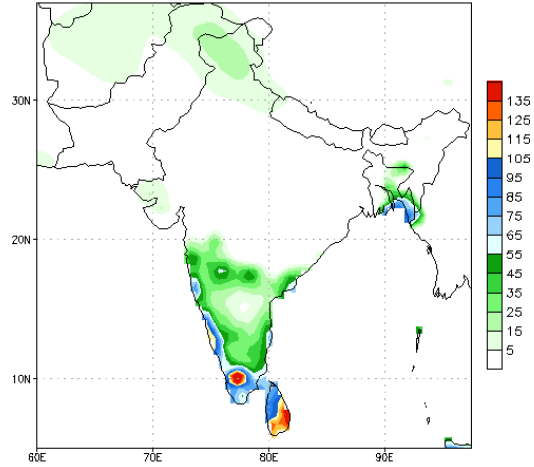
**NCEP GFS 1- 14 Day prediction**

NCEP GFS Ensemble Forecast 1-7 Day Precipitation (mm)  
from: 11Nov2020  
11Nov2020-17Nov2020 Accumulation



Bias correction based on last 30-day forecast error

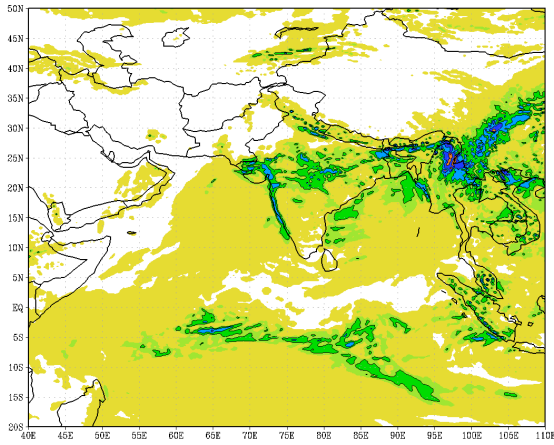
NCEP GFS Ensemble Forecast 8-14 Day Precipitation (mm)  
from: 11Nov2020  
18Nov2020-24Nov2020 Accumulation



Bias correction based on last 30-day forecast error

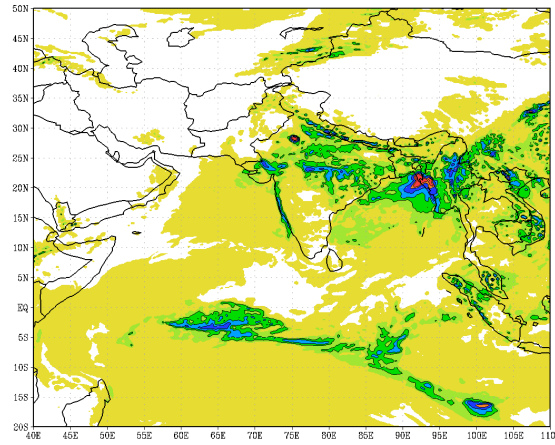
**IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India**

IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (24 HR)  
based on 00 UTC of 17-08-2020 valid for 03 UTC of 18-08-2020



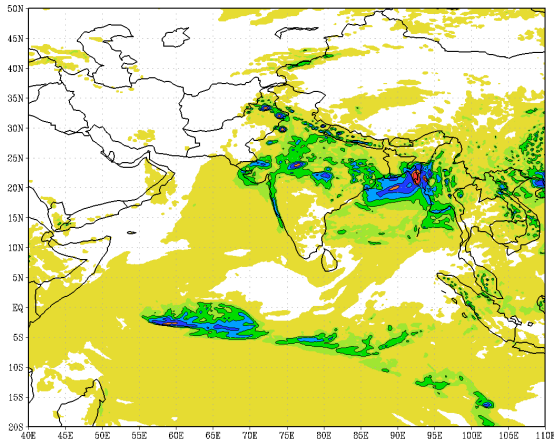
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IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (48 HR)  
based on 00 UTC of 17-08-2020 valid for 03 UTC of 19-08-2020



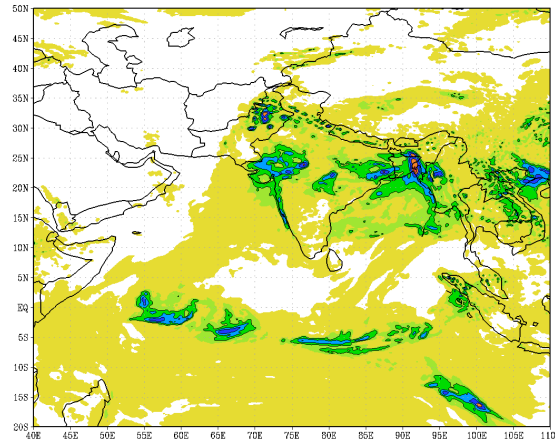
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IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (72 HR)  
based on 00 UTC of 17-08-2020 valid for 03 UTC of 20-08-2020

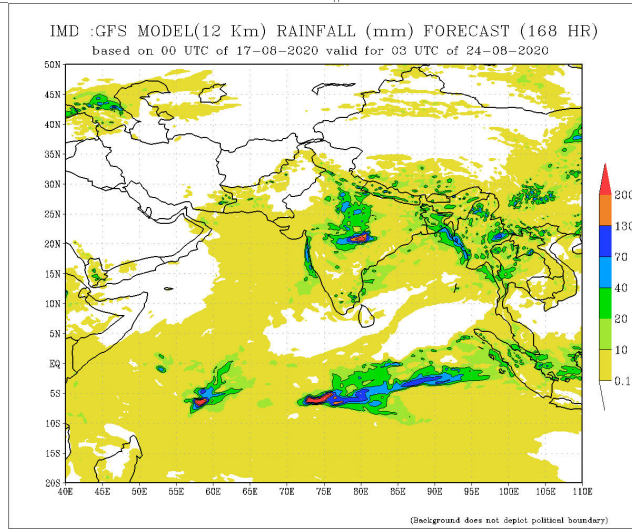
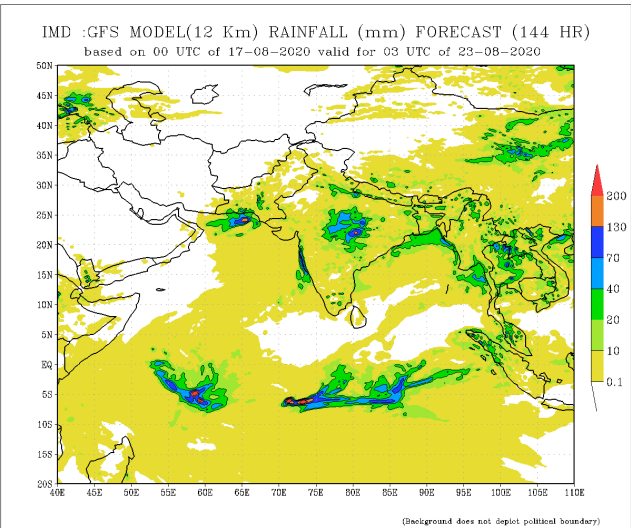
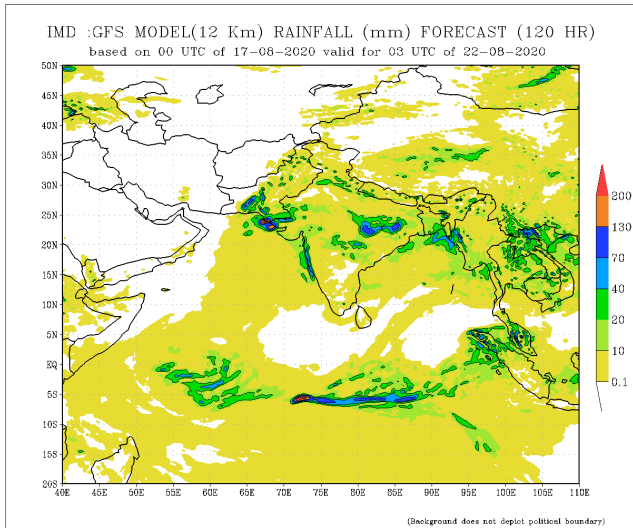


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IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (96 HR)  
based on 00 UTC of 17-08-2020 valid for 03 UTC of 21-08-2020

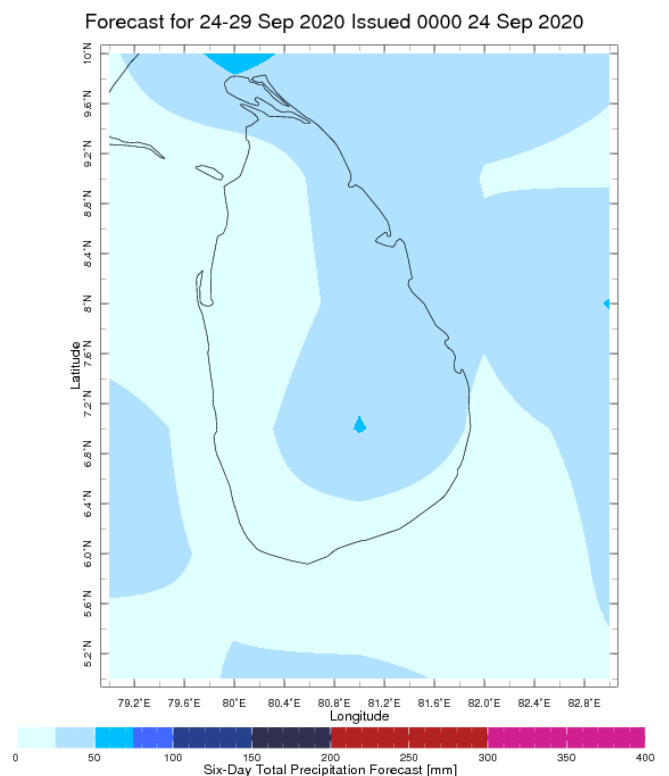
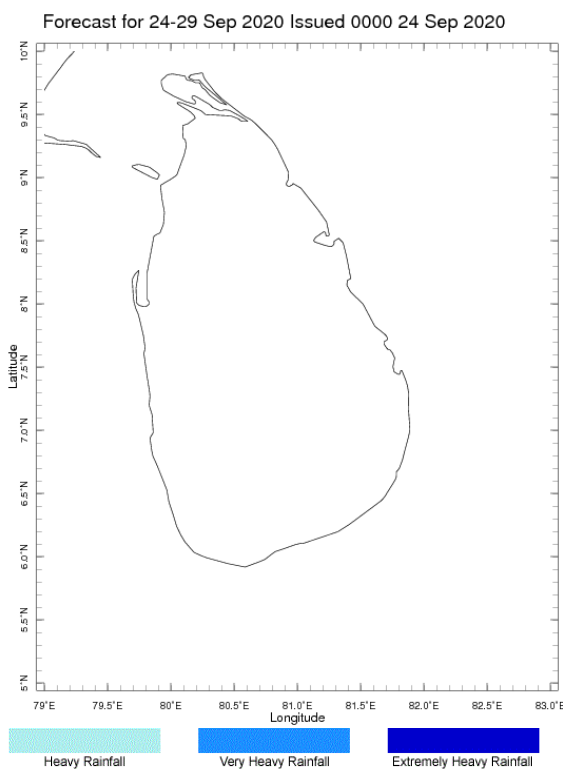


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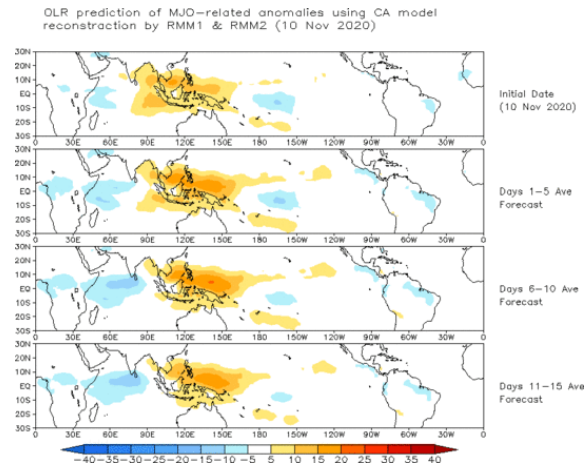
### Weekly Rainfall Forecast from IRI

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

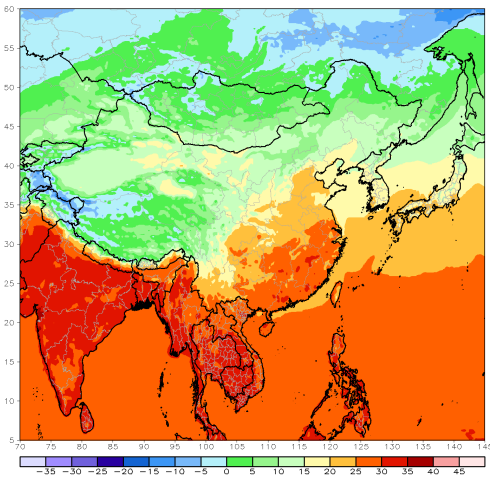
The Outgoing Longwave Radiation (OLR) is a proxy for rainfall. This can be used to identify convective rain clouds based on the MJO phase. Violet and Blue shading indicates enhanced tropical weather and Orange shading indicates suppressed conditions. The following figure shows the forecasts of MJO associated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



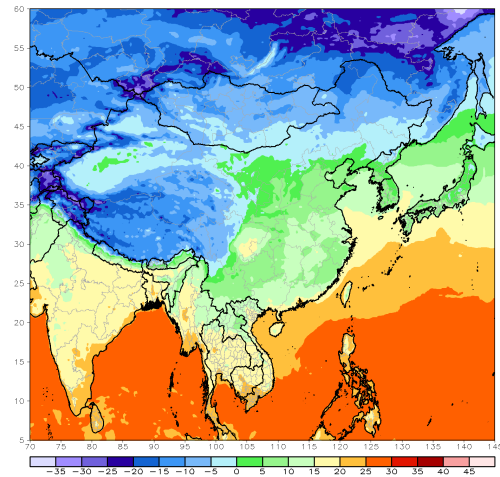
## Weekly Temperature Forecast

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

GFS week1 Temperature Max (C)  
Ending: 00z19Nov2020



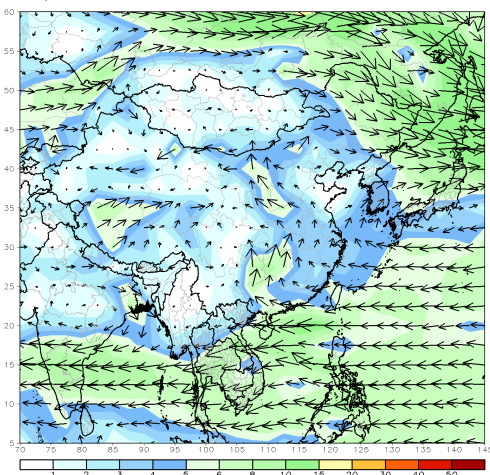
GFS week1 Temperature Min (C)  
Ending: 00z19Nov2020



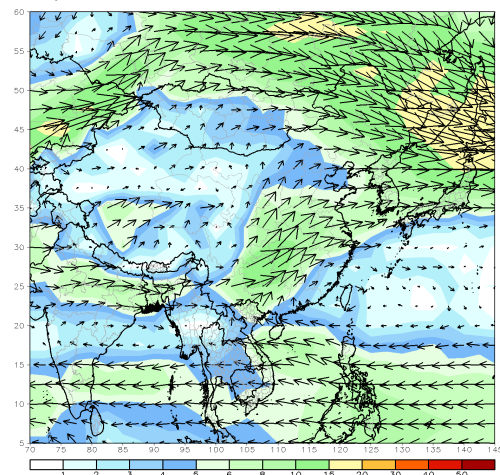
## Weekly Wind Forecast

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

GFS 850mb week1 Mean Vector Wind Total (m/s)  
Ending: 00z19Nov2020



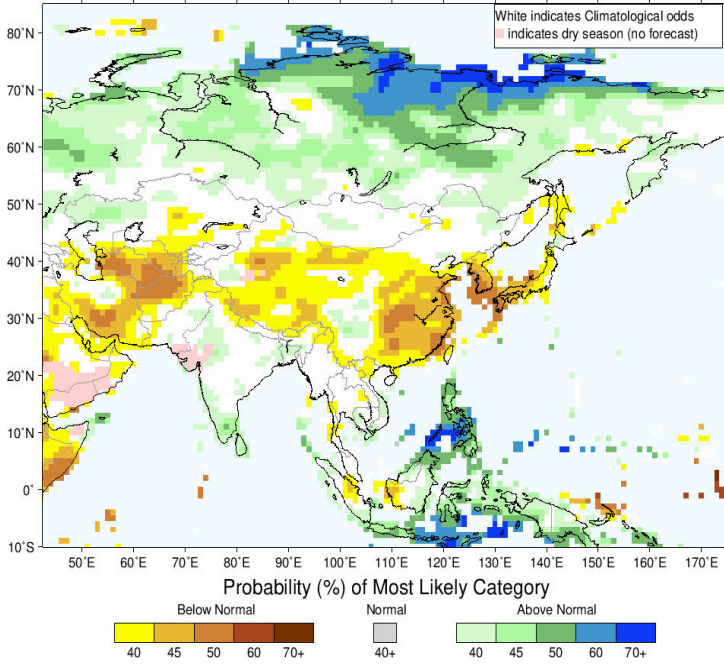
GFS 700mb week1 Mean Vector Wind Total (m/s)  
Ending: 00z19Nov2020



## Seasonal Rainfall and Temperature Forecast

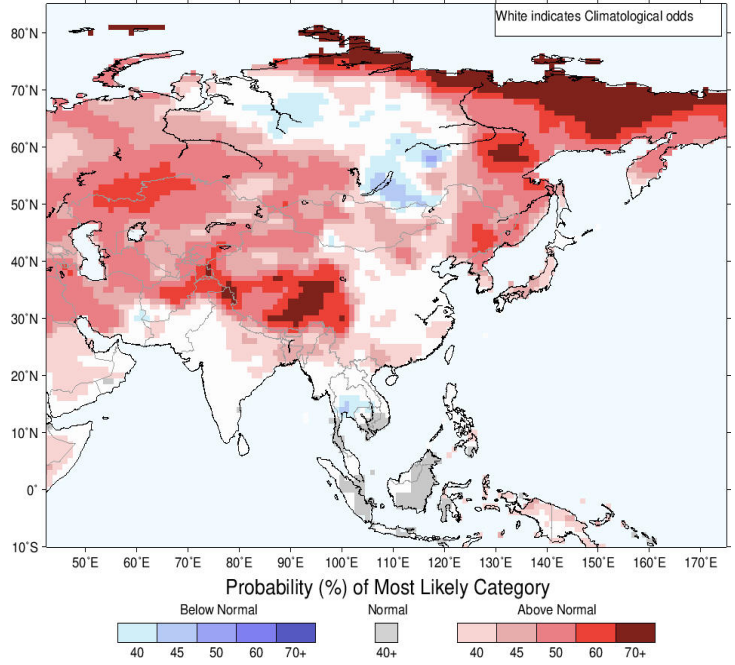
Following is the latest seasonal precipitation and temperature prediction for the next 3 months by the IRI. The color shading indicates the probability of the most dominant tercile -- that is, the tercile having the highest forecast probability. The color bar alongside the map defines these dominant 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 November-December-January 2021, Issued October 2020



Precipitation Forecast

IRI Multi-Model Probability Forecast for Temperature for October-November-December 2020, Issued September 2020



Temperature Forecast

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