

**Week of  
11 - 18 Dec  
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 17<sup>th</sup>-23<sup>rd</sup> Dec: very high rainfall over the Northern, North-central and Eastern Provinces.

**Monitored Rainfalls**



- Between 3<sup>rd</sup> - 9<sup>th</sup> Dec: up to 150 mm in Gampaha district on 8<sup>th</sup> Dec.

**Monitored Wind**



- From 2<sup>nd</sup> - 8<sup>th</sup> Dec: up to 5 km/h distributed winds were experienced the entire island.

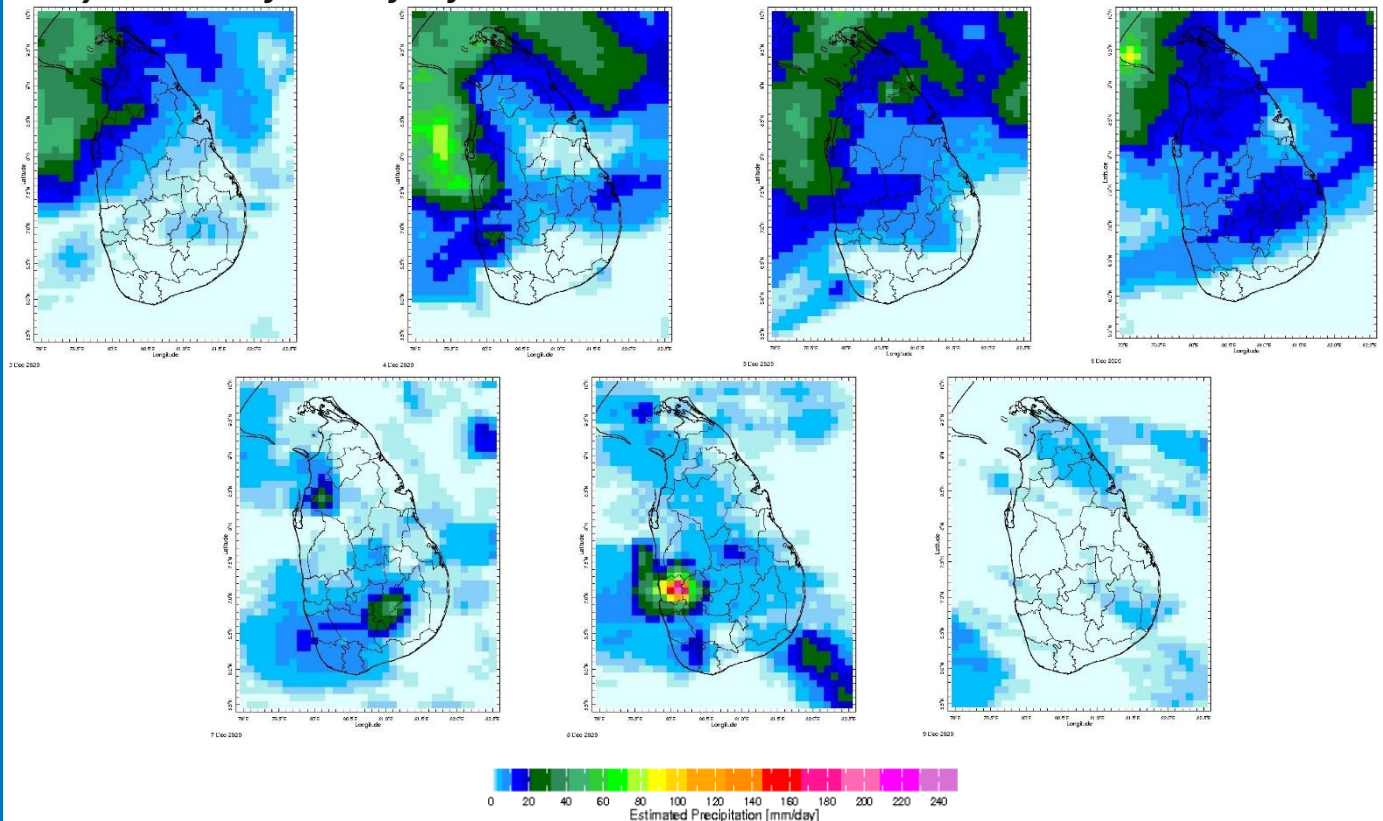
**Monitored Sea Surface**



- 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> December**





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

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

### **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: December 2, 2020**

Equatorial Eastern Pacific SST reached La Niña threshold in early-December, 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 10<sup>th</sup> – 16<sup>th</sup> December:** Total rainfall up to 105 mm in Northern province; up to 65 mm in Eastern province; up to 55 mm in North central province and up to 25 mm in Southern, North western, Sabaragamuwa and Western provinces.

**From 17<sup>th</sup> – 23<sup>rd</sup> December:** Total rainfall up to 140 mm in Northern, North central and Eastern provinces; up to 105 mm in North western, Central and Uva provinces; up to 95 mm in Sabaragamuwa and Western provinces and up to 75 mm in Southern province.



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Phone (+94) 81-2376746, (+94) 81-2300415 E mail: [fectsl@gmail.com](mailto:fectsl@gmail.com)  
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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 suppresses the rainfall during 9<sup>th</sup> – 18<sup>th</sup> Dec and severely suppresses during 19<sup>th</sup> -23<sup>rd</sup> Dec over Sri Lanka.

## Interpretation

### Monitoring

**Cyclonic Circulation:** Cyclonic storm “Burevi” started to brew over the Bay of Bengal 30<sup>th</sup> Nov. 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.

**Rainfall:** During the last two weeks, here had been high rainfall over the Jaffna and Gampaha districts. Northern and Western Provinces with significant rainfall over the North central and Uva Provinces.

**Wind:** As was typical for early December the wind direction had distributed surrounding seas. The cyclonic circulation pattern in the southern Bay of Bengal influenced the North-easterly and North-westerly coast of Sri Lanka to the start of the December.

**Temperatures:** were cooling from the highs in the previous month as was seasonable –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 Northern, Northern-central and Eastern provinces in Sri Lanka.

**Temperatures:** During 11<sup>th</sup>–17<sup>th</sup> Dec, the temperature remains high especially the Western, Eastern and Southern coast.

**Teleconnections:** MJO- is in phases that suppresses the rainfall during 9<sup>th</sup> – 18<sup>th</sup> Dec and severely suppresses during 19<sup>th</sup> -23<sup>rd</sup> 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.

<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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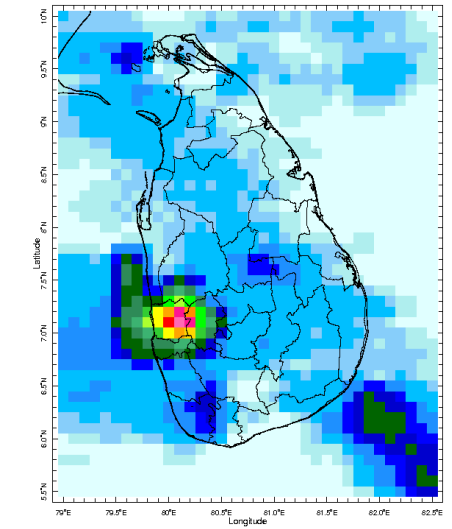
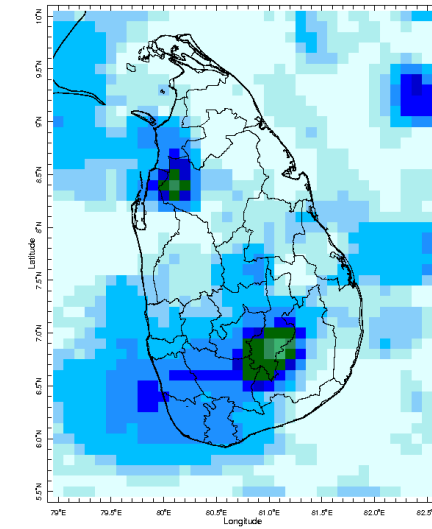
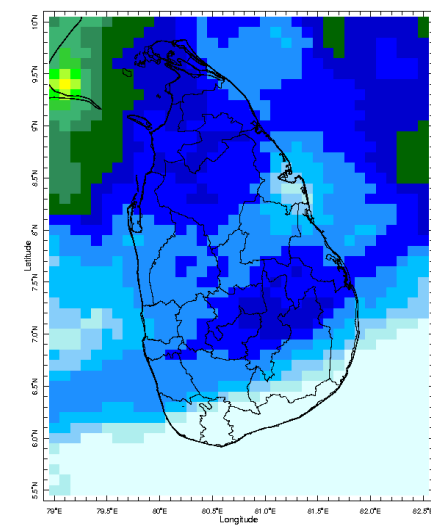
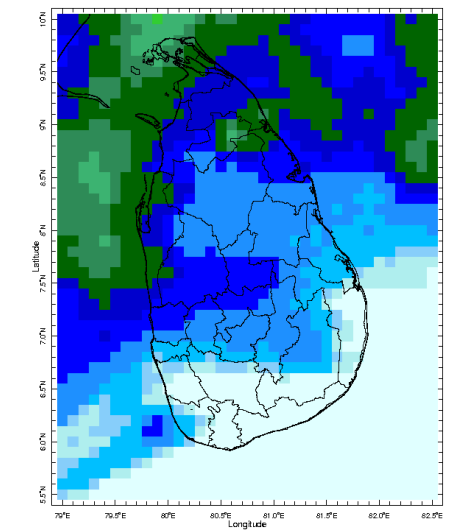
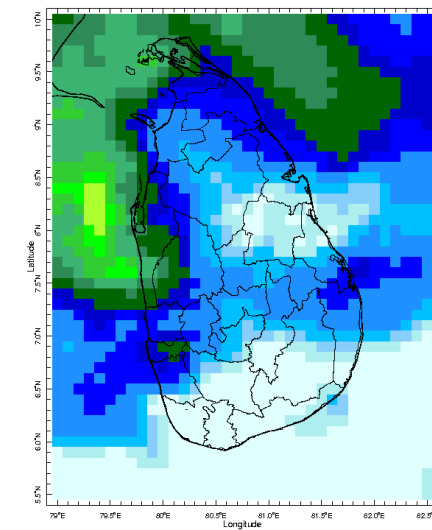
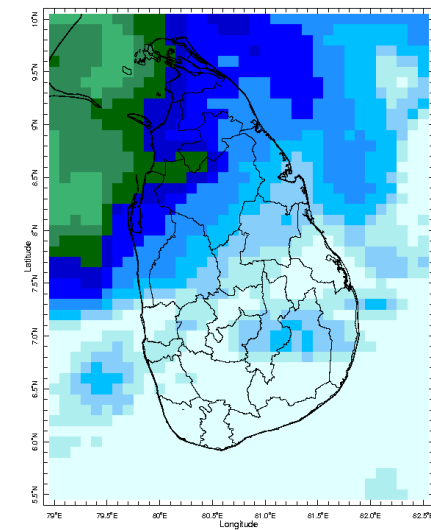
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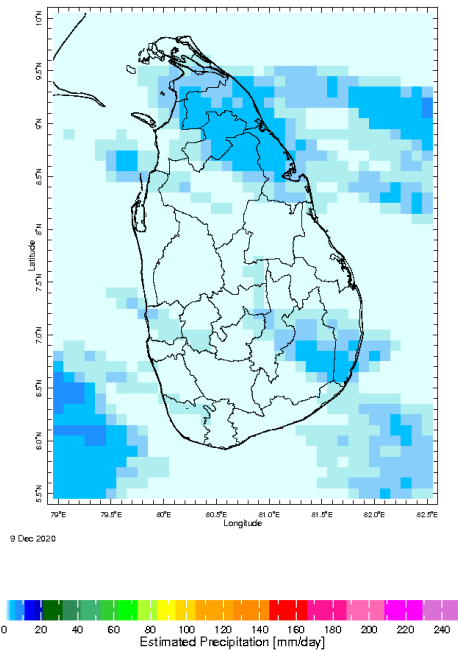


### MONITORING

#### Daily Rainfall Monitoring

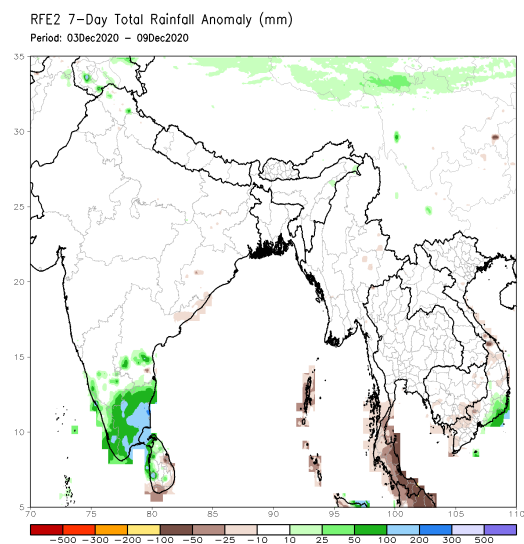
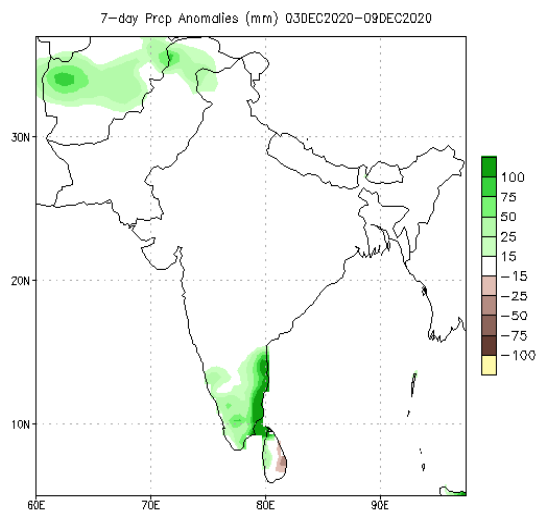
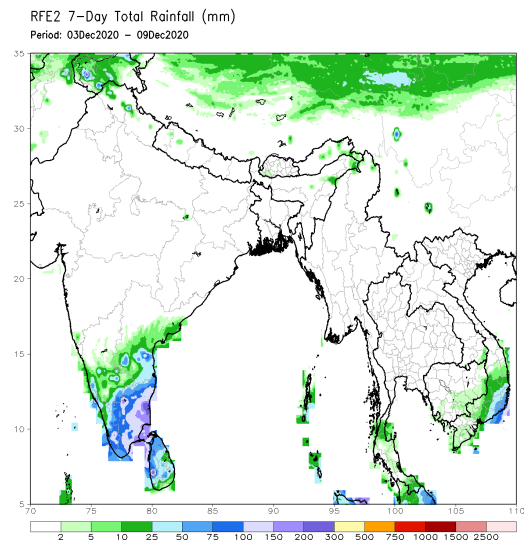
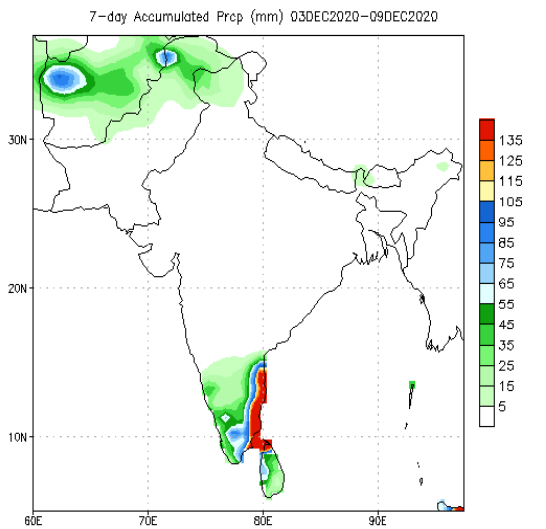
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.





## Weekly Rainfall Monitoring

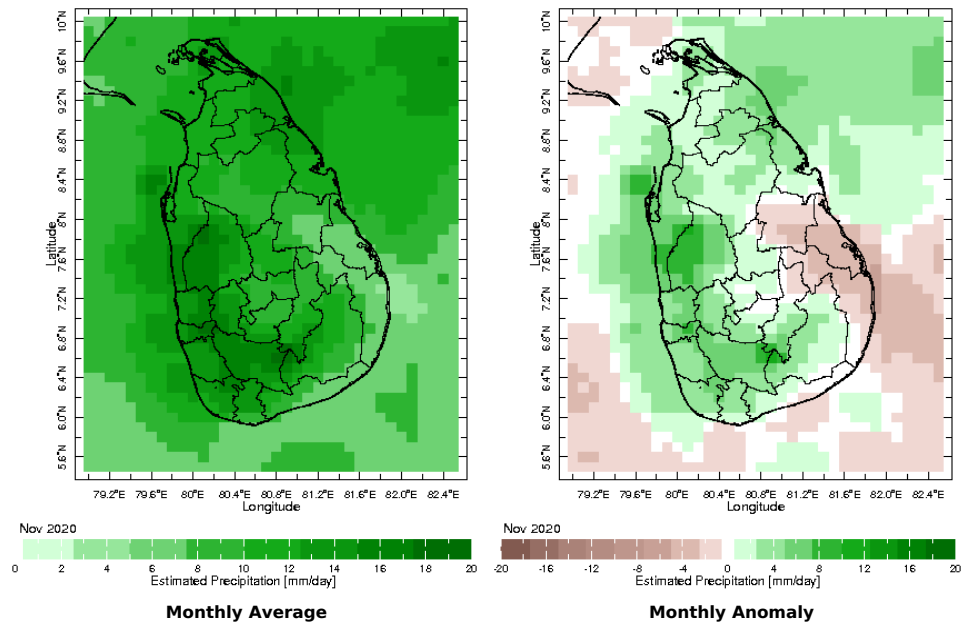
The following figures show the total satellite observed rainfall in the last week in Sri Lanka. The figure in the left is the total 7-day rainfall from NOAA Climate Prediction Center (CPC) Unified Precipitation Analysis and the figure in the right is the total 7-day rainfall from CPC RFE 2.0 Satellite Rainfall Estimates. The bottom two figures are the respective anomalies.



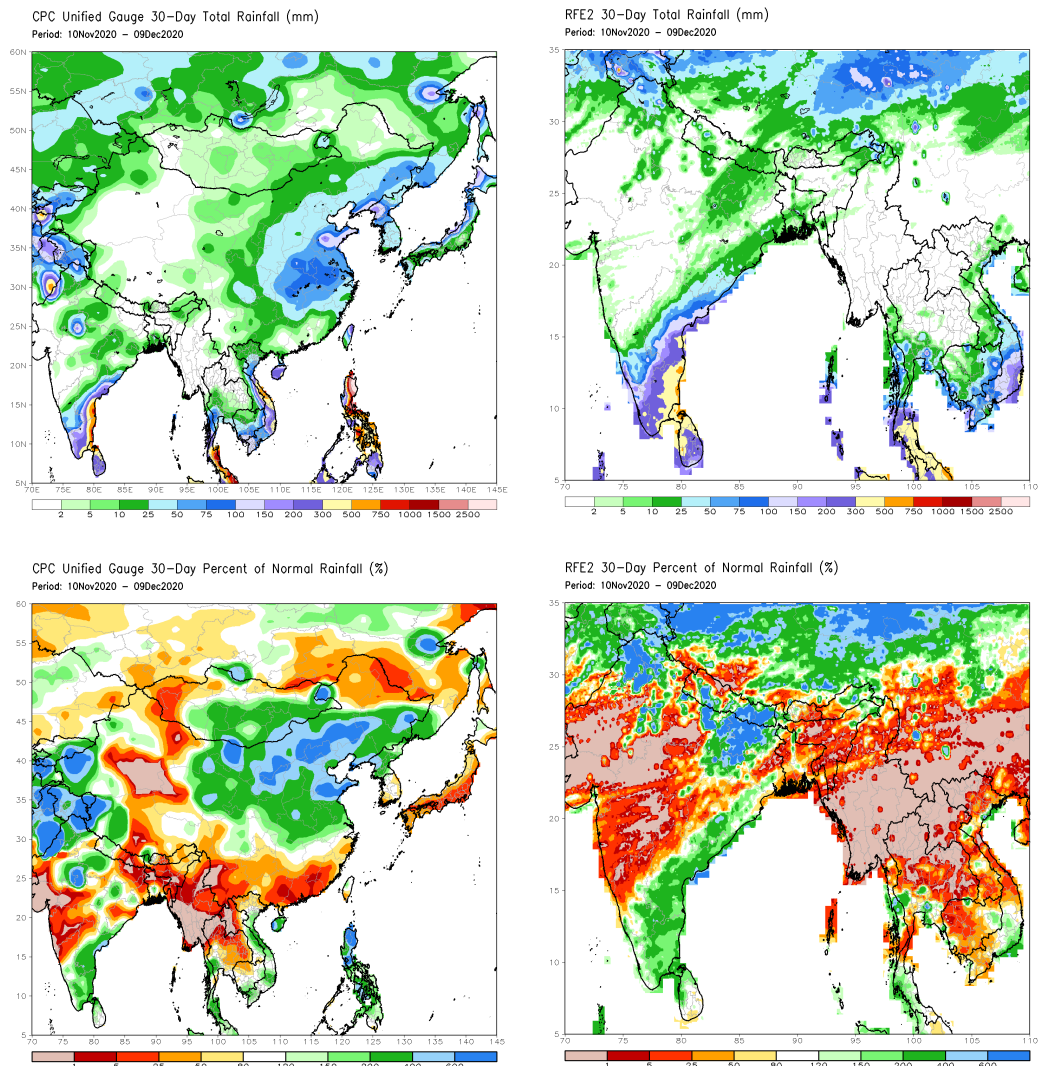


## Monthly Rainfall Monitoring

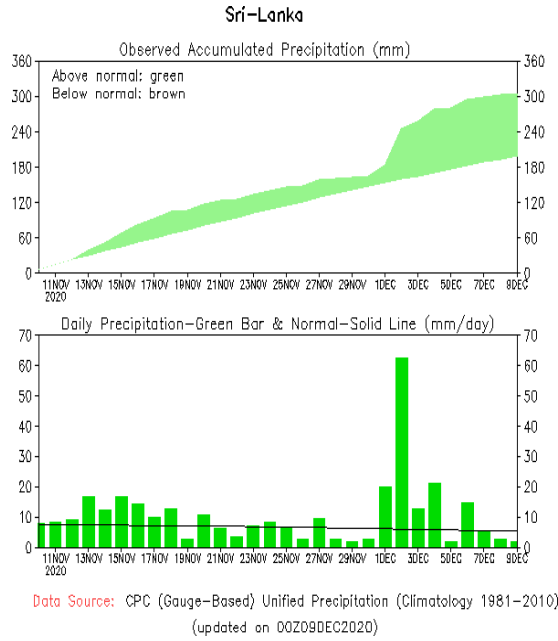
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



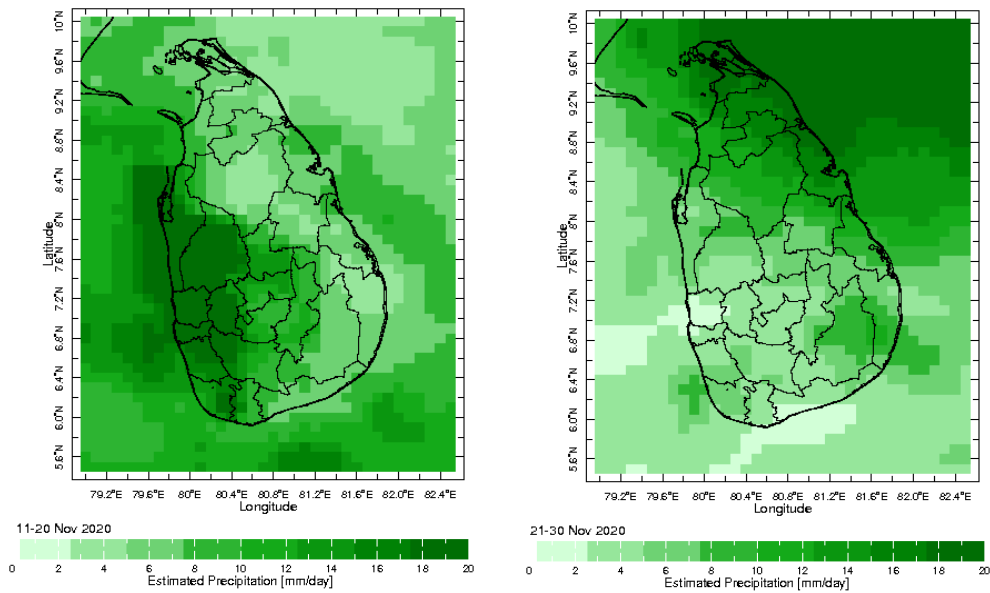
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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



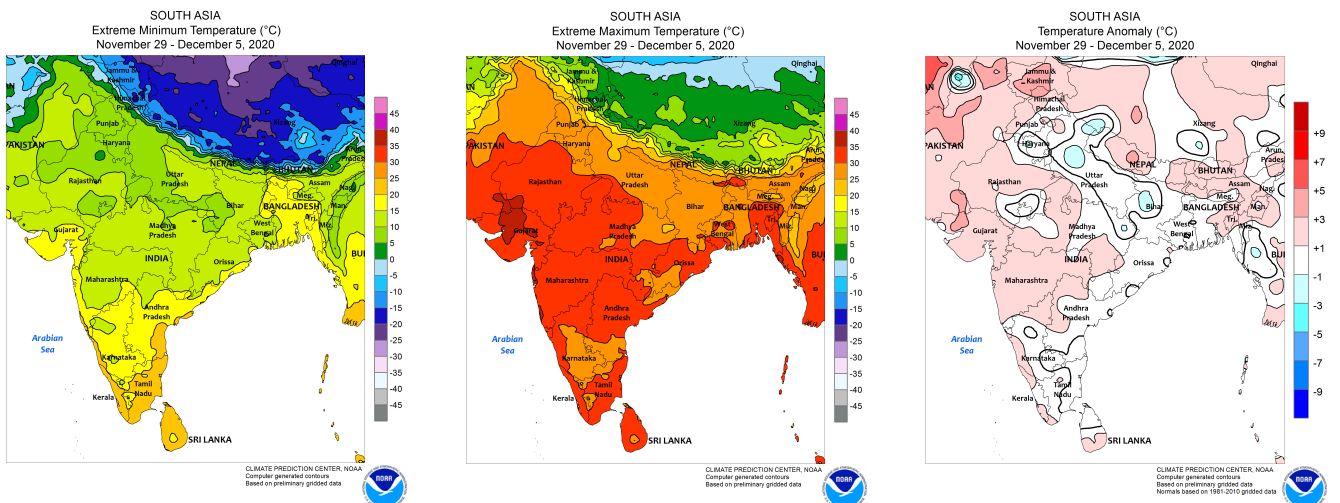
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



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

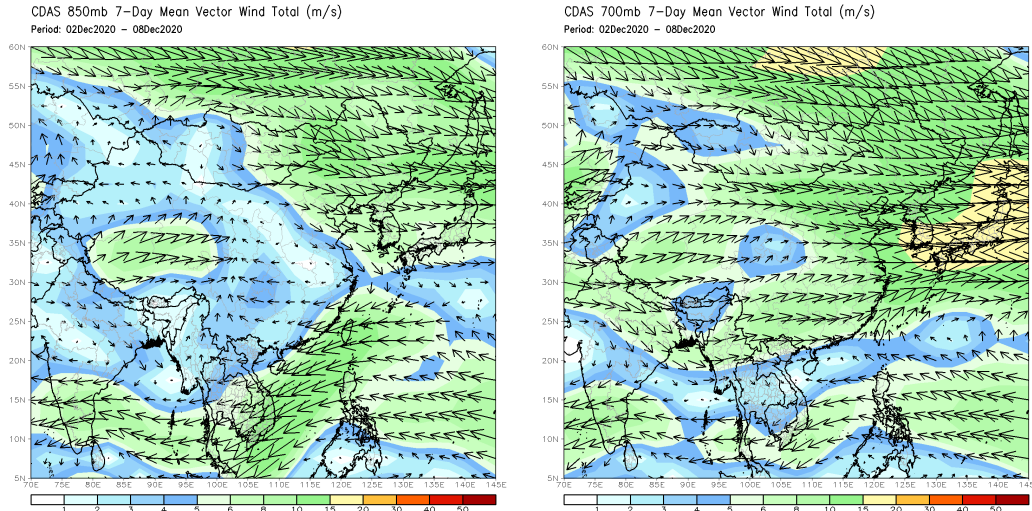


### Weekly Temperature Monitoring



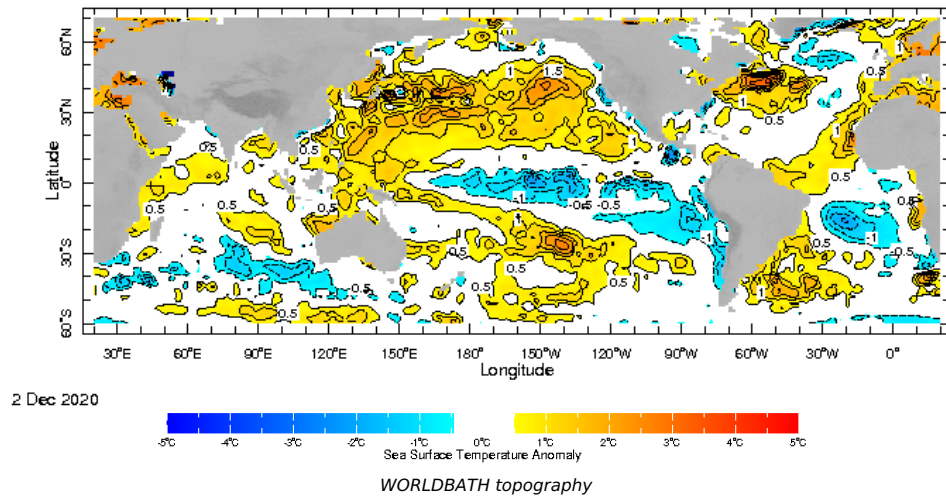
## Weekly Wind Monitoring

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.

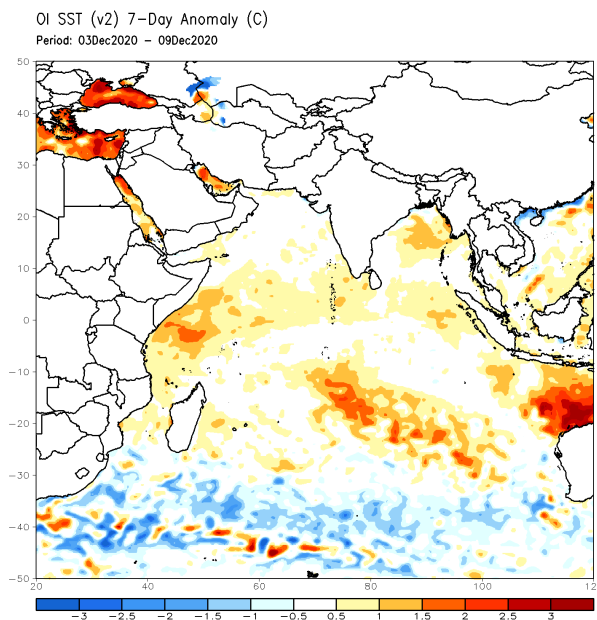


## Weekly Average SST Anomalies

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

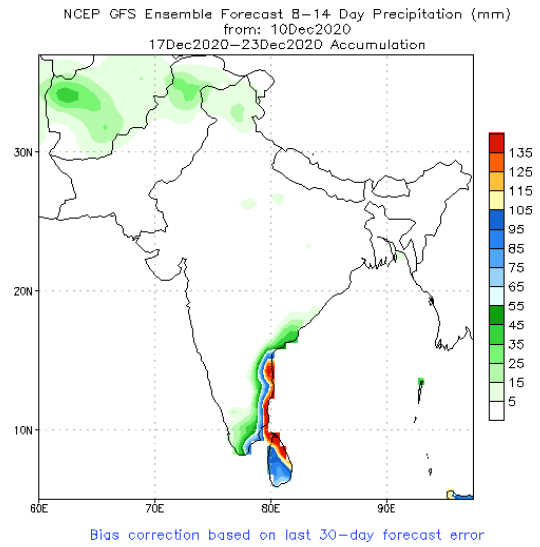
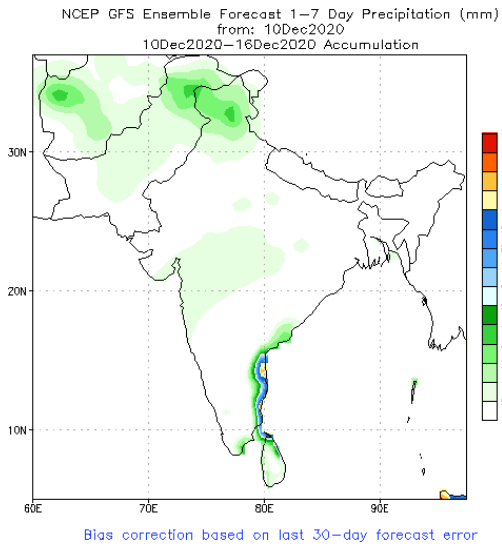


Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC

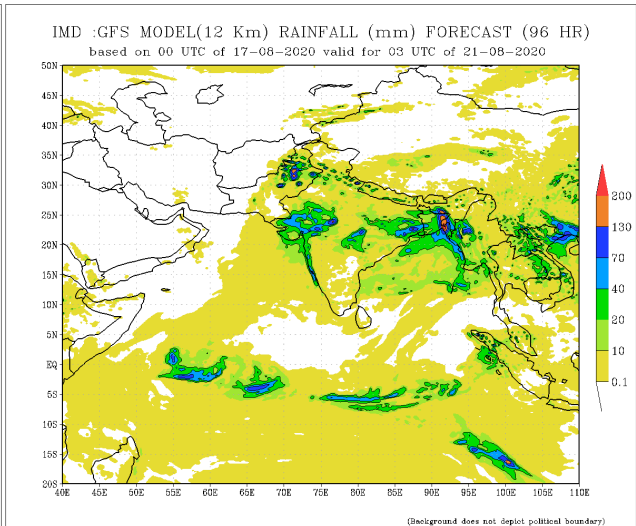
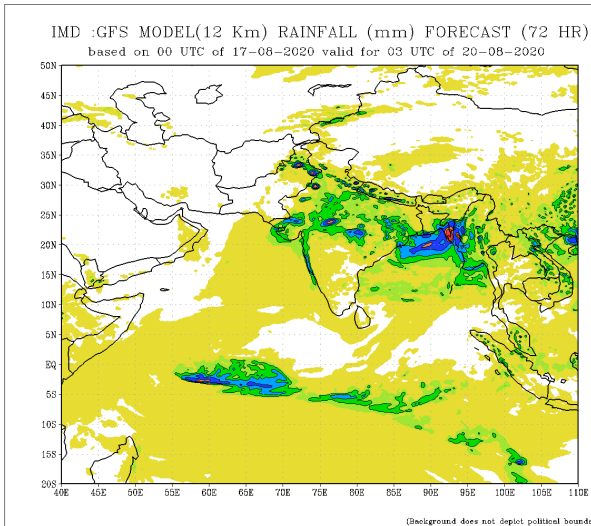
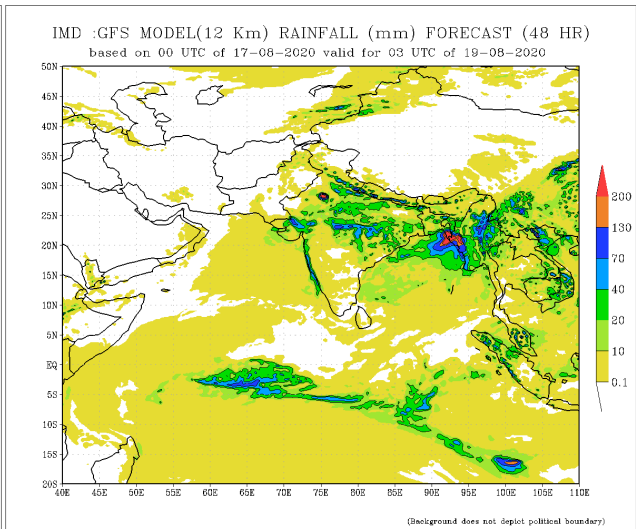
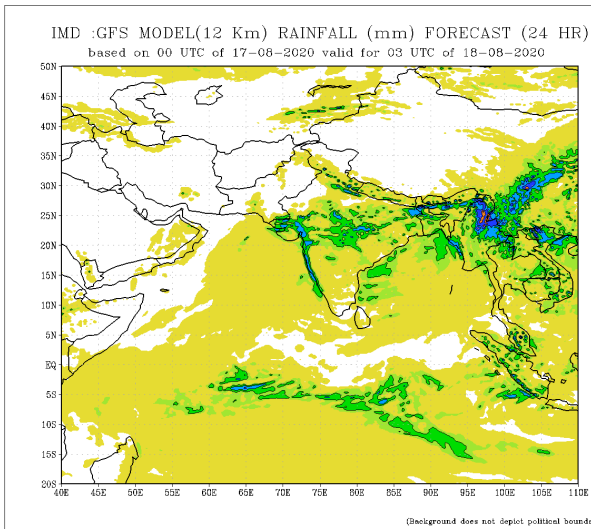


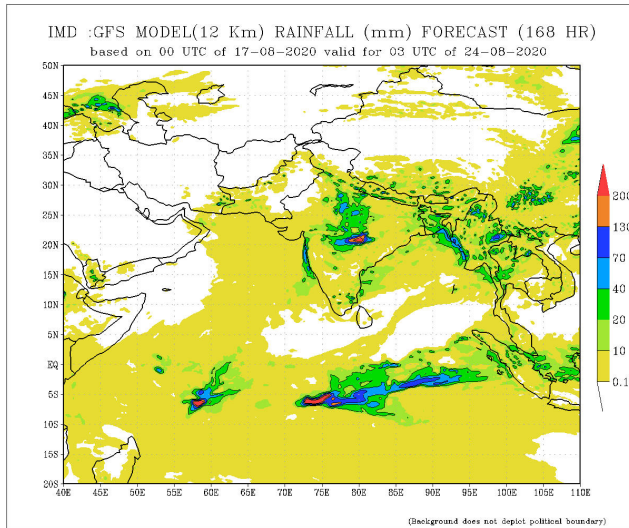
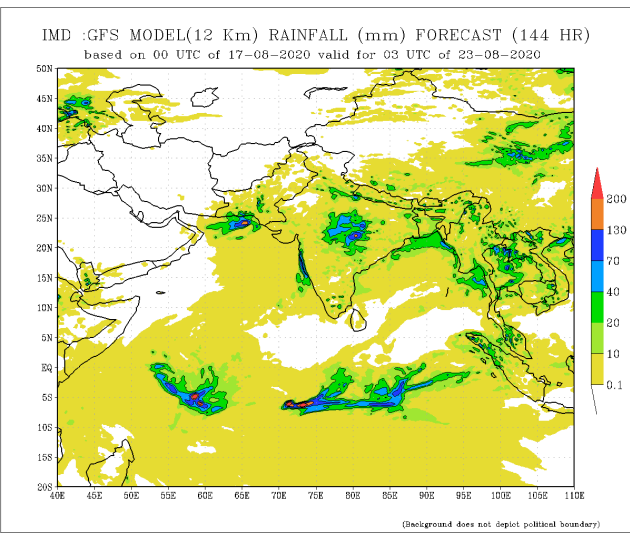
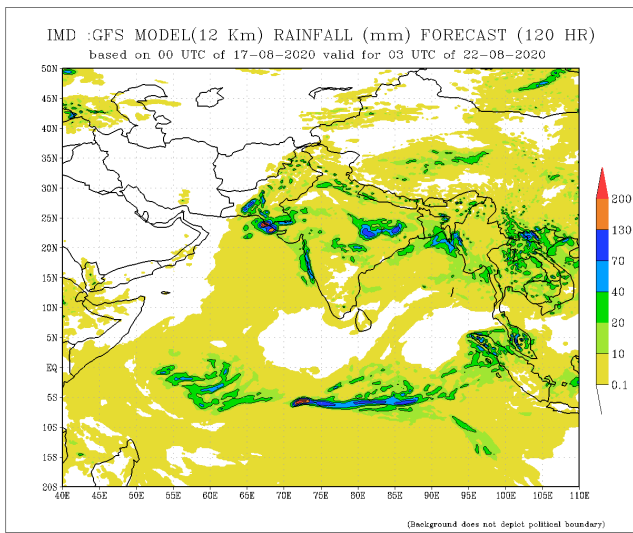


**NCEP GFS 1- 14 Day prediction**



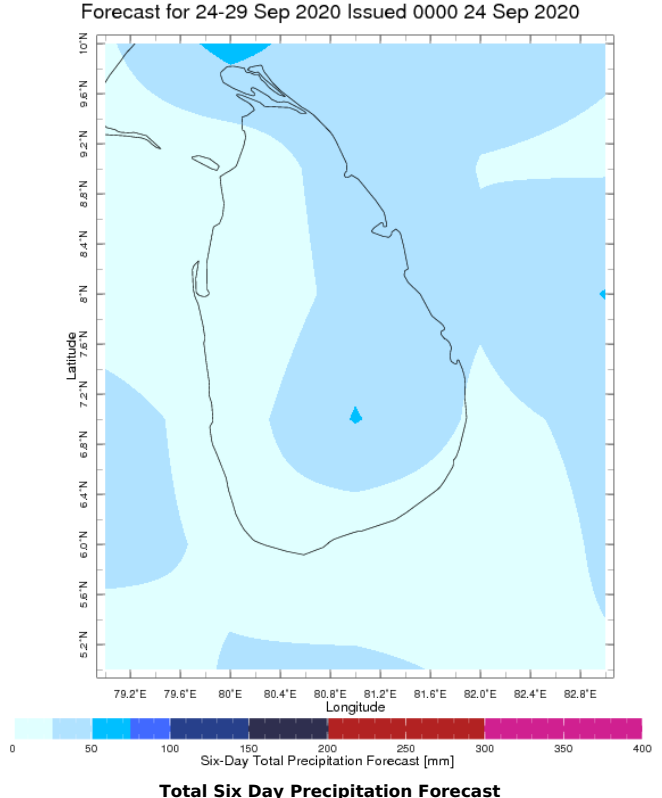
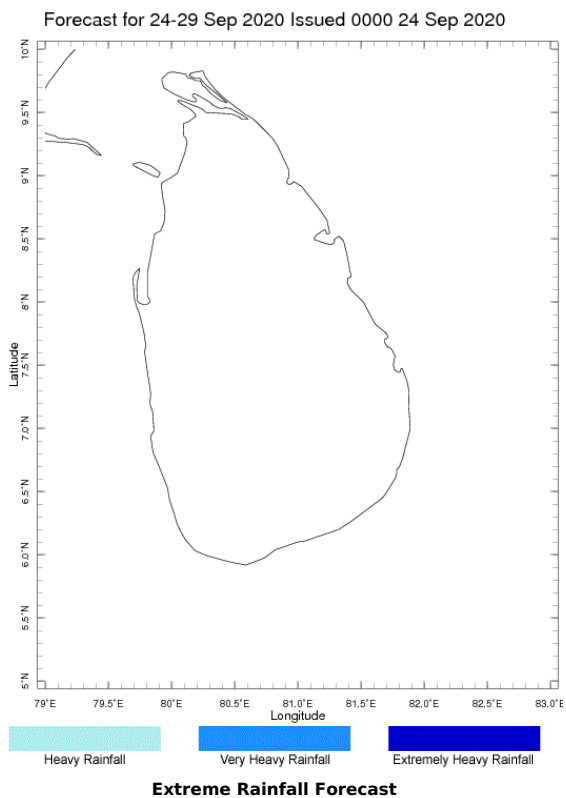
**IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India**





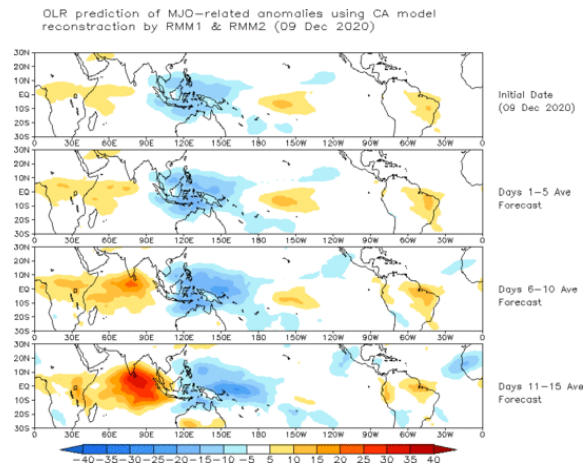
## Weekly Rainfall Forecast from IRI

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.



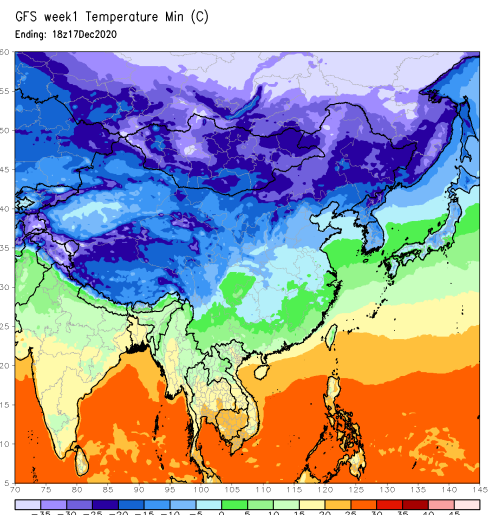
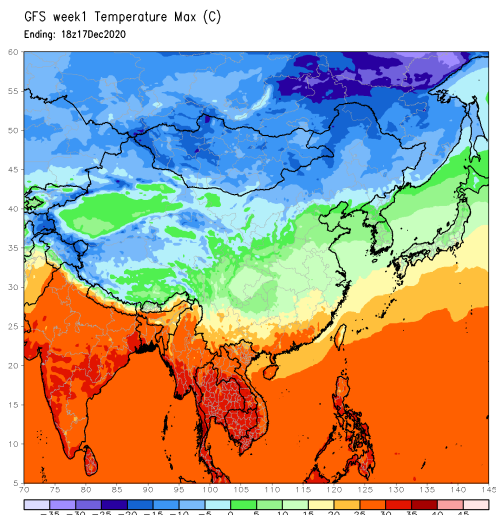
## Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

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.



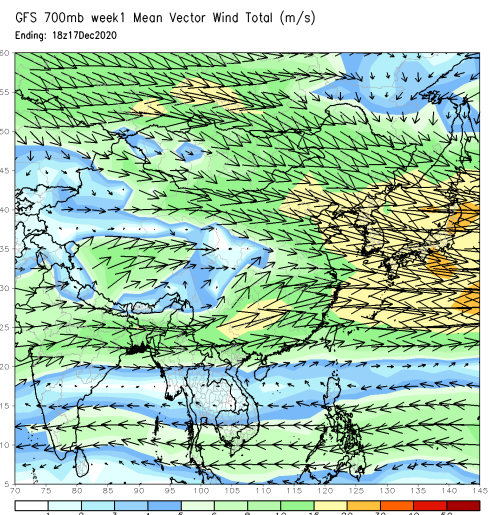
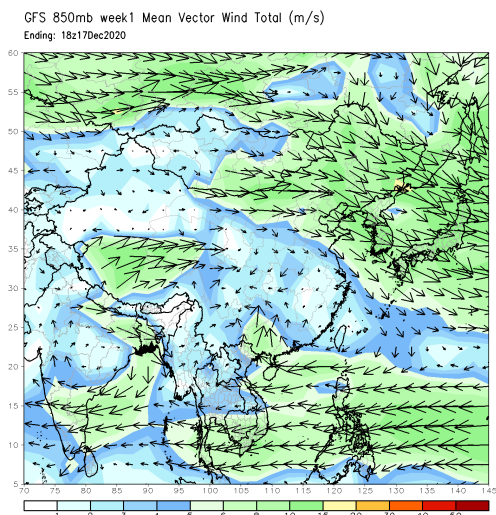
## Weekly Temperature Forecast

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)

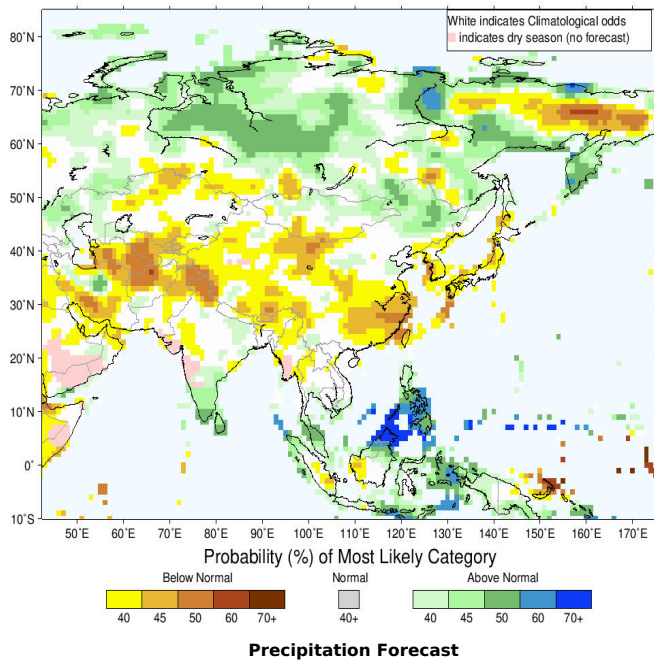




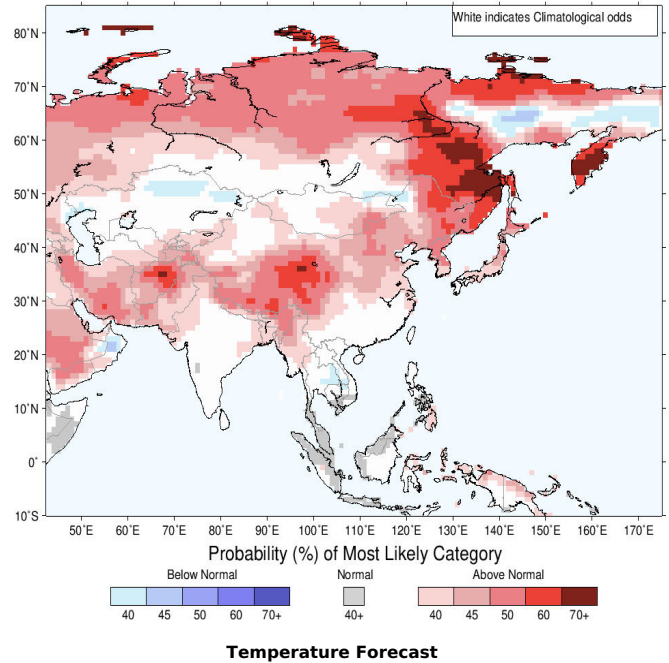
## Seasonal Rainfall and Temperature Forecast

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 colors 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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