

**2 January  
2020**

**EXPERIMENTAL CLIMATE MONITORING AND PREDICTION**

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**HIGHLIGHTS**

**Rainfall Forecast**



- The NOAA weekly rainfall forecast predicts up to 75 mm of total rainfall in the western and central regions during 1- 6 Jan.

**Monitored Rainfalls**



- Between 24-30 Dec: up to 60 mm of rainfall were recorded in the southwestern regions of the island on the 24<sup>th</sup> and 25<sup>th</sup>.

**Monitored Wind**



- From 24-30 Dec: up to 18 km/h, northeasterly winds were experienced by the entire island.

**Monitored Sea Surface**



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

**Monitoring**

**Rainfall**

**Weekly Monitoring**

Date	Rainfall
24 <sup>th</sup> December	Up to 60 mm in Colombo district; up to 30 mm in Jaffna, Kilinochchi, Gampaha and Kalutara districts; and up to 20 mm in Mullaitivu, Ratnapura, Galle and Hambantota districts.
25 <sup>th</sup> December	Up to 60 mm in Galle and Matara districts; up to 50 mm in Kalutara and Ratnapura districts; up to 30 mm in Anuradhapura, Kegalle, Colombo, Nuwara Eliya and Monaragala districts; and up to 20 mm in Polonnaruwa, Puttalam and Hambantota districts.
26 <sup>th</sup> December	Up to 30 mm in Ratnapura district; and up to 20 mm in Nuwara Eliya district.
27 <sup>th</sup> December	No Rainfall.
28 <sup>st</sup> December	No Rainfall.
29 <sup>th</sup> December	Up to 5 mm in Kurunegala district.
30 <sup>th</sup> December	No Rainfall.



## Federation for Environment, Climate and Technology

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

The RFE 2.0 tool shows total up to 50-75 mm in Galle district; up to 25-50 mm in Kalutara and Matara districts; and up to 10-25 mm in Anuradhapura, Polonnaruwa, Colombo, Ratnapura and Hambantota districts. Above average rainfall up to 10-25 mm is shown for Galle district. Below average rainfall up to 25-50 mm is shown for Jaffna, Kilinochchi, Mannar, Vavuniya, Mullaitivu, Anuradhapura, Trincomalee, Polonnaruwa, Badulla, Monaragala, Batticaloa and Ampara districts; and up to 10-25 mm in Puttalam, Kurunegala, Matale, Kandy, Kegalle, Gampaha and Colombo districts.

### ***Monthly Monitoring***

During December – Above average rainfall conditions up to 300 mm were experienced by Trincomalee, Anuradhapura and Ampara districts; up to 240 mm in Mullaitivu, Puttalam, Polonnaruwa, Kurunegala, Matale, Kandy, Nuwara Eliya, Badulla, Monaragala, Galle, Colombo, Jaffna and Hambantota districts; and up to 60 mm in Kegalle, Kalutara and Matara districts. The CPC Unified Precipitation Analysis tool shows up to 500 mm were experienced by Mullaitivu, Anuradhapura, Polonnaruwa, Matale, Badulla, Monaragala, Batticaloa and Ampara districts; and up to 200-300 mm in Jaffna, Kilinochchi, Mannar, Puttalam, Kandy, Nuwara Eliya, Ratnapura and Hambantota districts.

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

#### ***Pacific sea state: December 19, 2019***

SSTs in the east-central Pacific were neutral, but near the borderline of weak El Niño levels during mid-December. Patterns in most atmospheric variables have maintained neutral conditions. Most model forecasts favor warm-neutral to borderline weak El Niño SST conditions during early winter, returning to ENSO-neutral from late winter to spring and even early summer. The official CPC/IRI outlook is consistent with these model forecasts.

#### ***Indian Ocean State***

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



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## Predictions

### Rainfall

#### **14-day prediction: NOAA NCEP models**

**From 1<sup>st</sup> – 7<sup>th</sup> Jan:** Total rainfall more than 45 mm in Trincomalee, Anuradhapura, Polonnaruwa, Badulla, Batticaloa and Ampara districts; up to 25-35 mm in most parts of the island.

**From 8<sup>th</sup> – 14<sup>th</sup> Jan:** Total rainfall more than 45 mm in Batticaloa and Ampara districts; up to 25-35 mm in Polonnaruwa, Badulla and Monaragala districts.

#### **NOAA Model Forecast:**

**From 1<sup>st</sup> – 6<sup>th</sup> Dec:** Total rainfall up to 75 mm is expected in Puttalam, Kurunegala, Kegalle, Kandy, Nuwara Eliya, Badulla, Ratnapura, Colombo and Kalutara districts.

### MJO based OLR predictions

#### **For the next 15 days:**

MJO shall suppress the rainfall in Sri Lanka in the next 5 days and shall not have an impact in the following 10 days.

<sup>1</sup> International Research Institute for Climate and Society, Earth Institute at Columbia University, New York.  
Official hydro-meteorological statements are provided by the Sri Lanka Department of Meteorology and Department of Irrigation.



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## Weekly Hydro- Meteorological Report for Sri Lanka

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#### 1. Monitoring

- a. Daily Rainfall Monitoring
- b. Monthly Rainfall Monitoring
- c. Dekadal (10 Day) Satellite Derived Rainfall Estimates
- d. Weekly Average SST Anomalies

#### 2. Predictions

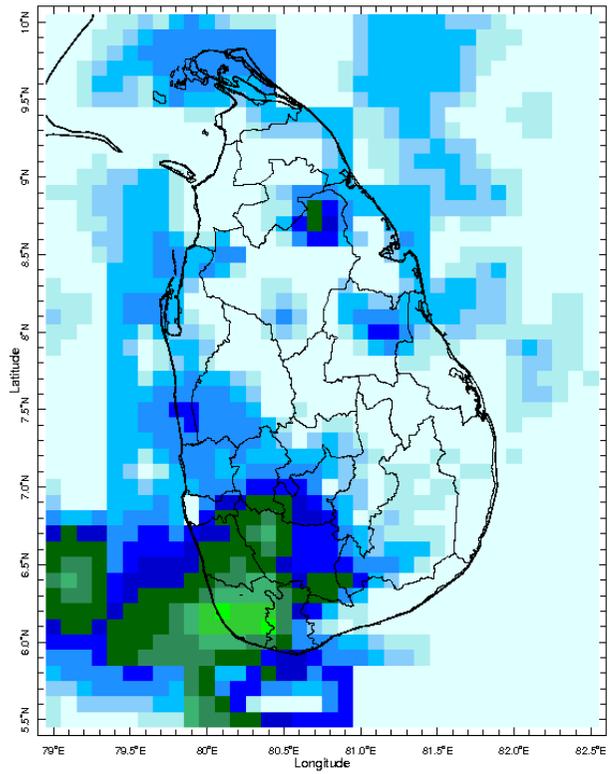
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

## MONITORING

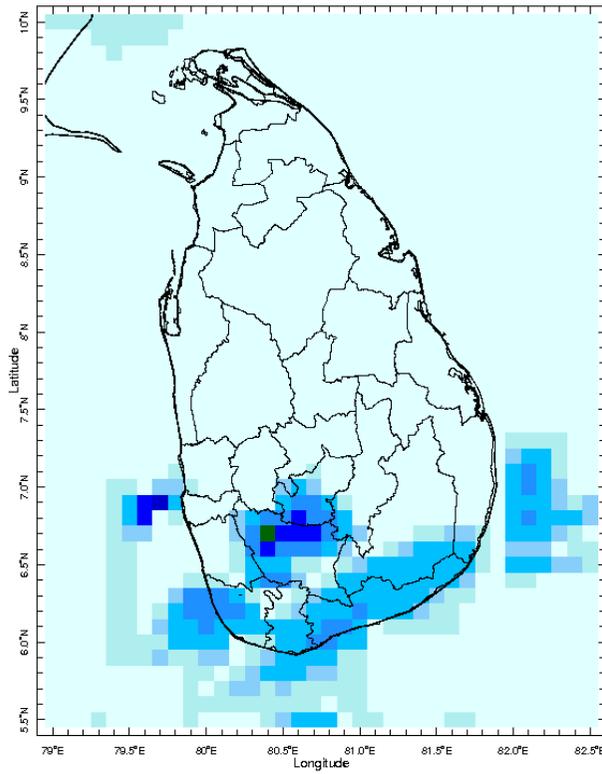
### Daily Rainfall Monitoring

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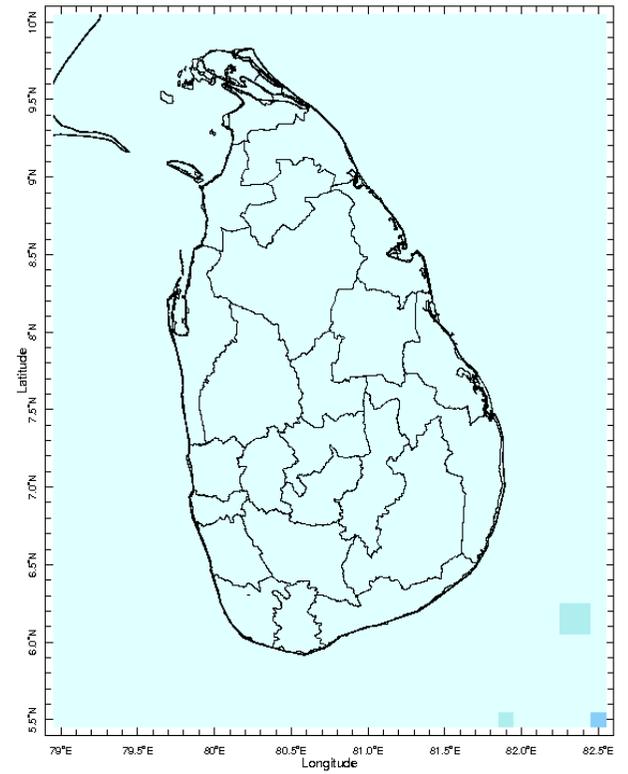
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



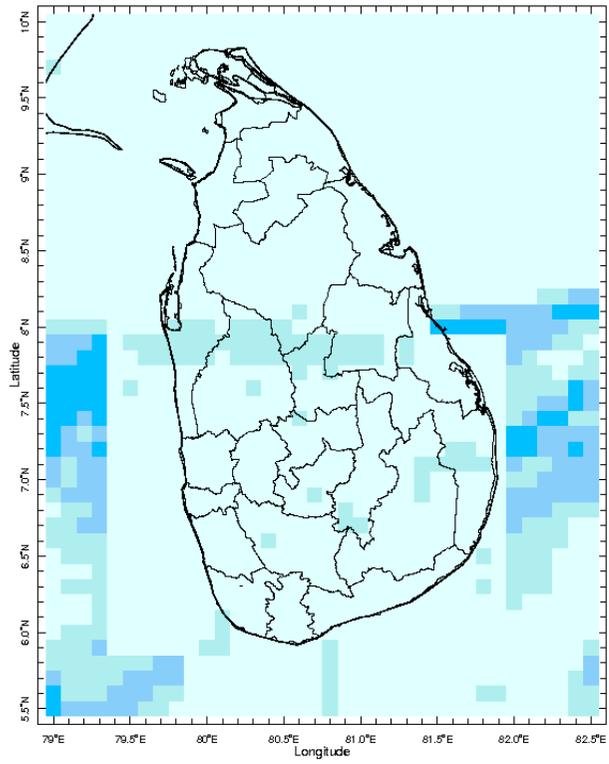
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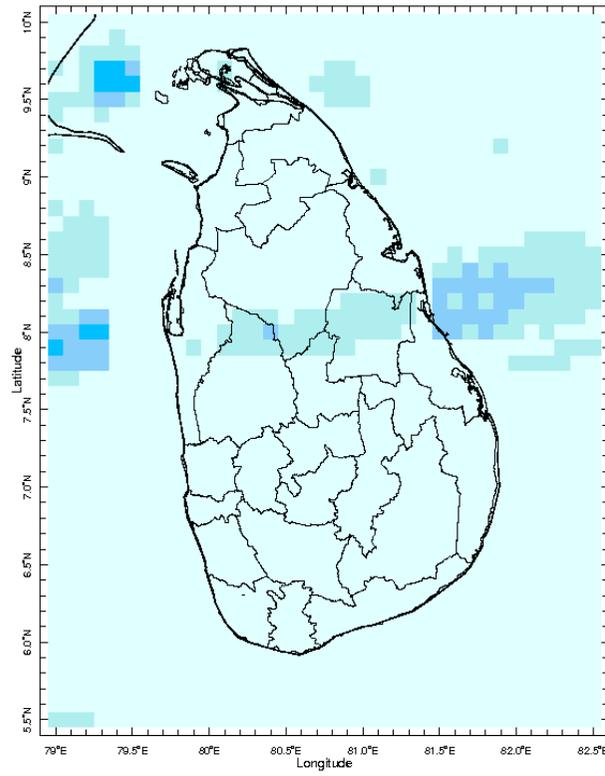
26 Dec 2019



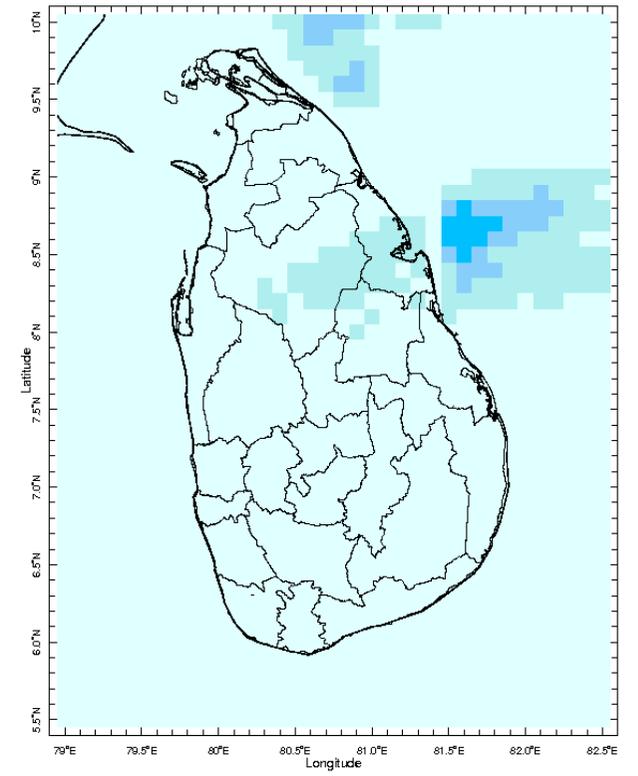
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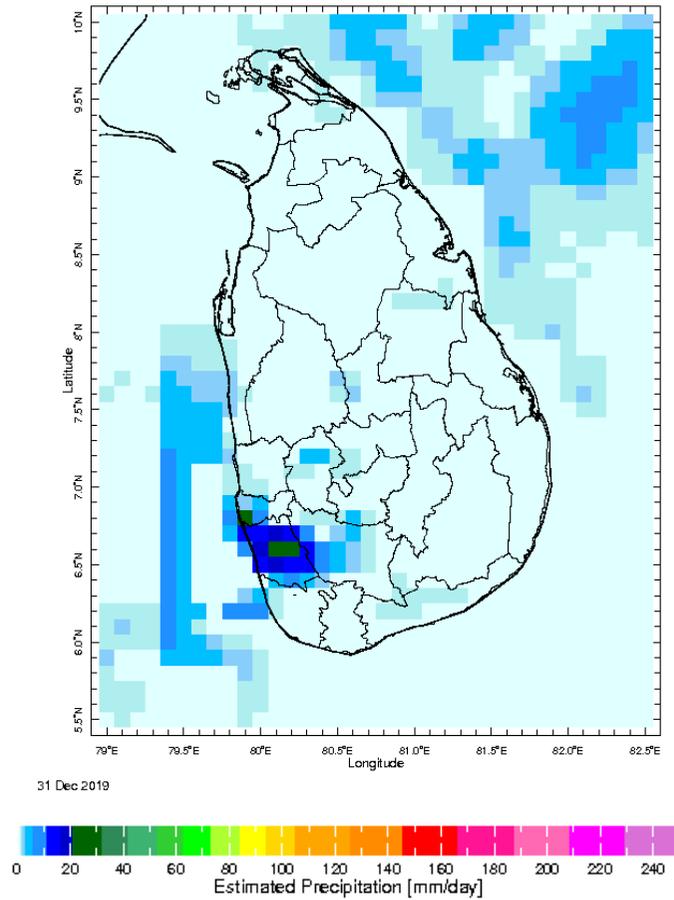
28 Dec 2019



29 Dec 2019

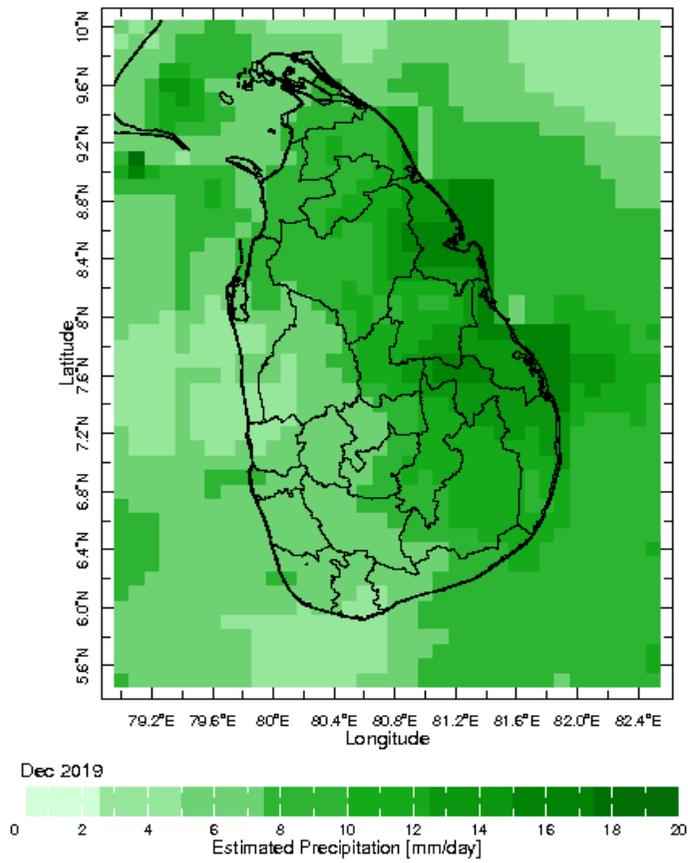


30 Dec 2019

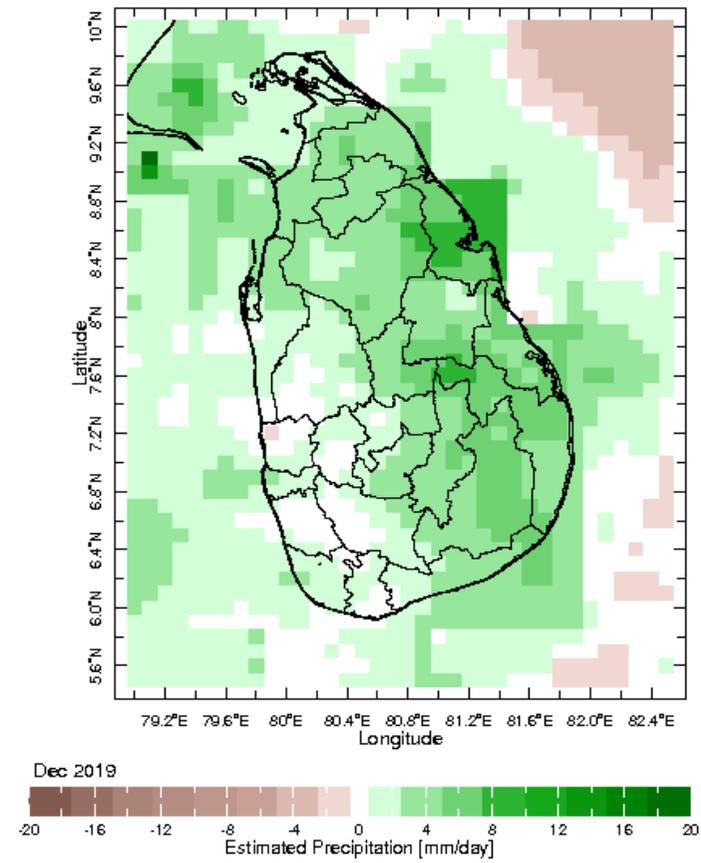


## Monthly Rainfall Monitoring

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

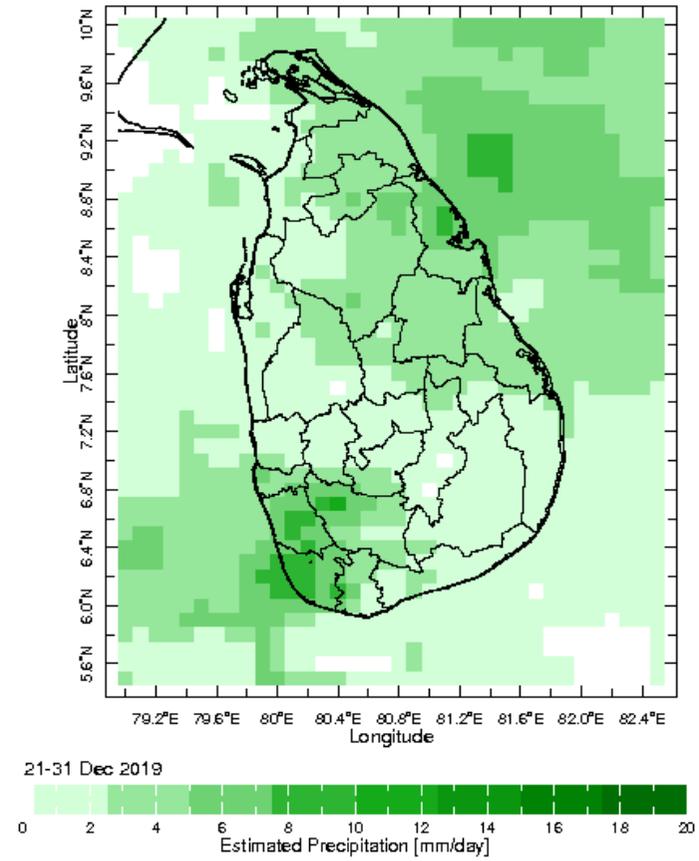
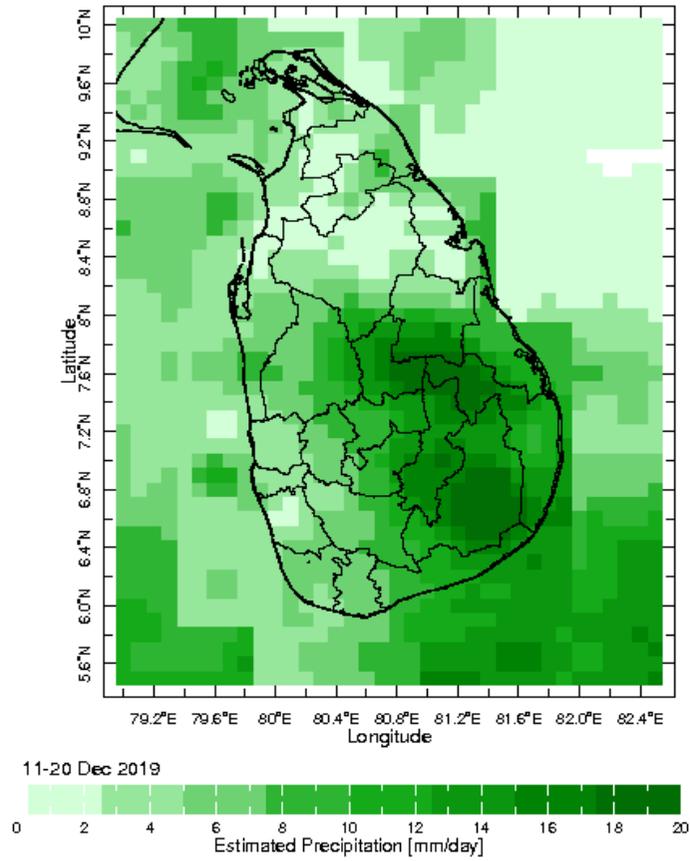


**Monthly Average**



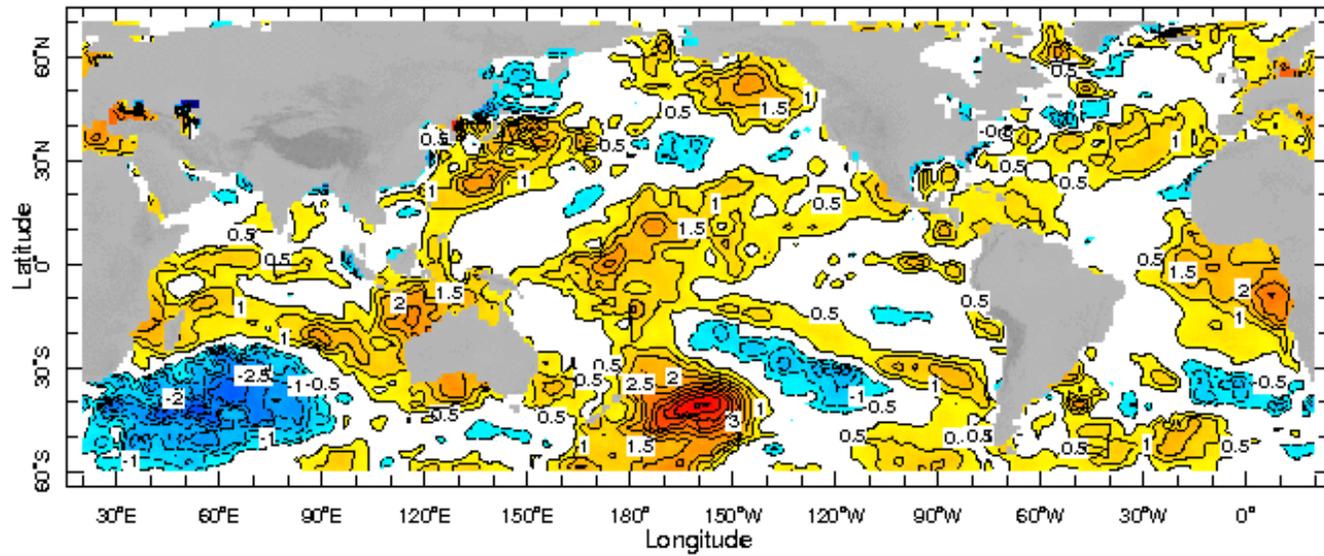
**Monthly Anomaly**

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



## Weekly Average SST Anomalies

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



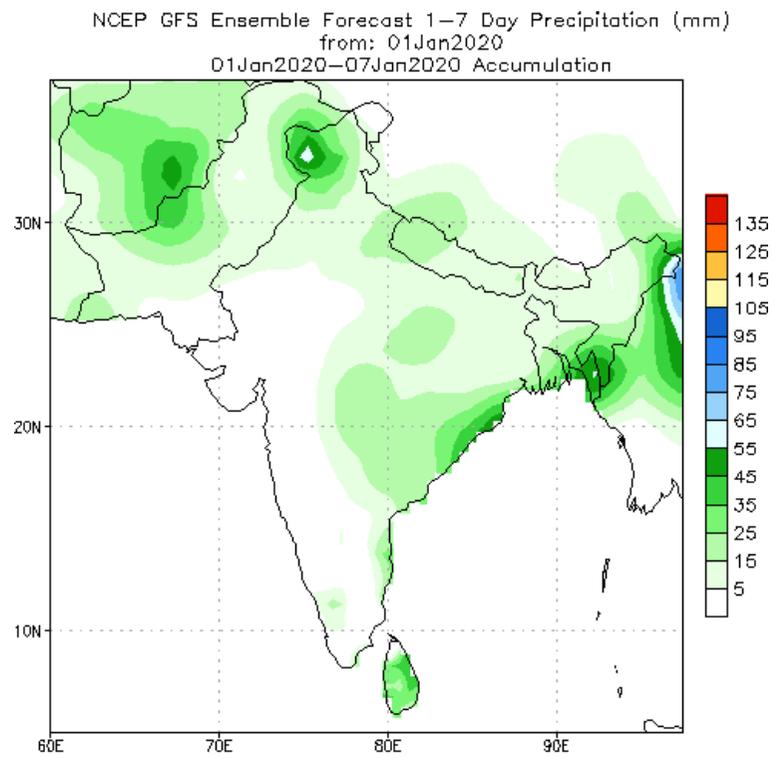
25 Dec 2019



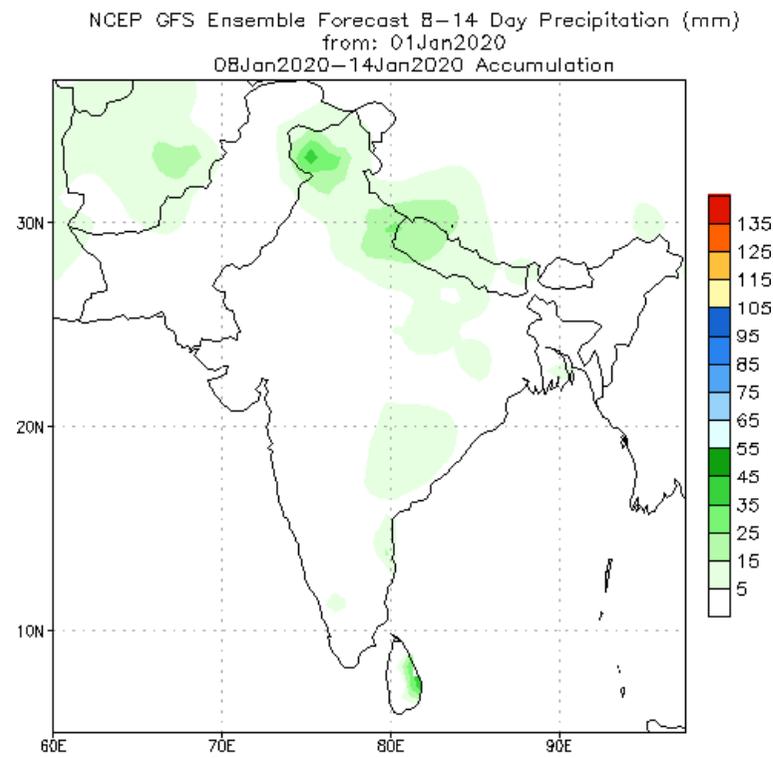
*WORLDBATH* topography

## PREDICTIONS

NCEP GFS 1- 14 Day prediction



Bias correction based on last 30-day forecast error



Bias correction based on last 30-day forecast error

**WRF Model Forecast (from IMD Chennai)**

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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.

