

## Experimental Climate Monitoring and Prediction

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22 August 2019

### Highlights

- The IRI weekly rainfall forecast predicts up to 75 mm of total rainfall in Kalutara and Galle districts during 21 - 26 Aug.
- Between 14 - 19 Aug: up to 100 mm of rainfalls were recorded in Polonnaruwa district on the 16<sup>th</sup>.
- From 13 - 19 Aug: up to 54 km/h, northwesterly winds were experienced by the entire island.
- 1 °C above average sea surface temperature was observed in the seas around Sri Lanka.

#### Monitoring

##### Rainfall

**Weekly Monitoring:** On August 14<sup>th</sup>, Galle, Matara and Hambantota districts received up to 20 mm of rainfall; and Kalutara and Ratnapura districts up to 10 mm. On the 15<sup>th</sup>, Kilinochchi, Mannar, Mullaitivu, Puttalam, Kurunegala, Matale and Polonnaruwa districts received up to 5 mm of rainfall. On the 16<sup>th</sup>, Polonnaruwa district received up to 100 mm of rainfall; Matale and Ampara districts up to 80 mm; Trincomalee, Anuradhapura and Monaragala districts up to 60 mm; Mullaitivu, Mannar, Puttalam and Badulla districts up to 50 mm; and Kandy and Kilinochchi districts up to 20 mm. On the 17<sup>th</sup>, Kurunegala district received up to 20 mm of rainfall. On the 18<sup>th</sup>, Vavuniya district received up to 90 mm of rainfall; Kilinochchi, Mullaitivu, Mannar, Anuradhapura and Gampaha districts up to 50 mm; Puttalam, Kurunegala, Trincomalee, Monaragala and Ampara districts up to 30 mm; and Polonnaruwa district up to 20 mm. On the 19<sup>th</sup>, Batticaloa, Ampara, Badulla, Monaragala and Ratnapura districts received up to 20 mm of rainfall. On the 20<sup>th</sup>, Ratnapura district received up to 30 mm of rainfall; and Mullaitivu, Vavuniya, Gampaha, Colombo, Monaragala and Hambantota districts up to 20 mm.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total up to 75-100 mm in Polonnaruwa, Matale and Badulla districts; up to 50-75 mm in Anuradhapura, Trincomalee, Ampara and Monaragala districts; and up to 25-50 mm in Jaffna, Kilinochchi, Mullaitivu, Vavuniya, Mannar, Puttalam, Kurunegala, Kandy, Gampaha, Ratnapura and Galle districts. Above average rainfall up to 50-100 mm in Polonnaruwa districts; and up to 25-50 mm in Vavuniya, Anuradhapura, Matale, Monaragala, Ampara and Batticaloa districts. Below average rainfall up to 25-50 mm in Kalutara, Ratnapura and Galle districts; and up to 10-25 mm in Trincomalee, Gampaha, Colombo, Kegalle, Kandy, Nuwara Eliya, Badulla, Matara and Hambantota districts.

**Monthly Monitoring:** During July – Above average rainfall conditions up to 60 mm were experienced by Puttalam, Kurunegala, Kandy, Nuwara Eliya, Badulla, Monaragala, Ampara and Hambantota districts. Below average rainfall conditions up to 60 mm were experienced by Jaffna, Kilinochchi, Mullaitivu, Mannar, Vavuniya, Matale, Gampaha, Colombo, Kalutara, Galle and Batticaloa districts. The CPC Unified Precipitation Analysis tool shows up to 200 mm of total rainfall in Nuwara Eliya, Badulla and Ratnapura districts; up to 150 mm in Kalutara, Galle, Matara, Kegalle, Kandy and Monaragala districts; up to 100 mm in Puttalam, Kurunegala, Matale and Ampara districts; and up to 75 mm in Gampaha and Trincomalee districts.

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

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

The weak El Niño of 2018-19 has ended, as SSTs in the east-central Pacific cooled to ENSO-neutral levels during July. Patterns in most atmospheric variables also are showing ENSO-neutral conditions. Collective model forecasts favor ENSO-neutral through autumn and winter, but with higher chances for El Niño than La Niña. The official CPC/IRI outlook, no longer carrying an El Niño advisory, generally agrees with the model forecasts through winter.

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

1 °C above average sea surface temperature was observed in the seas around Sri Lanka.

## Predictions

### Rainfall

#### 14-day prediction:

##### NOAA NCEP models:

From 21<sup>st</sup> – 27<sup>th</sup> Aug: Total rainfall up to 55 mm on Jaffna and Kilinochchi, districts; up to 35-45 mm in Mannar, Vavuniya and Trincomalee districts; and up to 25-35 mm in Puttalam, Anuradhapura and Polonnaruwa districts.

From 27<sup>th</sup> Aug – 3<sup>rd</sup> Sep: Total rainfall up to 35 mm Ratnapura districts; and up to 15-25 mm in Jaffna, Colombo, Kegalle, Nuwara Eliya, Kandy, Matara and Hambantota districts.

##### IMD NCMWRF Forecast:

23<sup>rd</sup> Aug: Not Available

24<sup>th</sup> Aug: Not Available

##### IRI Model Forecast:

From 21<sup>st</sup> – 26<sup>th</sup> Aug: Total rainfall up to 75 mm is expected in Kalutara and Galle districts; and up to 50 mm in Jaffna, Kilinochchi, Puttalam, Gampaha, Colombo, Ratnapura, Matara and Kegalle districts.

### MJO based OLR predictions

#### For the next 15 days:

MJO shall not have an impact on the rainfall in Sri Lanka in the next 5 days and shall enhance 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.

### FECT BLOG

Past reports available at <http://fectsl.blogspot.com/> and <http://fectsl.wordpress.com/>

### FECT WEBSITES

<http://www.climate.lk> and <http://www.tropicalclimate.org/>



[www.fb.com/fectsl](http://www.fb.com/fectsl)



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## Weekly Hydro- Meteorological Report for Sri Lanka

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

#### 2. Predictions

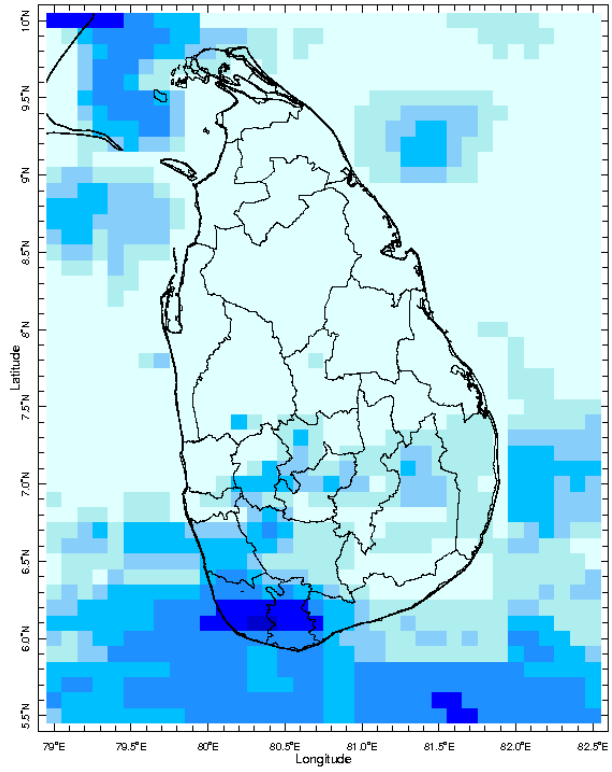
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

## MONITORING

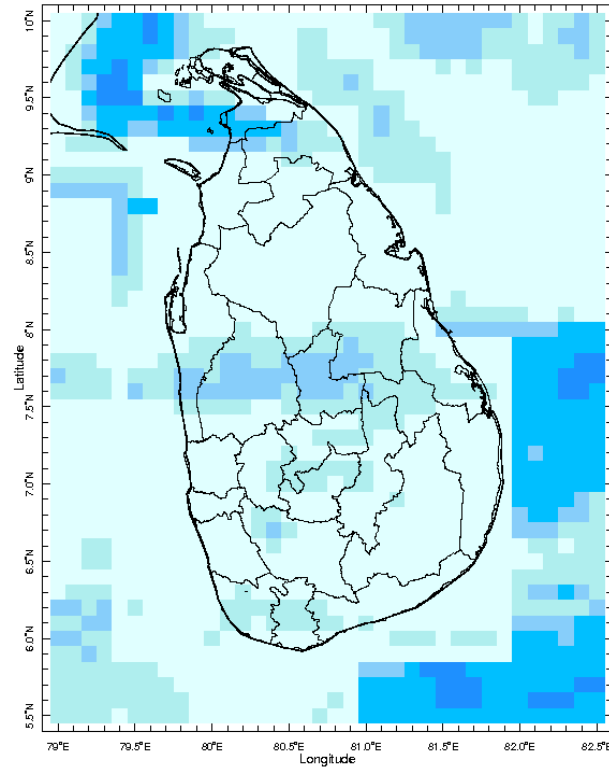
### Daily Rainfall Monitoring

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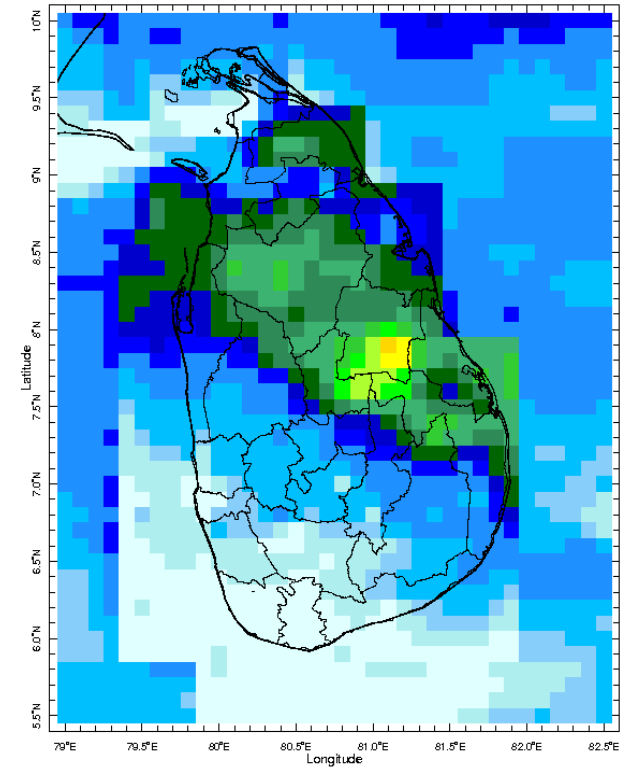
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



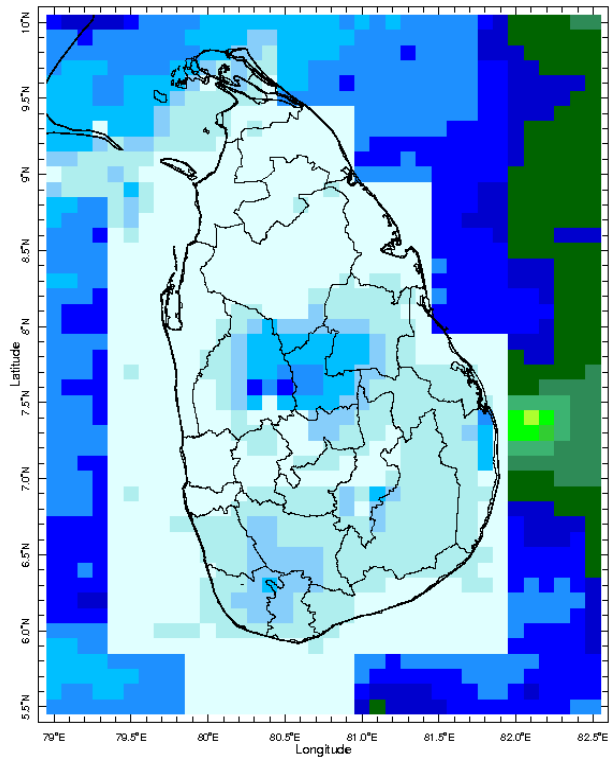
14 Aug 2019



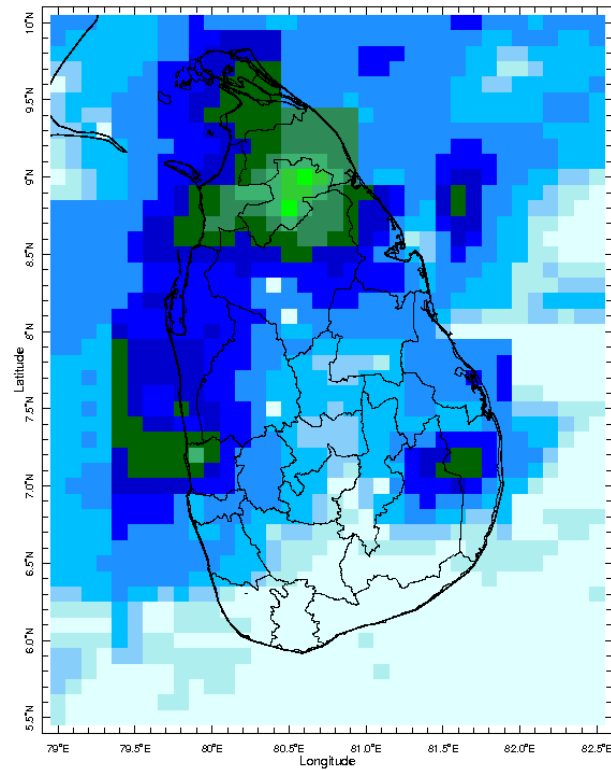
15 Aug 2019



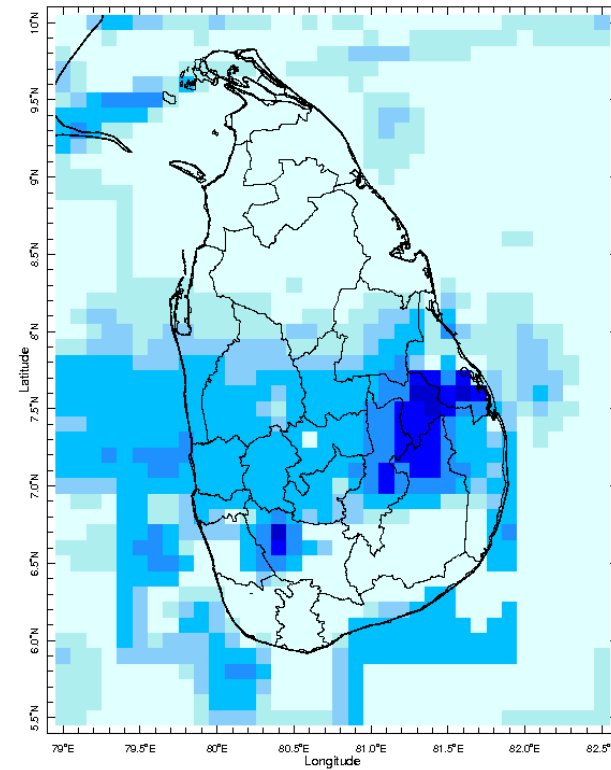
16 Aug 2019



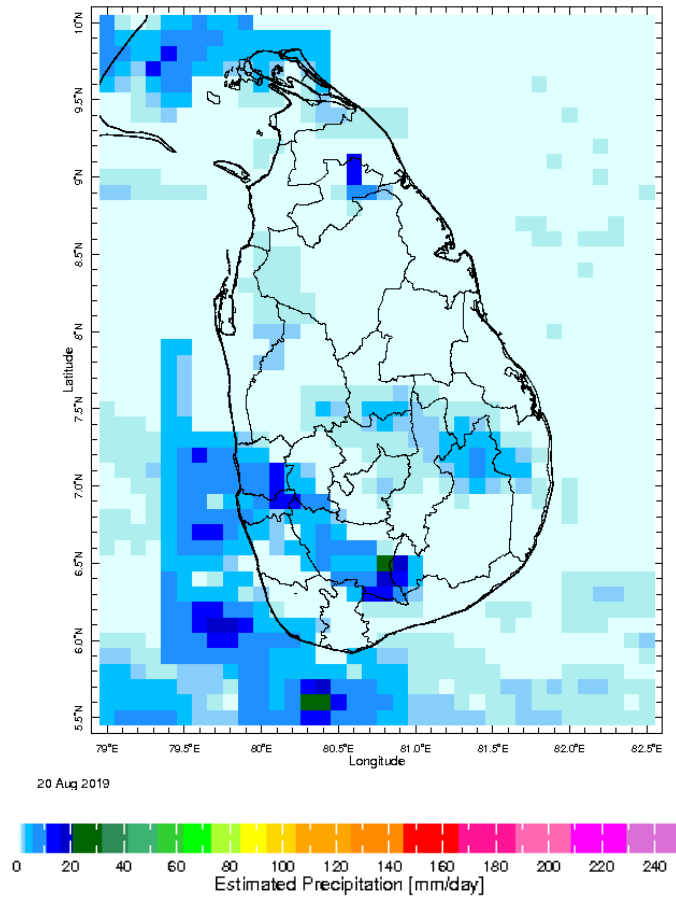
17 Aug 2019



18 Aug 2019

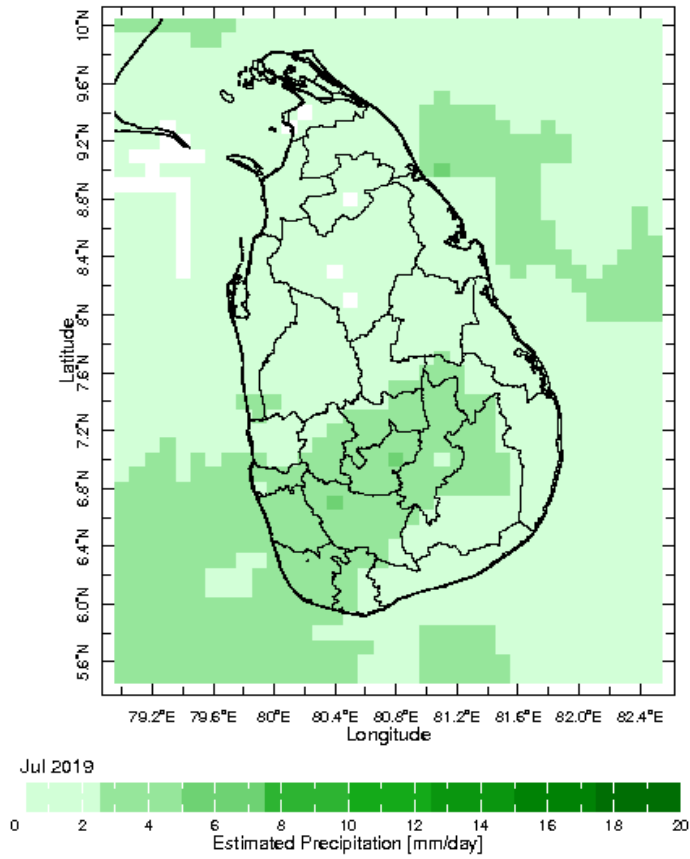


19 Aug 2019

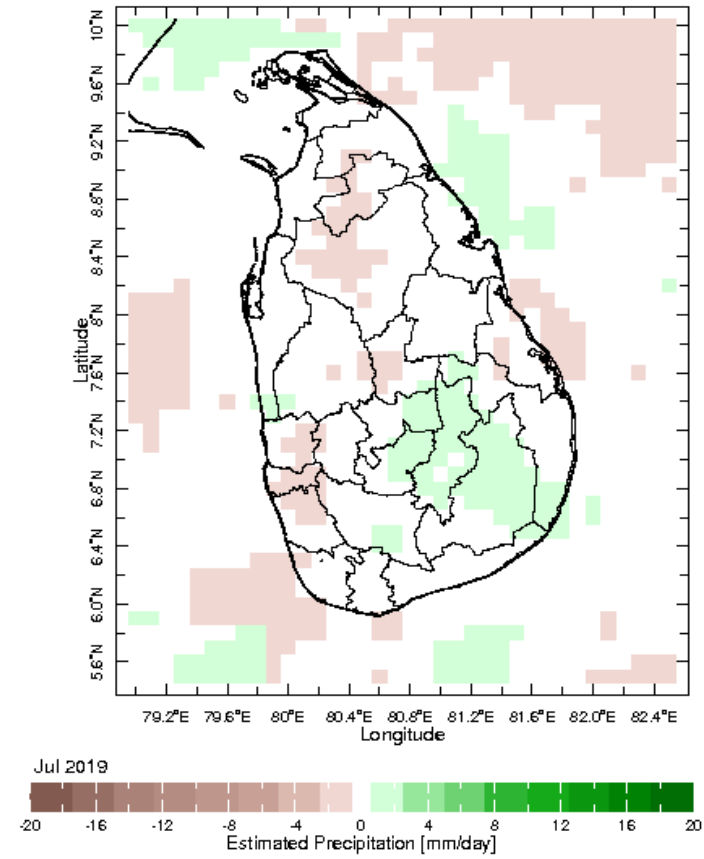


## Monthly Rainfall Monitoring

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

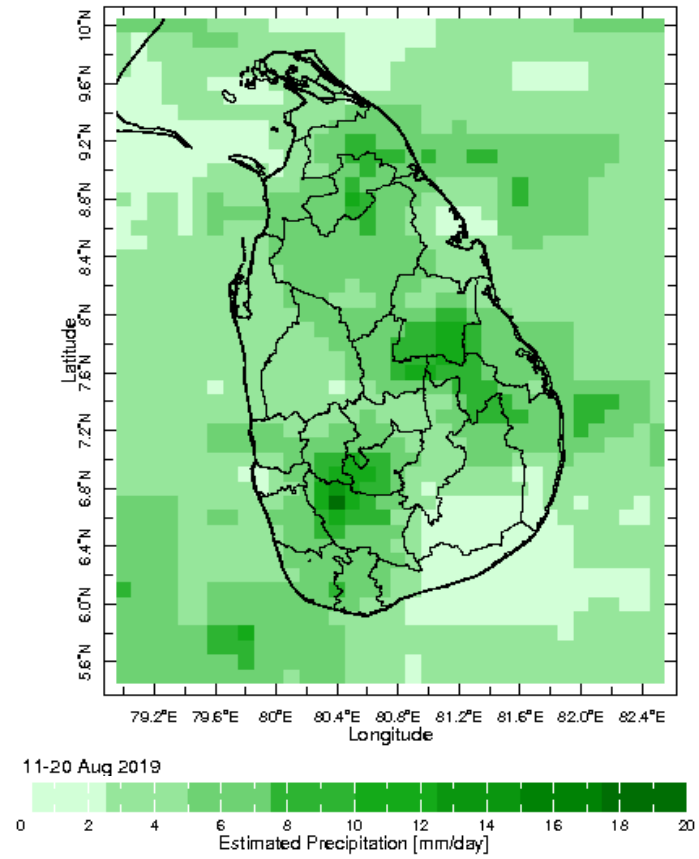
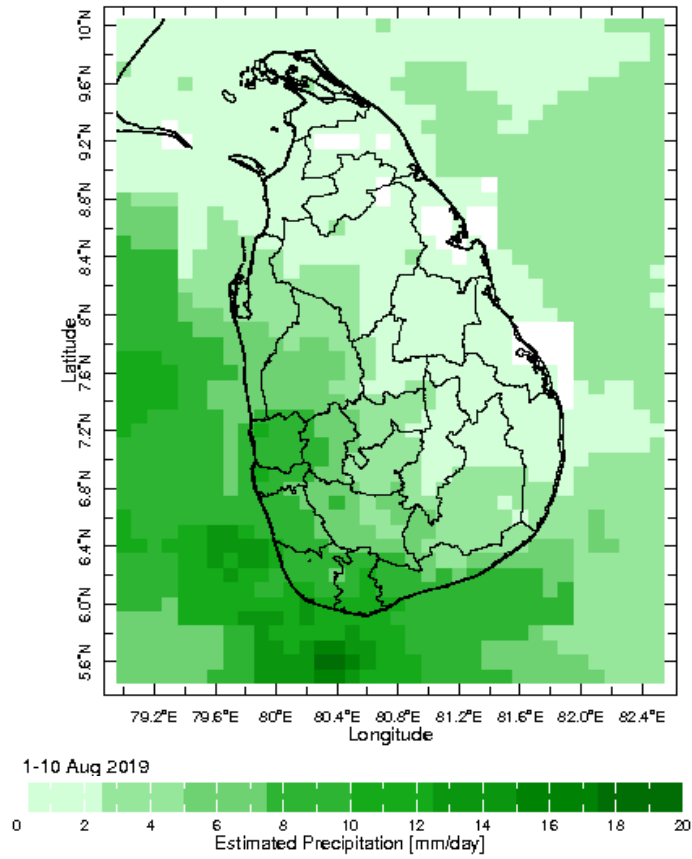


**Monthly Average**



**Monthly Anomaly**

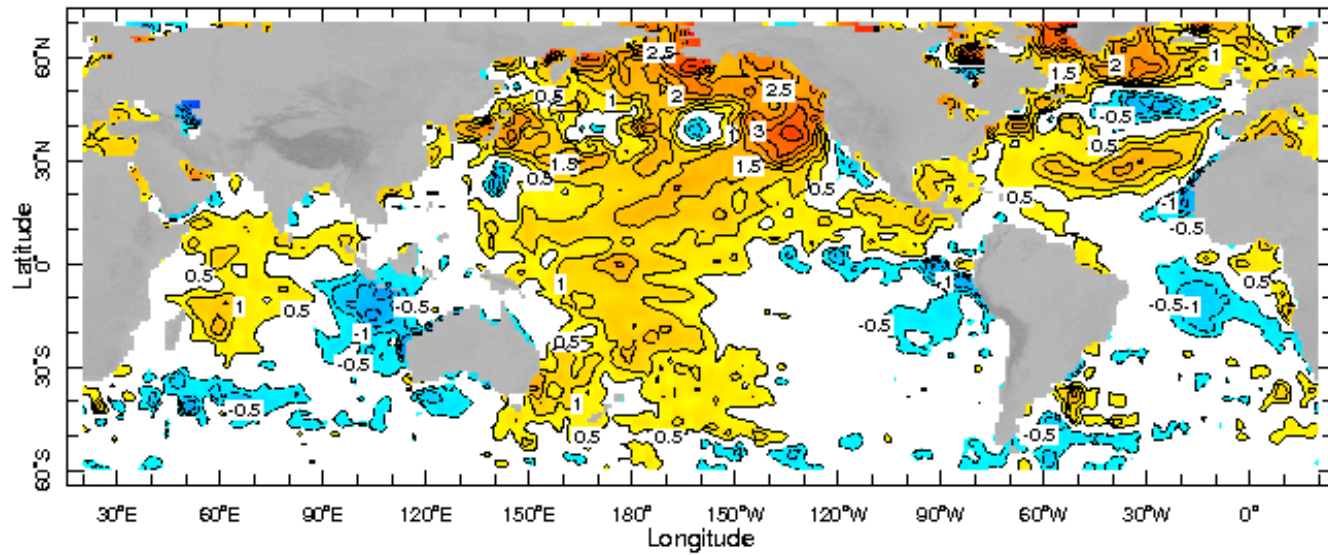
**Dekadal (10 Day) Satellite Derived Rainfall Estimates**



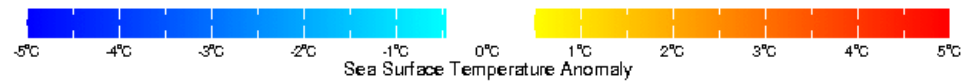
## Weekly Average SST Anomalies

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





14 Aug 2019

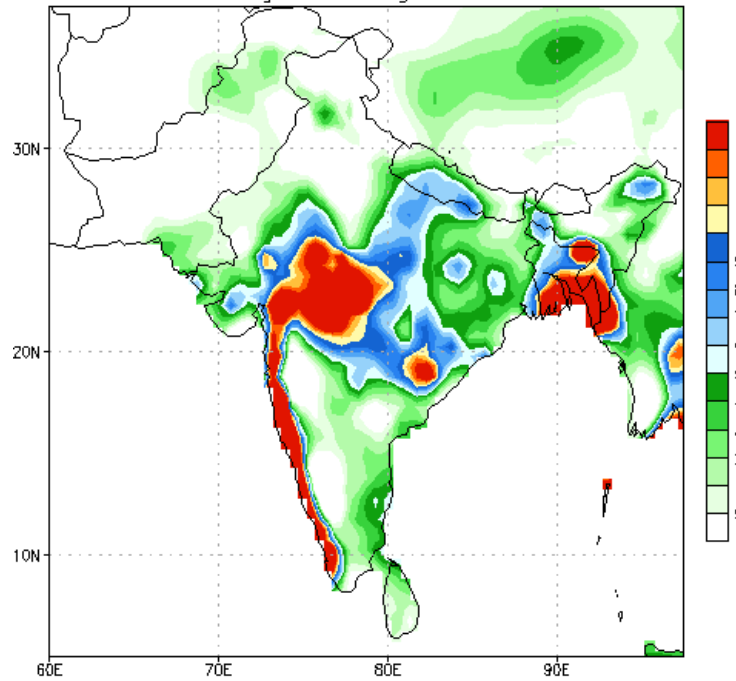


*WORLDBATH topography*

## PREDICTIONS

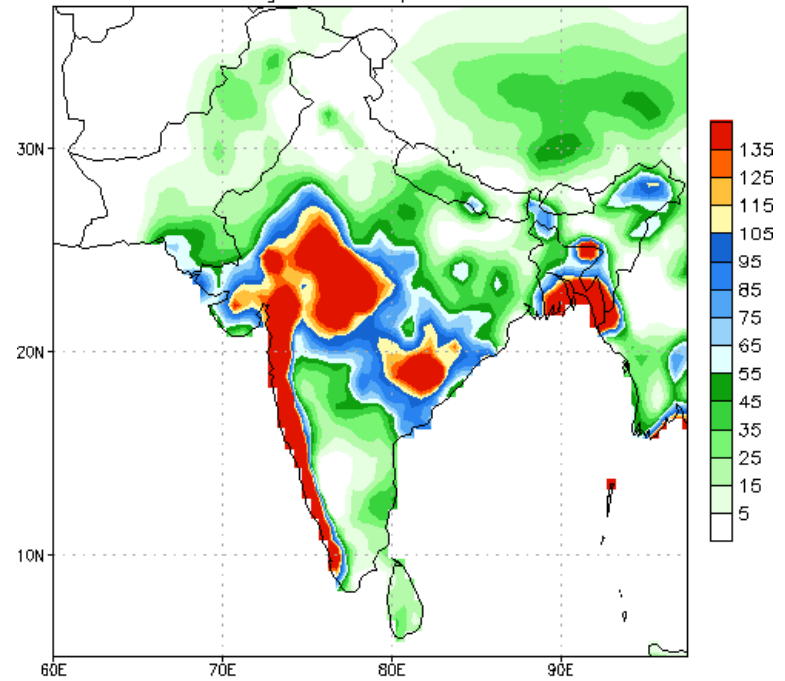
NCEP GFS 1- 14 Day prediction

NCEP GFS Ensemble Forecast 1-7 Day Precipitation (mm)  
from: 21Aug2019  
21Aug2019-27Aug2019 Accumulation



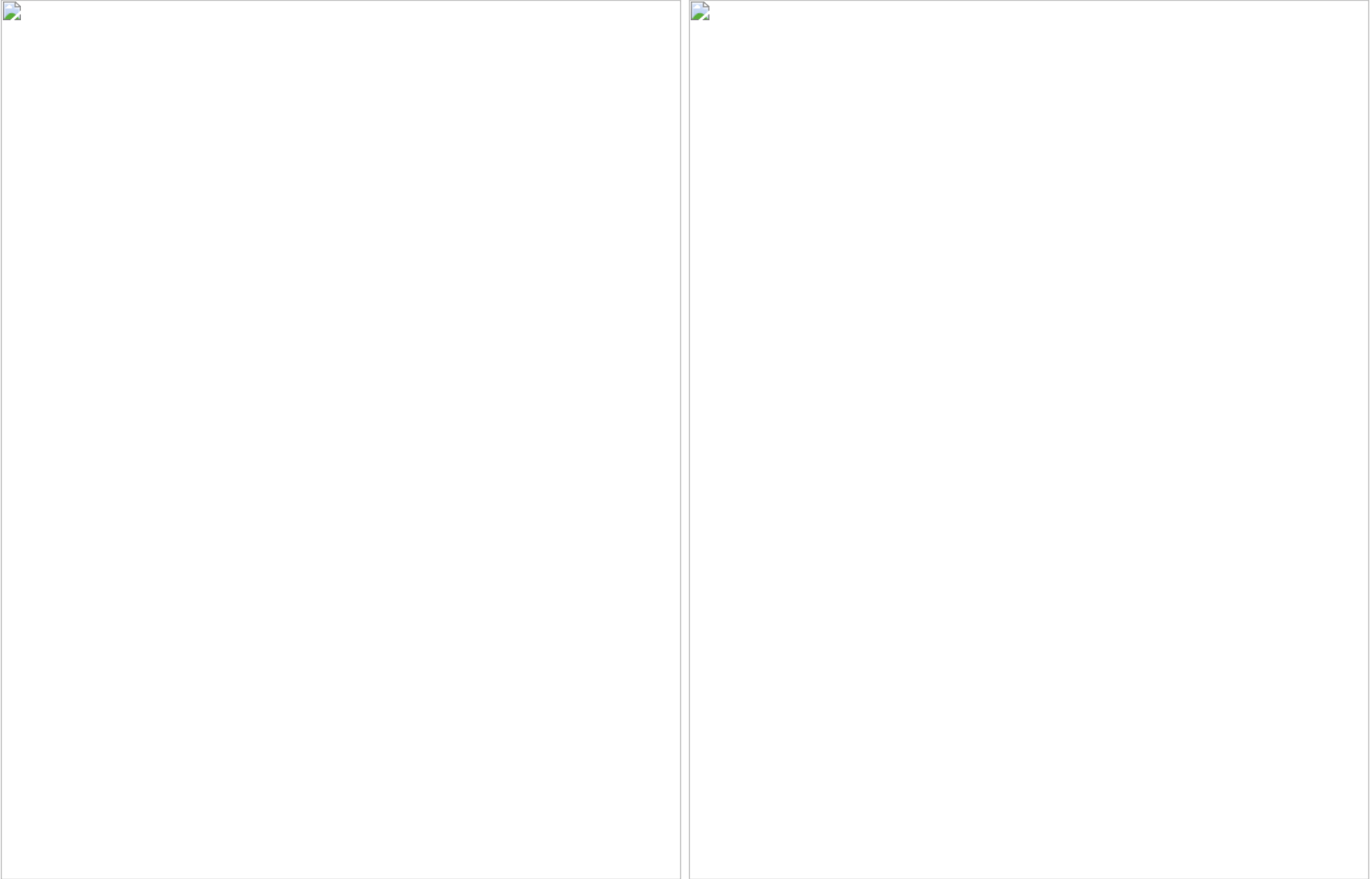
Bias correction based on last 30-day forecast error

NCEP GFS Ensemble Forecast 8-14 Day Precipitation (mm)  
from: 21Aug2019  
28Aug2019-03Sep2019 Accumulation



Bias correction based on last 30-day forecast error

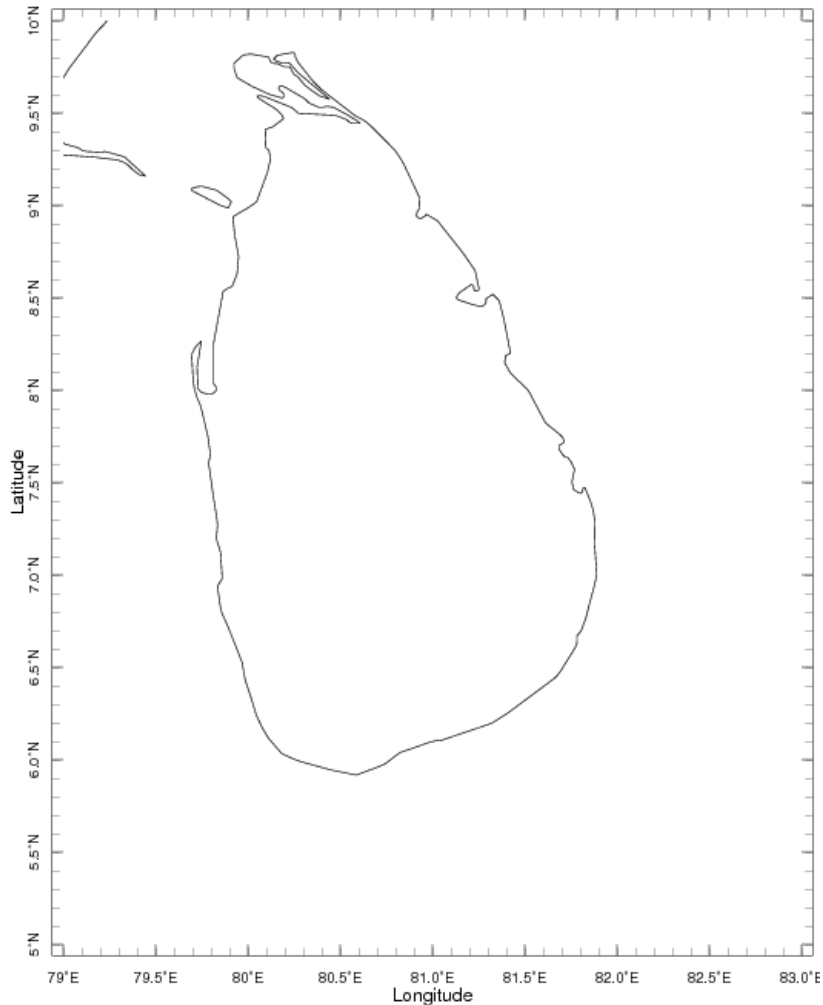
## WRF Model Forecast (from IMD Chennai)



Weekly Rainfall Forecast from IRI

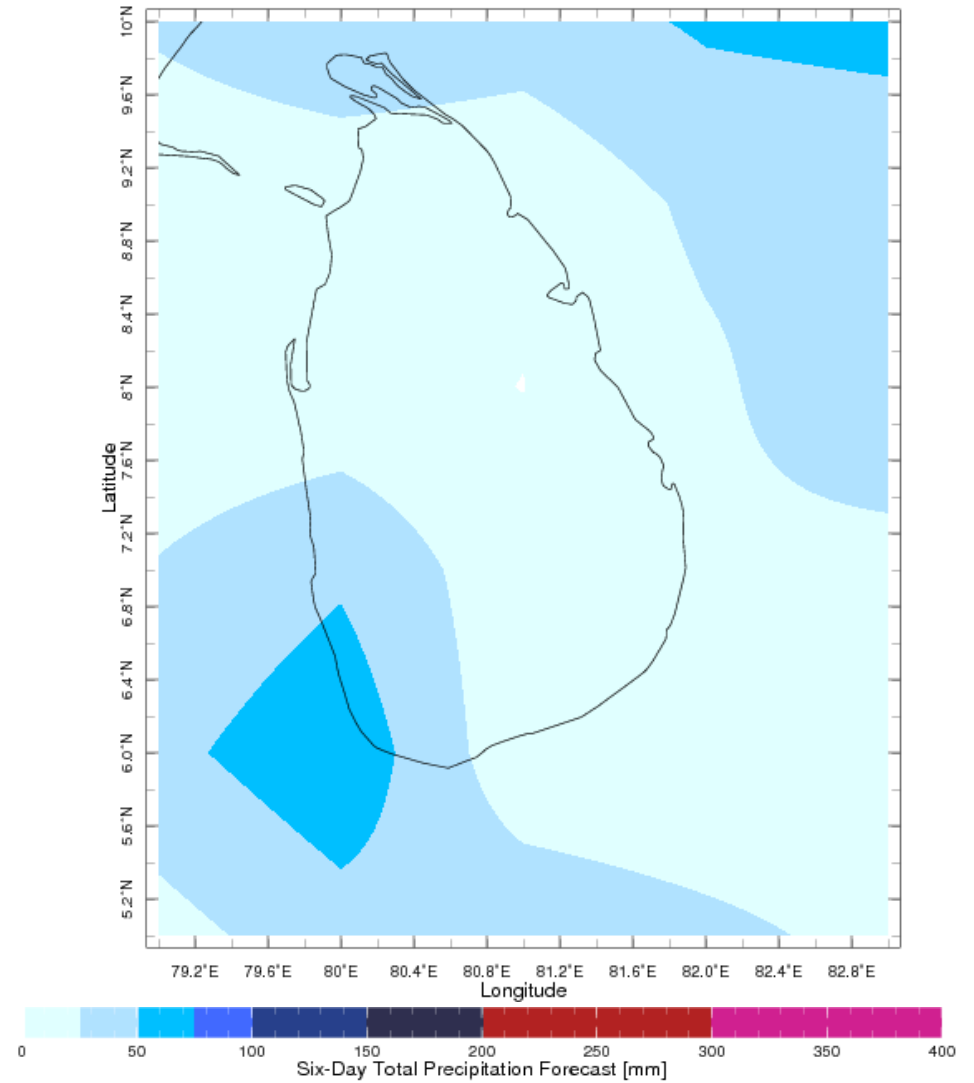
Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.

Forecast for 21-26 Aug 2019 Issued 0000 21 Aug 2019



Extreme Rainfall Forecast

Forecast for 21-26 Aug 2019 Issued 0000 21 Aug 2019



Total Six Day Precipitation Forecast