

## Experimental Climate Monitoring and Prediction

by: Ruchira Lokuhetti, Chalani Malge, Janan Visvanathan,  
Lareef Zubair and Michael Bell<sup>1</sup> (FECT and IRI<sup>1</sup>)

21 September 2017

### Highlights

- The WRF model predicts up to 36 mm of total rainfall in the western coastal regions on the 22<sup>nd</sup>.
- Between 13 - 19 Sep: Rainfall up to 30 mm was recorded in Jaffna and Kiinochchi districts on the 13<sup>th</sup>.
- From 3 - 9 Sep: minimum temperature of 20 °C was recorded from Nuwara Eliya district while most parts of the island recorded a maximum temperature between 30-35 °C.
- From 12 - 18 Sep: up to 54 km/h, southwesterly winds were experienced by the entire country.
- 0.5 °C above average sea surface temperature was observed in the northern and eastern seas around Sri Lanka.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On September 13<sup>th</sup>, Jaffna and Kilinochchi districts received up to 30 mm of rainfall; Puttalam, Kurunegala, Gampaha, Kegalla, Colombo and Kalutara districts up to 20 mm; and many parts of the island up to 10 mm. On the 14<sup>th</sup> Gampaha, Colombo, Kegalla and Ratnapura districts received up to 10 mm of rainfall. On the 15<sup>th</sup> Ampara and several regions of Monaragala districts received up to 10 mm of rainfall. On the 16<sup>th</sup> Kalutara, Galle and Ratnapura districts received up to 20 mm of rainfall; and many southwestern parts of the island up to 10 mm. On the 17<sup>th</sup> Kurunegala district received up to 20 mm of rainfall; and many central and western parts of the island up to 10 mm. No significant rainfalls were recorded in any part of the island during 18<sup>th</sup> and 19<sup>th</sup>.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall of 25-50 mm in Puttalam, Kurunegala, Kalutara and Ratnapura districts; and 25-50 mm Kegalla, Matale, Kandy, Nuwara Eliya, Galle and Matara districts. It shows below average rainfall up to and 10-25 mm in Trincomalee, Anuradhapura, Polonnaruwa, Badulla, Monaragala, Galle, Matara and Hambantota districts.

**Monthly Monitoring:** During August - below average rainfall conditions were experienced in the southern and western regions of the island and above average rainfall in northern and eastern regions. Gampaha, Colombo, Kalutara, Galle, Matara, Kegalla, Nuwara Eliya and Hambantota districts received up to 150 mm below average rainfall. Batticaloa, Ampara and Monaragala districts received up to 180 mm of above average rainfall; and Mannar, Anuradhapura, Polonnaruwa, Trincomalee, Ampara and northern regions of Puttalam and Badulla districts up to 150 mm. The CPC Unified Precipitation Analysis tool shows ~300 mm of total rainfall in Batticaloa, Polonnaruwa, Monaragala, Badulla, Ratnapura, Anuradhapura and Ampara districts; up to ~200 mm in Trincomalee, Puttalam, Matale, Kandy, Kalutara and Galle districts; up to 100 mm in Jaffna, Kilinochchi, Mullaitivu, Kurunegala, Matara and Hambantota districts; and up to 50 mm in many parts of the island.

#### Ocean State (Text Courtesy IRI)

##### **Pacific sea state: September 19, 2017**

In mid-September 2017, the tropical Pacific remained in an ENSO-neutral state, although SSTs in the east-central tropical Pacific have cooled to the threshold for La Niña while the atmosphere continues to maintain largely ENSO-neutral patterns. The collection of latest ENSO prediction models indicates coolish ENSO-neutral or weak La Niña as two possible scenarios during Northern Hemisphere fall and winter. The official CPC/IRI outlook slightly favors La Niña development, and carries a La Niña watch.

## **Indian Ocean State**

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

## **Predictions**

### **Rainfall**

#### **14-day prediction:**

##### **NOAA NCEP models:**

From 20<sup>th</sup> – 26<sup>th</sup> Sep: Total rainfall between 45-55 mm in Colombo, Kegalla, Ratnapura and Galle districts; and between 35-45 mm Gampaha, Kurunegala and Matara districts.

From 27<sup>th</sup> Sep – 3<sup>rd</sup> Oct : Total rainfall between 65-75 mm in Kalutara and Galle districts; between 45-55 mm in Colombo, Kegalla, Ratnapura and Matara districts; and between 35-45 mm Puttalam, Gampaha, Kurunegala and Hambantota districts.

#### **IMD WRF Forecast:**

22<sup>nd</sup> Sep: Up to 36 mm of rainfall in Puttalam, Gampaha, Colombo, Kalutara, Galle and Ratnapura districts; and up to 7.6 mm in many parts of the island.

23<sup>rd</sup> Sep: Up to 7.6 mm of rainfall in Kilinochchi, Mulaitivu, Mannar, Anuradhapura, Polonnaruwa, Puttalam, Gampaha, Colombo, Kalutara, Galle and Hambantota districts.

#### **IRI Model Forecast:**

20<sup>th</sup>- 25<sup>th</sup> Sep: Total rainfall up to 50 mm in northern coastal regions of Jaffna district.

### **MJO based OLR predictions**

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

MJO shall not have a significant impact on the rainfall in Sri Lanka.

<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/>



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## Weekly Hydro- Meteorological Report for Sri Lanka

### Inside This Issue

#### 1. Monitoring

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

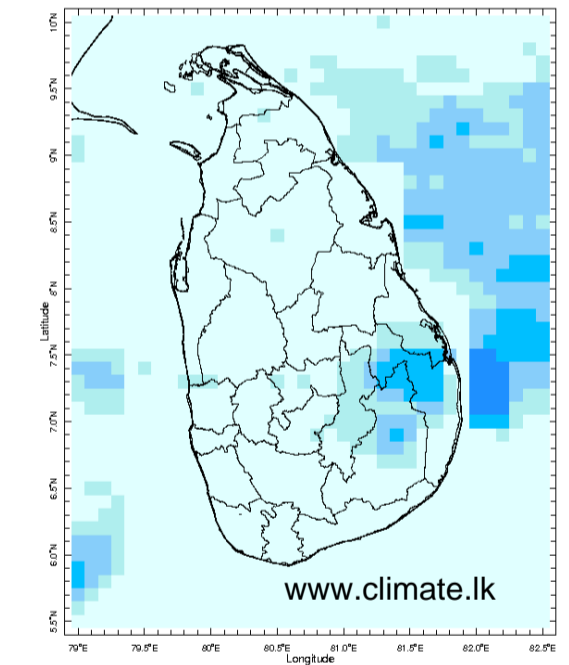
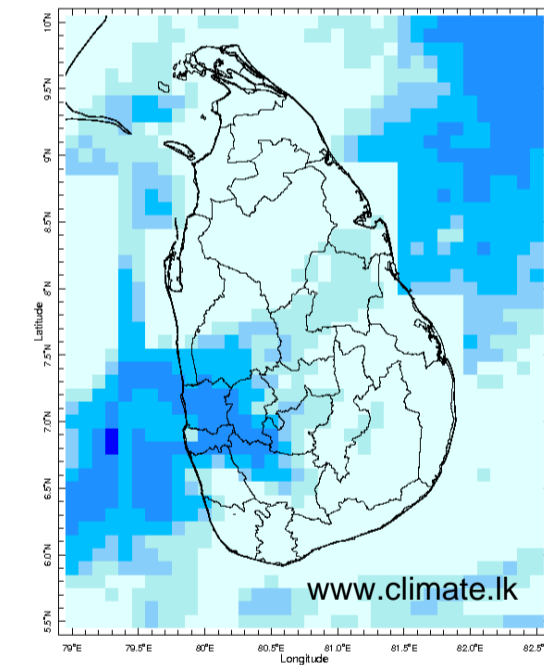
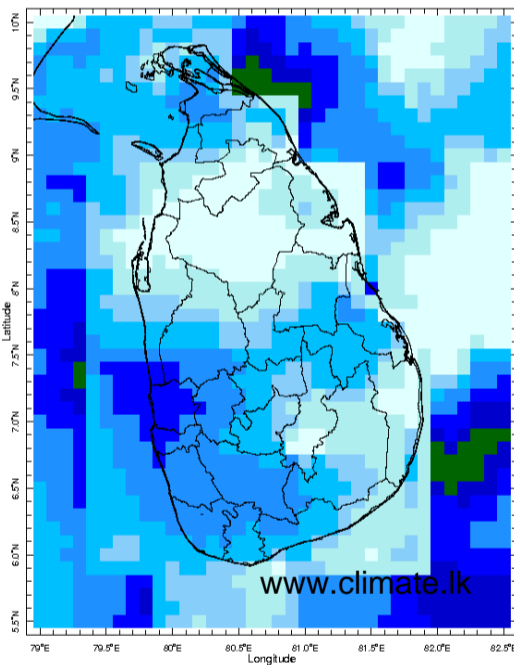
#### 2. Predictions

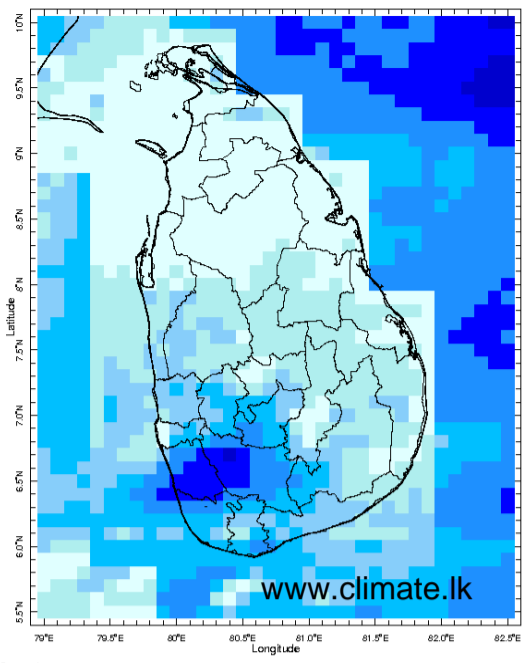
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

## MONITORING

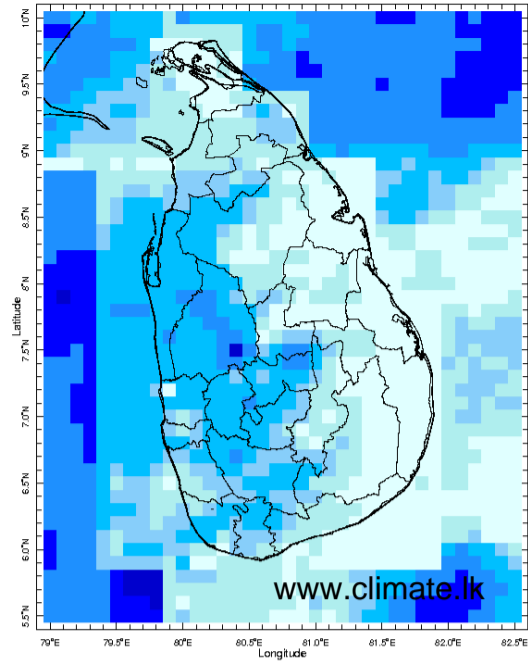
### Daily Rainfall Monitoring

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

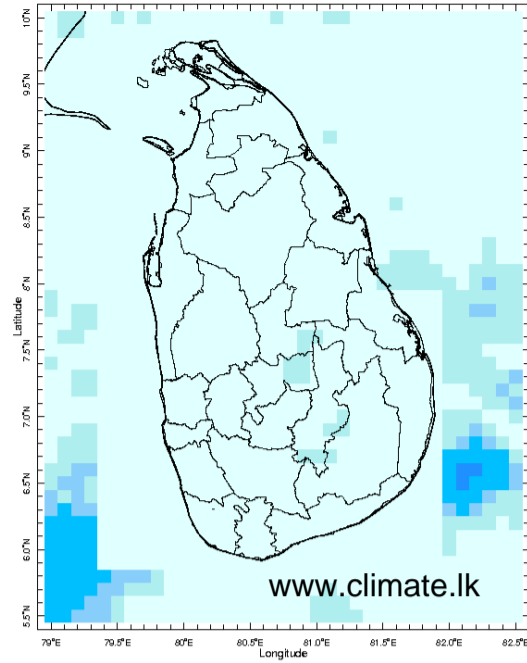




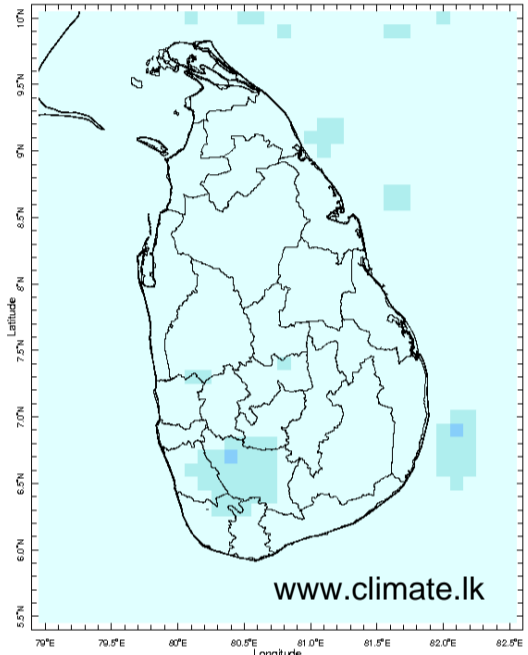
16 Sep 2017



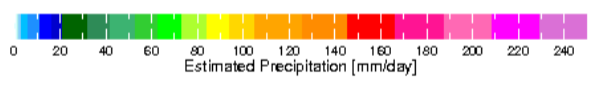
17 Sep 2017



18 Sep 2017

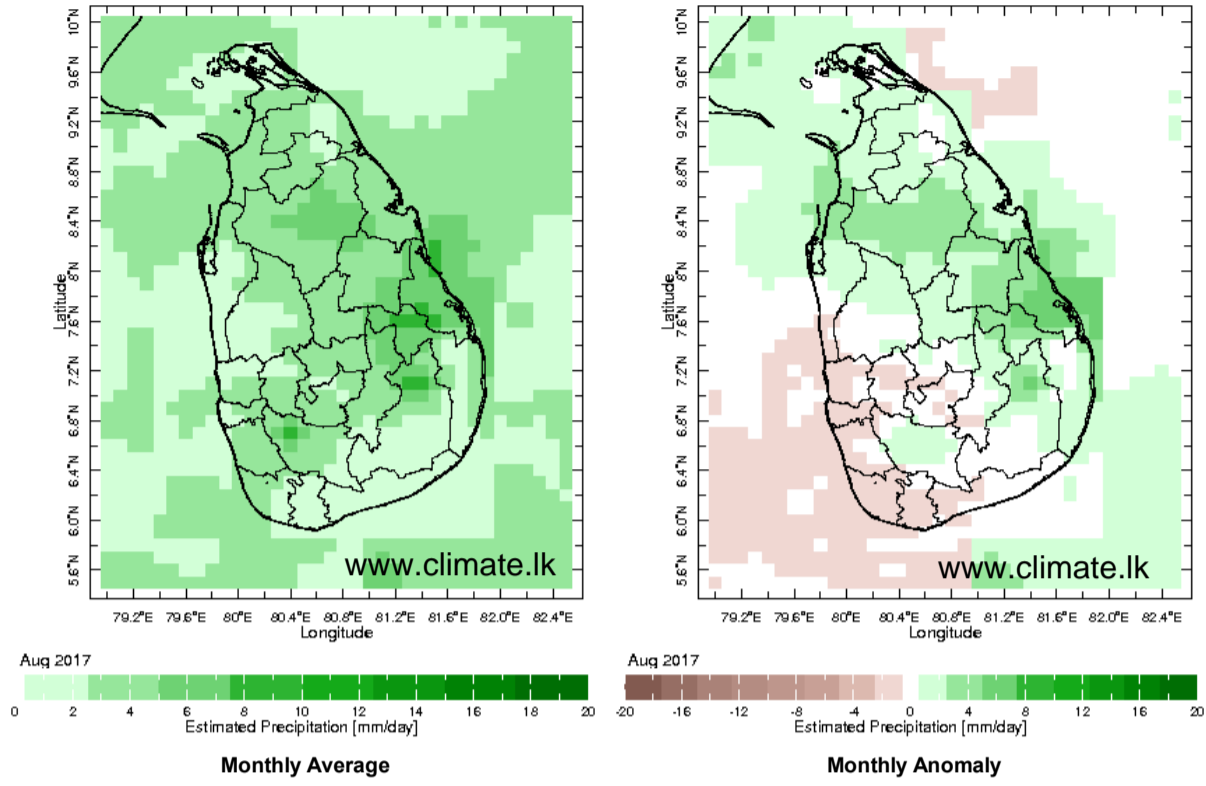


19 Sep 2017

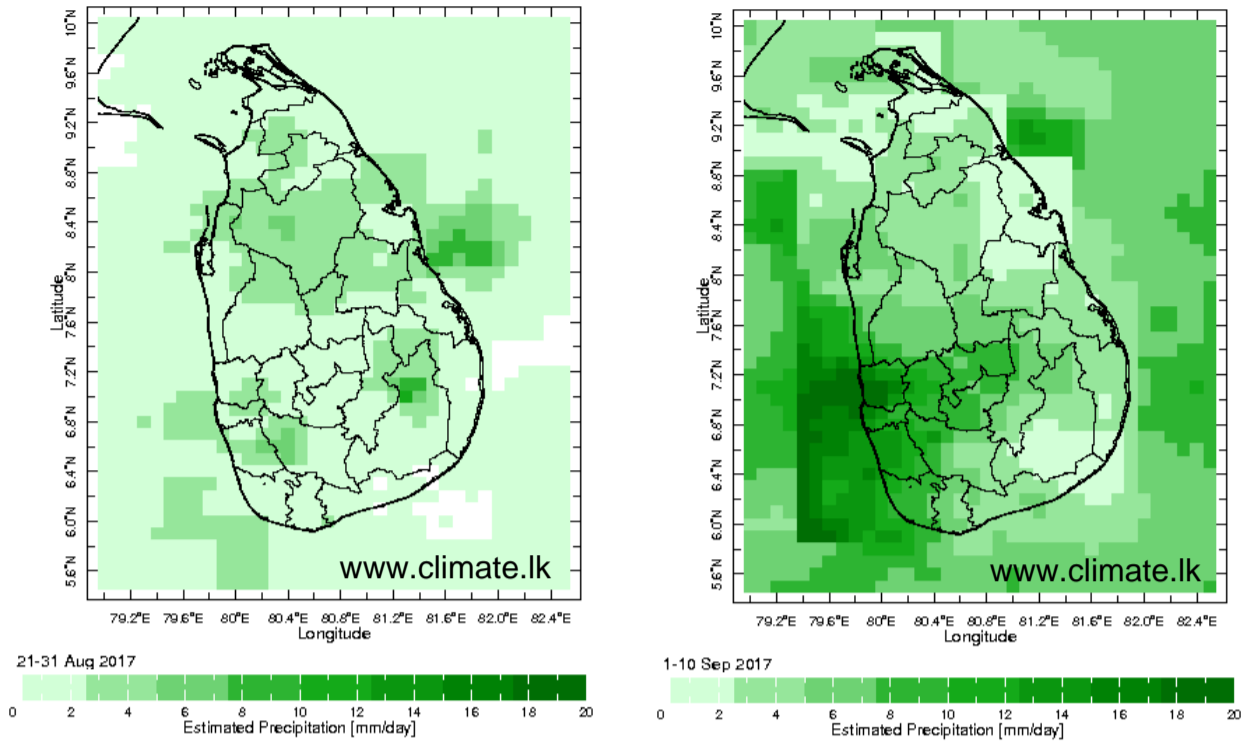


## Monthly Rainfall Monitoring

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

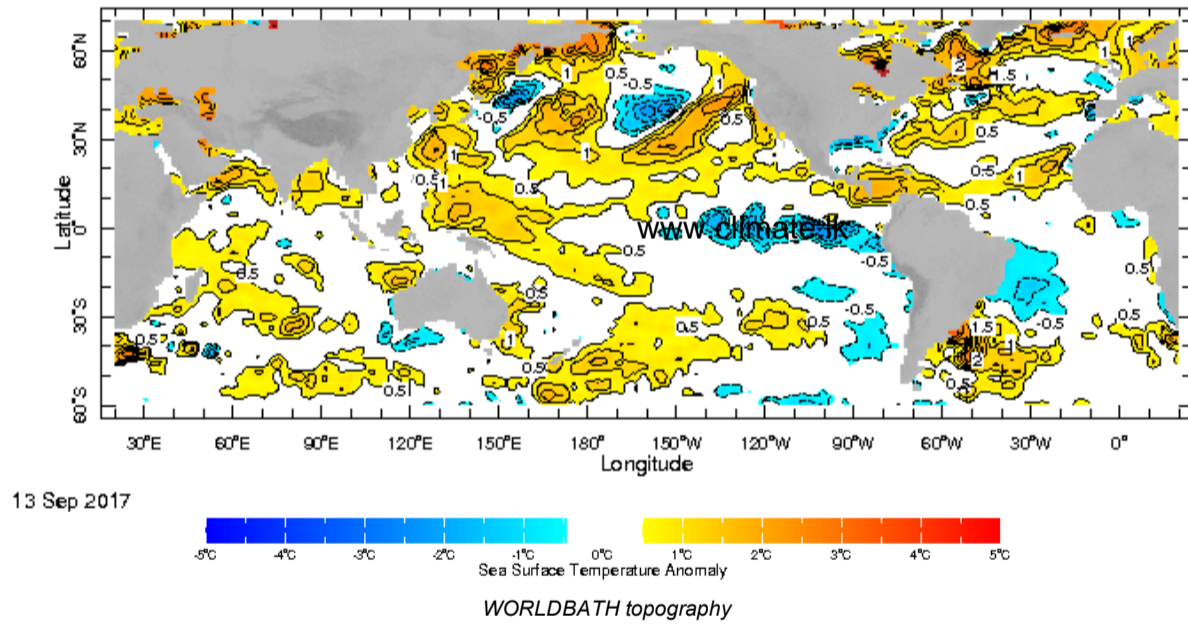


## Dekadal (10 Day) Satellite Derived Rainfall Estimates

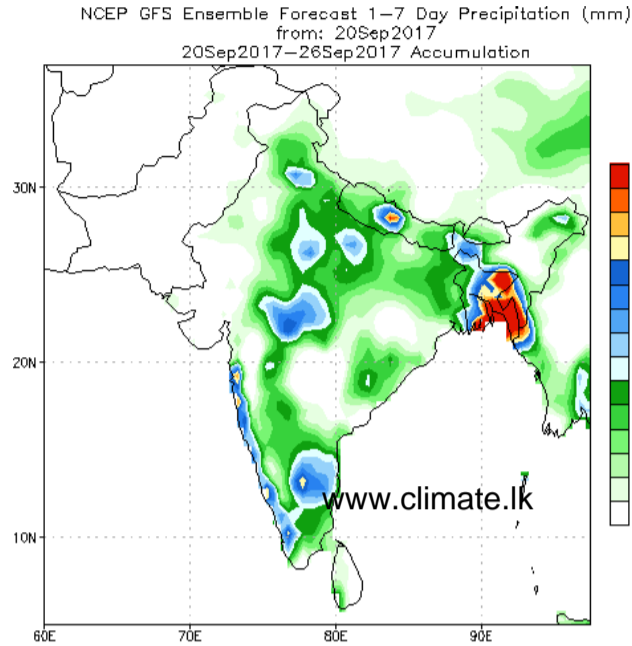


## Weekly Average SST Anomalies

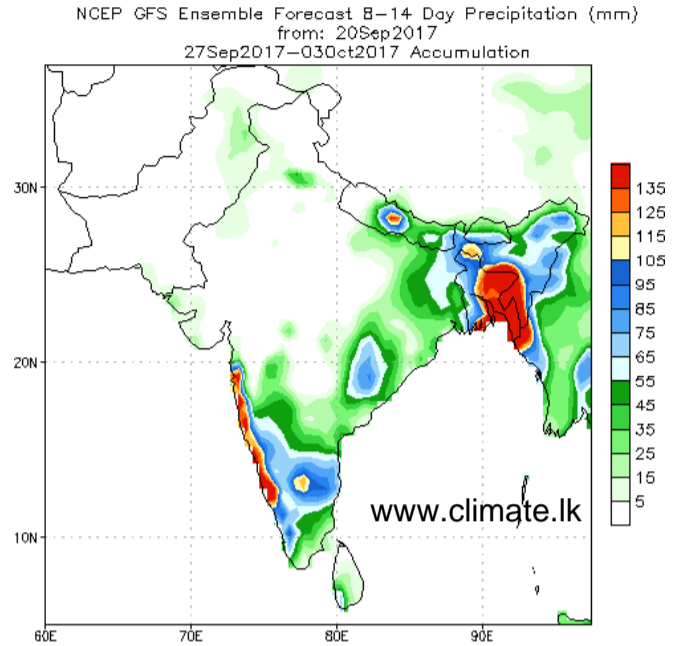
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



**NCEP GFS 1- 14 Day prediction**



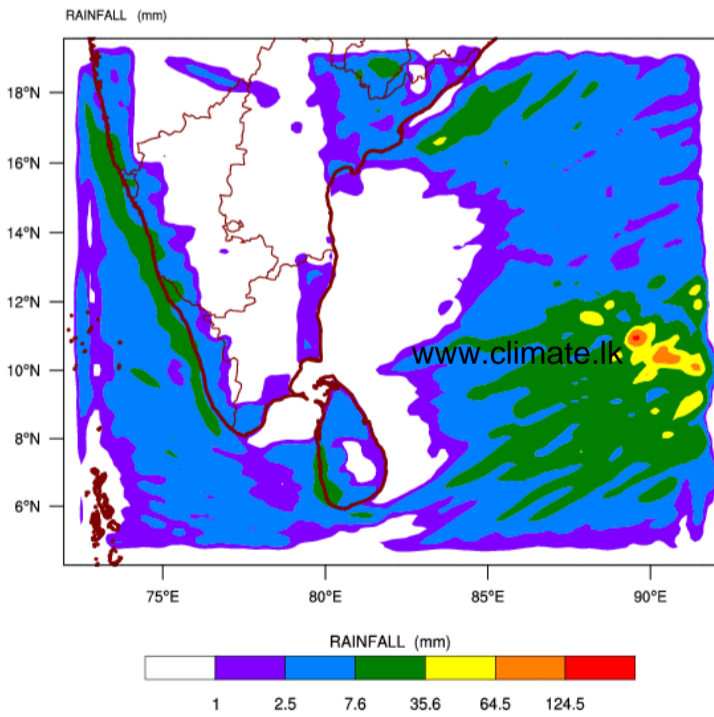
Bias correction based on last 30-day forecast error



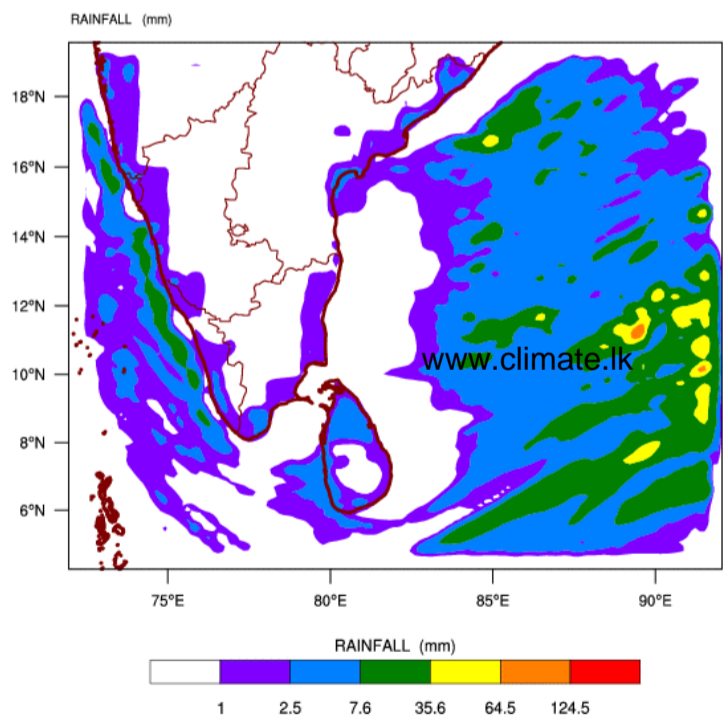
Bias correction based on last 30-day forecast error

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

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 20-09-2017 valid for 03 UTC of 22-09-2017

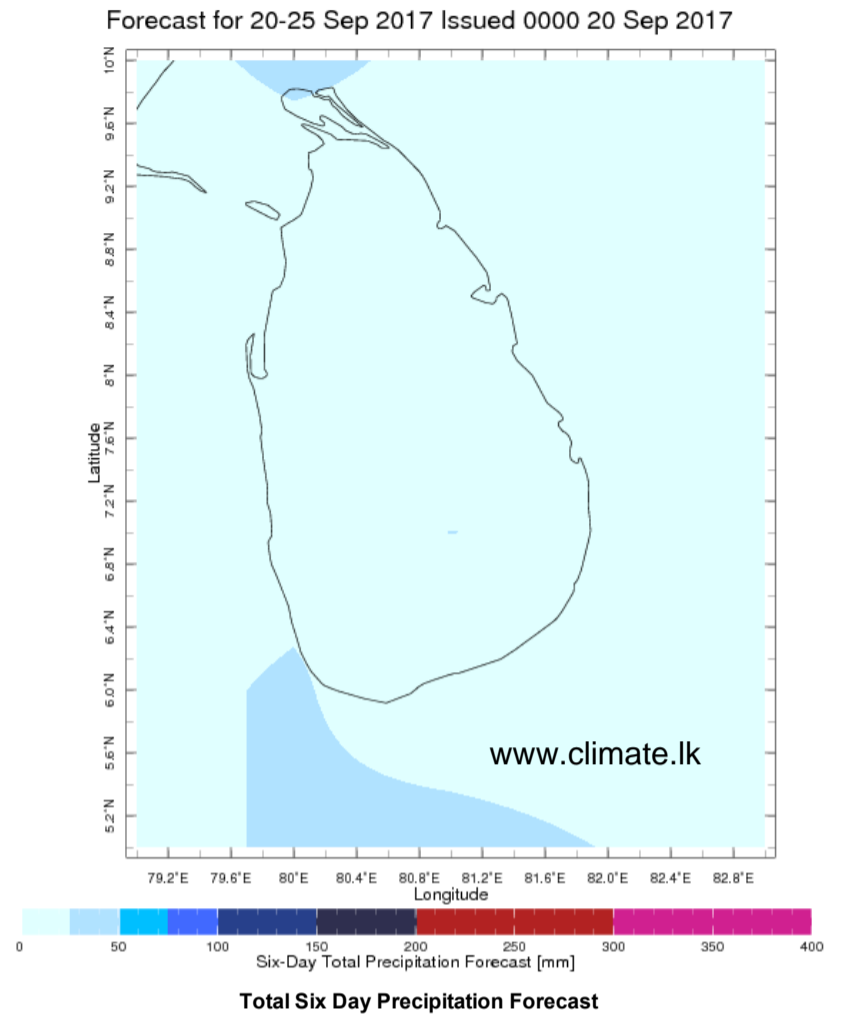
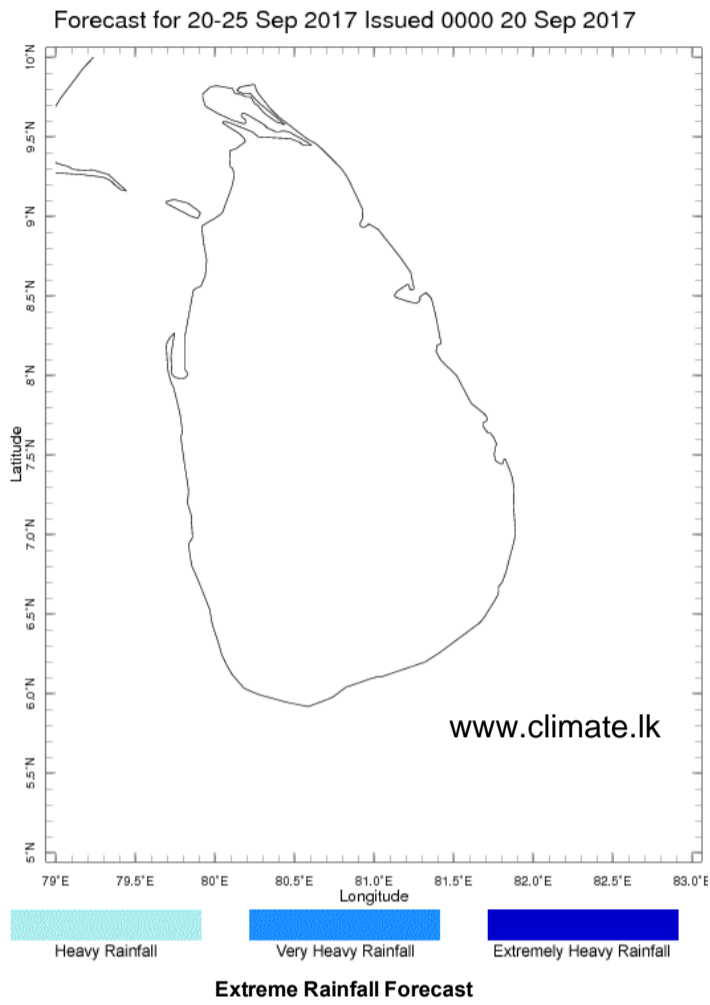


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 20-09-2017 valid for 03 UTC of 23-09-2017



# 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.





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