

## Experimental Climate Monitoring and Prediction

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### Highlights

- *The NCEP weekly rainfall forecast predicts total rainfall up to 55 mm in Gampaha, Kegalla and Ratnapura districts during 3<sup>rd</sup> -9<sup>th</sup> July.*
- *Between 25 Jun – 1 Jul: up to 50 mm of rainfall was recorded in Ampara district on the 29<sup>th</sup>.*
- *From 24-30 Jun: minimum temperature of 20 °C was recorded from Nuwara Eliya and Badulla districts while eastern coastal areas of the island recorded a maximum temperature between 35-40 °C.*
- *From 25 Jun- 1 Jul: up to 36 km/h, northwesterly winds were experienced by the entire island.*
- *0.5 °C above average sea surface temperature was observed in the western seas of Sri Lanka.*

### Monitoring

#### Rainfall

**Weekly Monitoring:** On June 25<sup>th</sup>, several regions of Gampaha, Colombo, Kegalla, Kurunegala, Nuwara Eliya and Badulla districts received up to 10 mm of rainfall. On the 26<sup>th</sup>, Kalutara, Galle and Ratnapura districts received up to 30 mm of rainfall; Matara district up to 20 mm; and Colombo, Nuwara Eliya and Kegalla districts up to 10 mm. On the 27<sup>th</sup>, Kalutara, Galle, Matara, Hambantota and Ratnapura district received up to 5 mm of rainfall. On the 28<sup>th</sup>, Galle and Matara districts received up to 40 mm; Hambantota district up to 30 mm; and Ratnapura and Kalutara districts up to 20 mm. On the 29<sup>th</sup>, Ampara district received up to 50 mm of rainfall; and Batticaloa district up to 40 mm. On the 30<sup>th</sup>, Ampara and Badulla districts received up to 30 mm of rainfall; and Polonnaruwa, Batticaloa, Matale, Monaragala and Hambantota districts up to 20 mm. On July 1<sup>st</sup>, Anuradhapura district received up to 40 mm of rainfall; Vavuniya, Mannar, Matale, Ampara, Batticaloa, Badulla and Monaragala districts up to 30 mm; and Kalutara and Galle districts up to 20 mm.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall 75-100 mm of total rainfall in Ampara district; up to 50-75 mm in Kalutara, Galle, Badulla and Batticaloa districts; and up to 25-50 mm in Polonnaruwa, Matale, Kandy, Nuwara Eliya, Monaragala, Ratnapura and Matara districts. Above average rainfall up to 50-100 mm is shown for Ampara district; and up to 25-50 mm in Anuradhapura, Polonnaruwa, Batticaloa, Badulla and Monaragala districts. Below average rainfall up to 10-25 mm is shown for Gampaha, Colombo, Kurunegala and Kegalla districts.

**Monthly Monitoring:** During June - above average rainfall conditions were experienced by the western and south-western regions of the island. Ratnapura district received up to 210 mm above average rainfall; Kegalla, Nuwara Eliya and Kalutara districts up to 150 mm; and Puttalam, Kurunegala, Colombo, Galle and Matara districts up to 60 mm. The CPC Unified Precipitation Analysis tool shows up to 500 mm of total rainfall in Ratnapura district; up to 300 mm Kegalla, Colombo and Kalutara districts; up to ~200 mm Gampaha, Galle and Nuwara Eliya districts; and up to 150 mm in Jaffna, Vavuniya, Anuradhapura, Trincomalee, Polonnaruwa, Kurunegala, Matale, Kandy, Badulla, Monaragala, Ampara and Hambantota districts.

#### Ocean State (Text Courtesy IRI)

##### **Pacific sea state: June 19, 2018**

In mid-June 2018, the east-central tropical Pacific waters reflected ENSO-neutral conditions, as did all key atmospheric variables. The subsurface water temperature continued to be above-average, and this strengthened further during May. The official CPC/IRI outlook calls for neutral conditions through northern summer season, with a 50% chance of El Niño development during fall, rising to 65% during winter 2018-19. An El Niño watch has been issued. The latest forecasts of statistical and dynamical models collectively favor weak El Niño development during late summer, growing to possibly moderate strength during fall and winter; forecasters are largely buying into this scenario as the spring barrier is now mostly passed.

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

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

## Predictions

### Rainfall

#### 14-day prediction:

##### NOAA NCEP models:

From 3<sup>rd</sup> – 9<sup>th</sup> Jul: Total rainfall between 45-55 mm in Gampaha, Kegalla and Ratnapura districts; between 35-45 mm in Kurunegala district; and 25-35 mm in Puttalam, Matale, Kandy and Nuwara Eliya districts.

From 10<sup>th</sup> – 16<sup>th</sup> Jul: Total rainfall between 65-75 mm in Kegalla and Ratnapura districts; and between 45-55 mm in Gampaha, Kandy, Nuwara Eliya and Galle districts.

##### IMD NCMWRF Forecast:

5<sup>th</sup> Jul: Up to 20 mm of rainfall expected in Anuradhapura district.

6<sup>th</sup> Jul: Up to 80 mm of rainfall expected in Vavuniya, Anuradhapura, Trincomalee, Polonnaruwa, Badulla and Monaragala districts; and up to 20 mm in Mannar, Mullaitivu, Matale, Nuwara Eliya and Hambantota districts.

##### IRI Model Forecast:

From 3<sup>rd</sup> – 8<sup>th</sup> Jul: Total rainfall up to 25 mm expected for the entire island.

### MJO based OLR predictions

#### For the next 15 days:

MJO shall not have an 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/>



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



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## Weekly Hydro- Meteorological Report for Sri Lanka

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#### 1. Monitoring

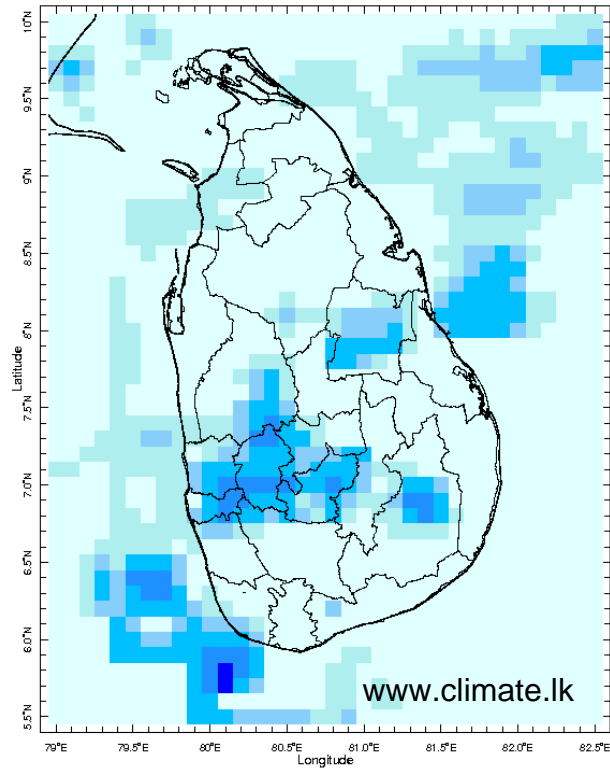
- a. Daily Rainfall Monitoring
- b. Monthly Rainfall Monitoring
- c. Dekadal (10 Day) Satellite Derived Rainfall Estimates
- d. Weekly Average SST Anomalies

#### 2. Predictions

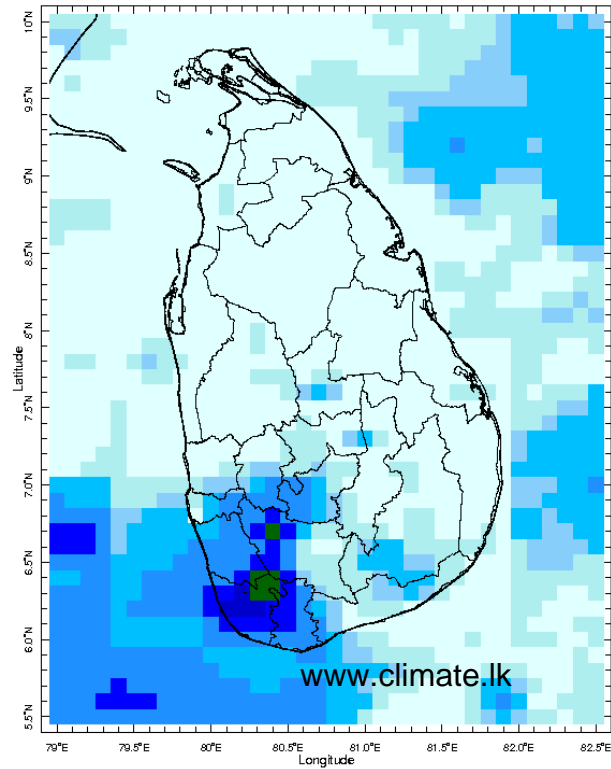
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

## Daily Rainfall Monitoring

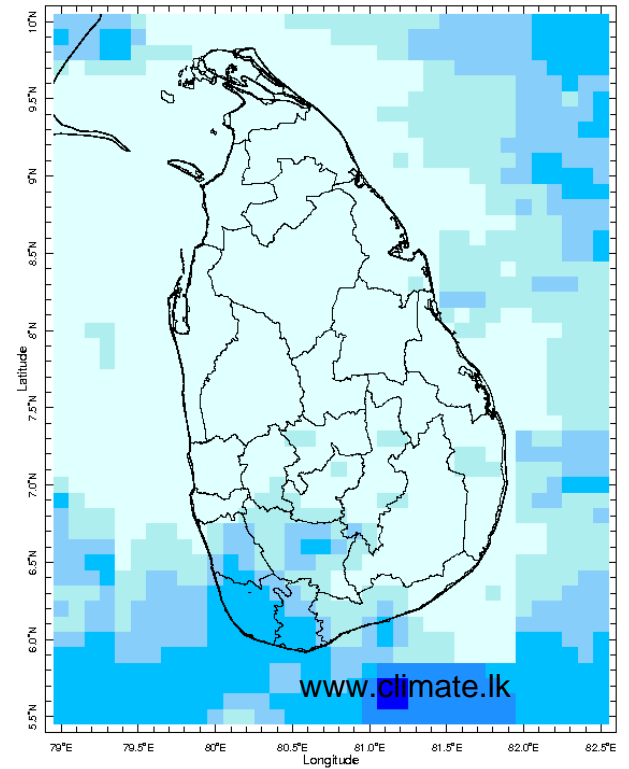
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



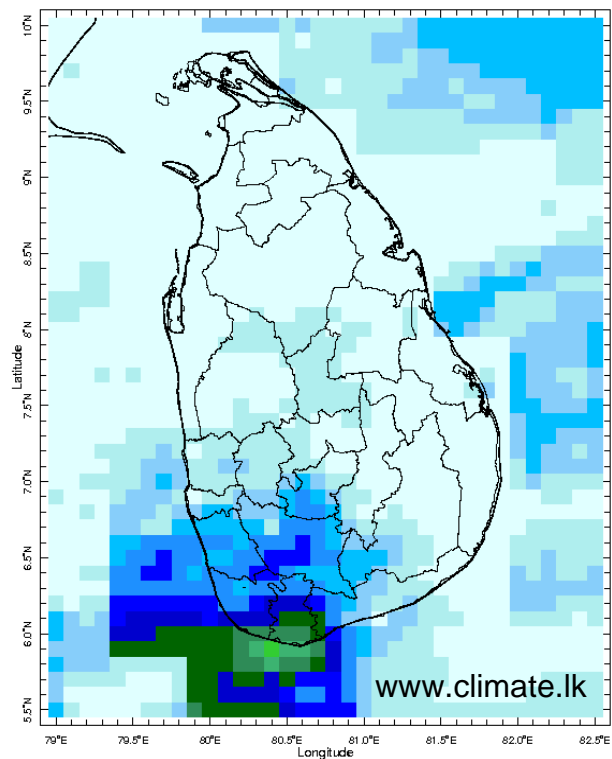
25 Jun 2018



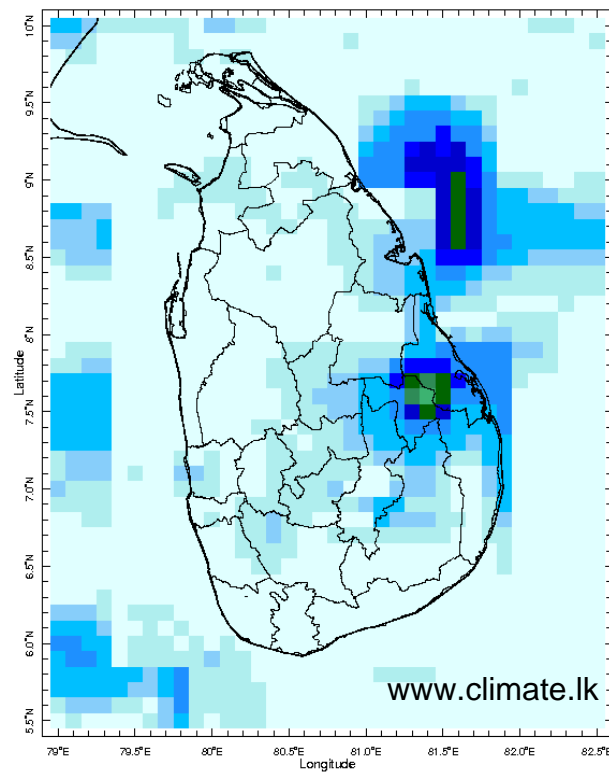
26 Jun 2018



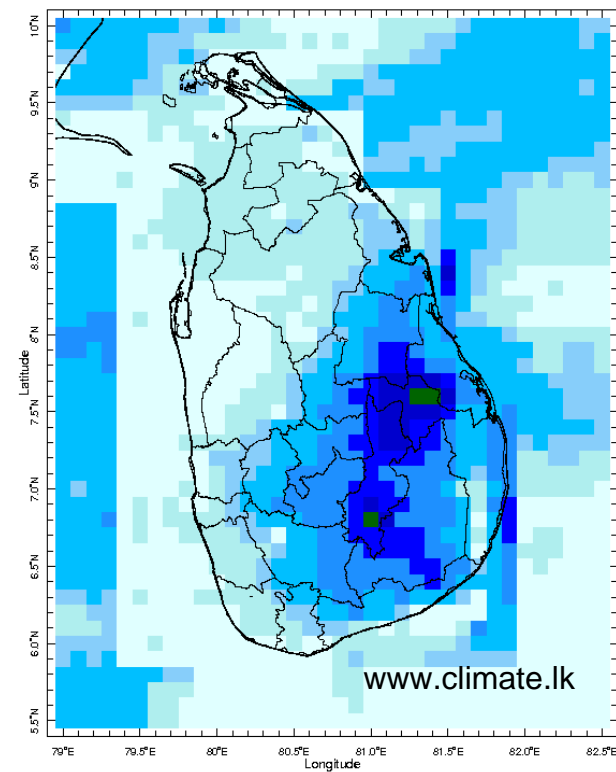
27 Jun 2018



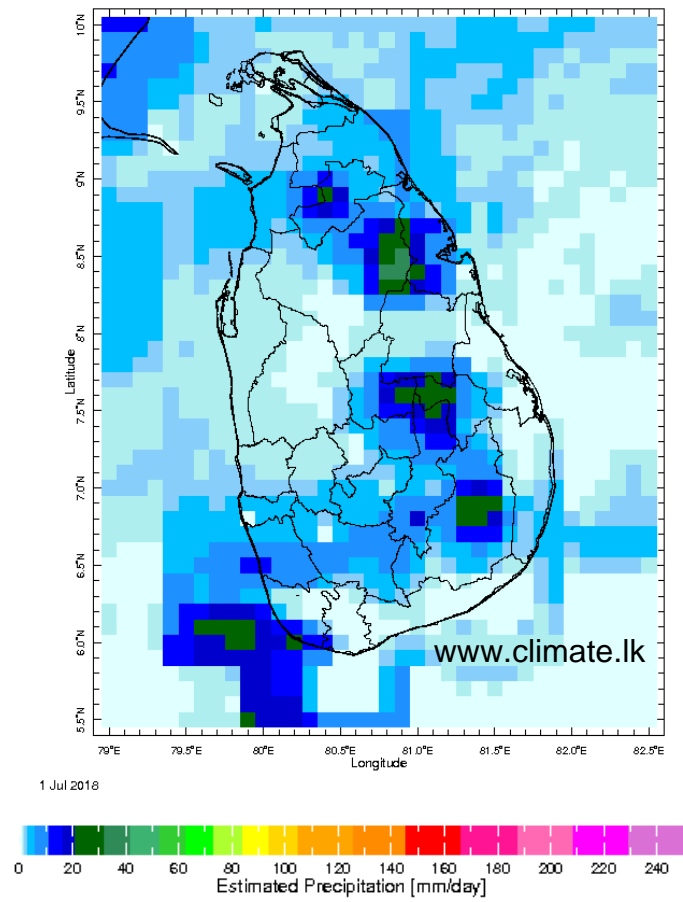
28 Jun 2018



29 Jun 2018

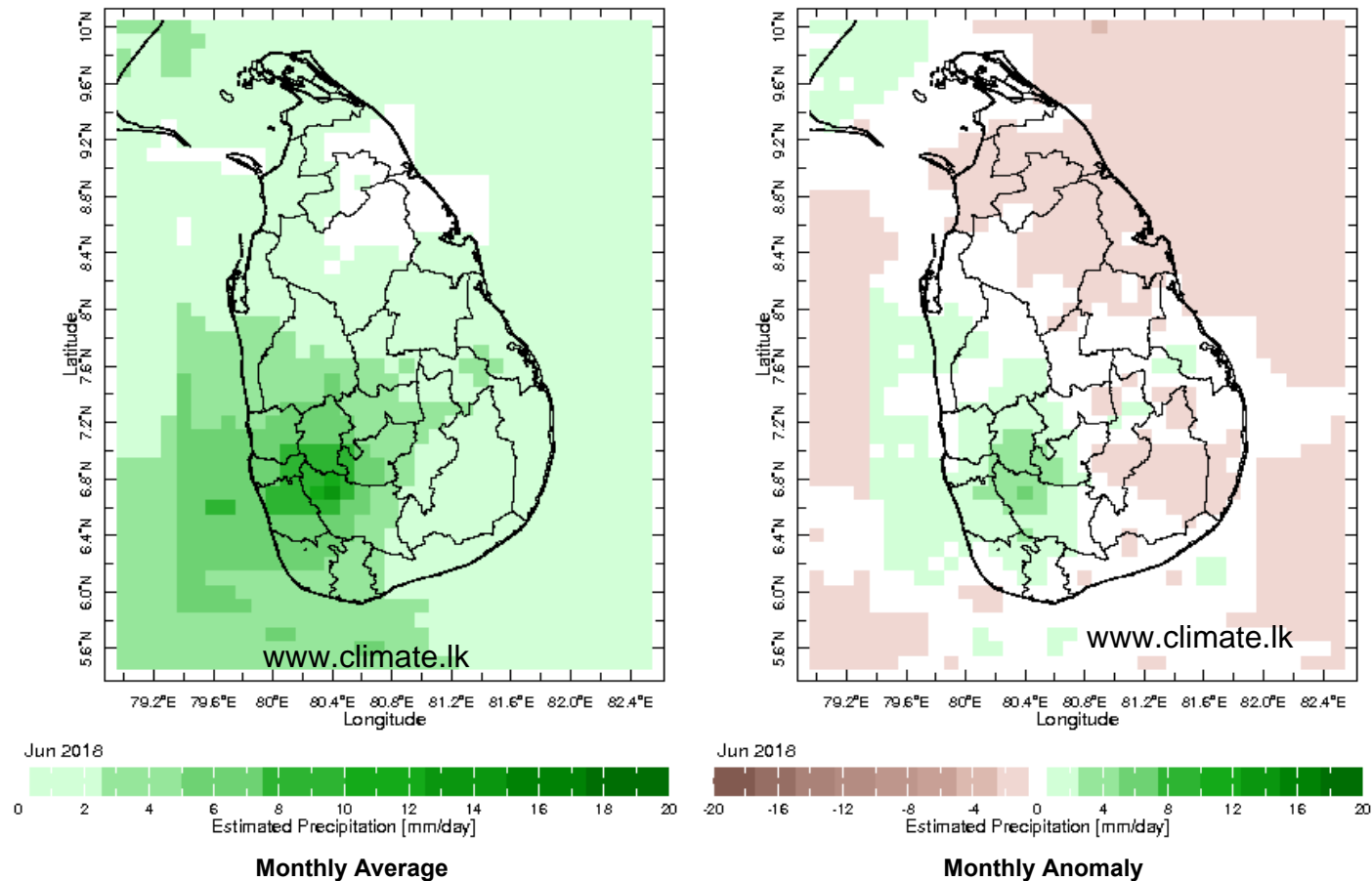


30 Jun 2018

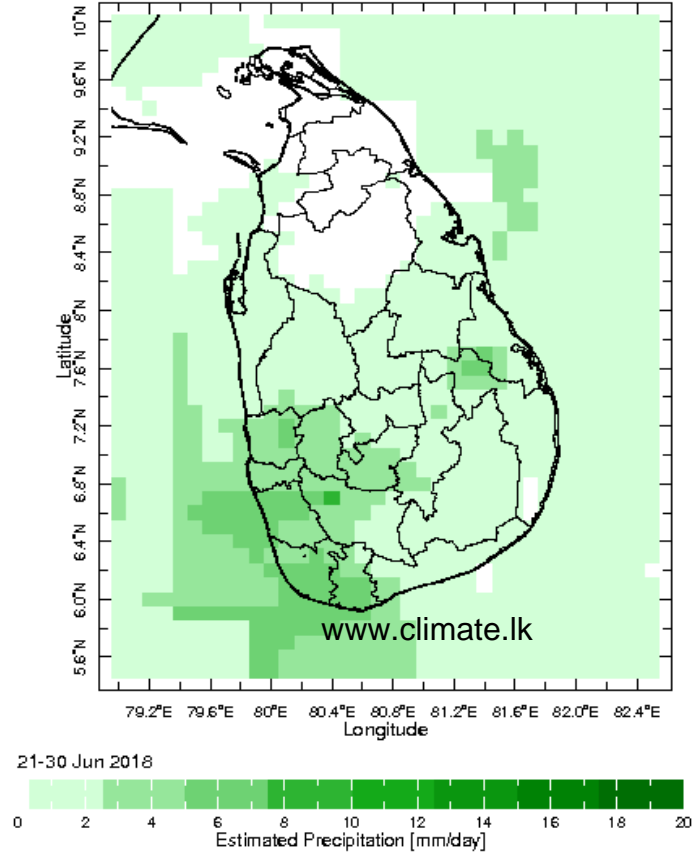
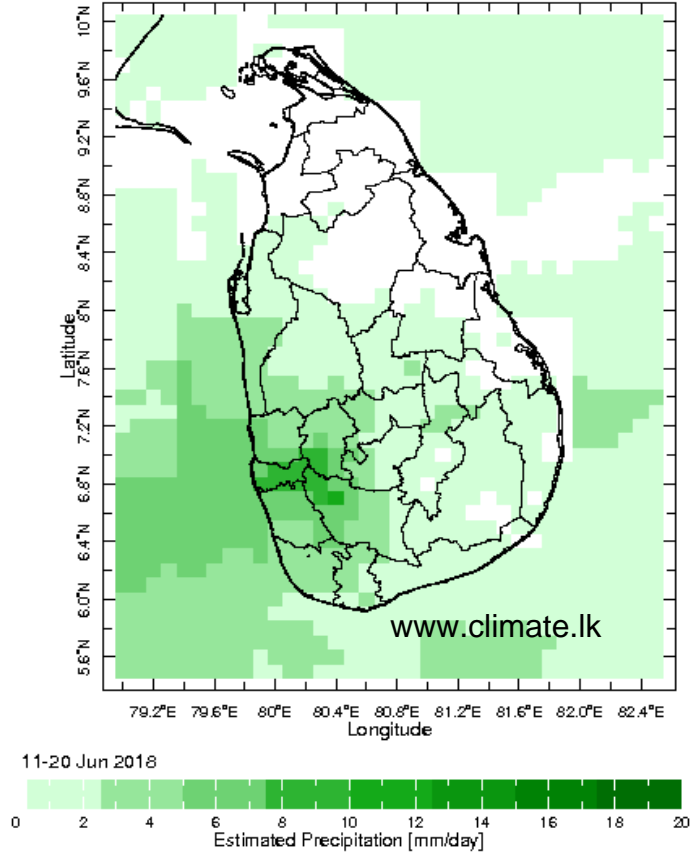


## Monthly Rainfall Monitoring

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



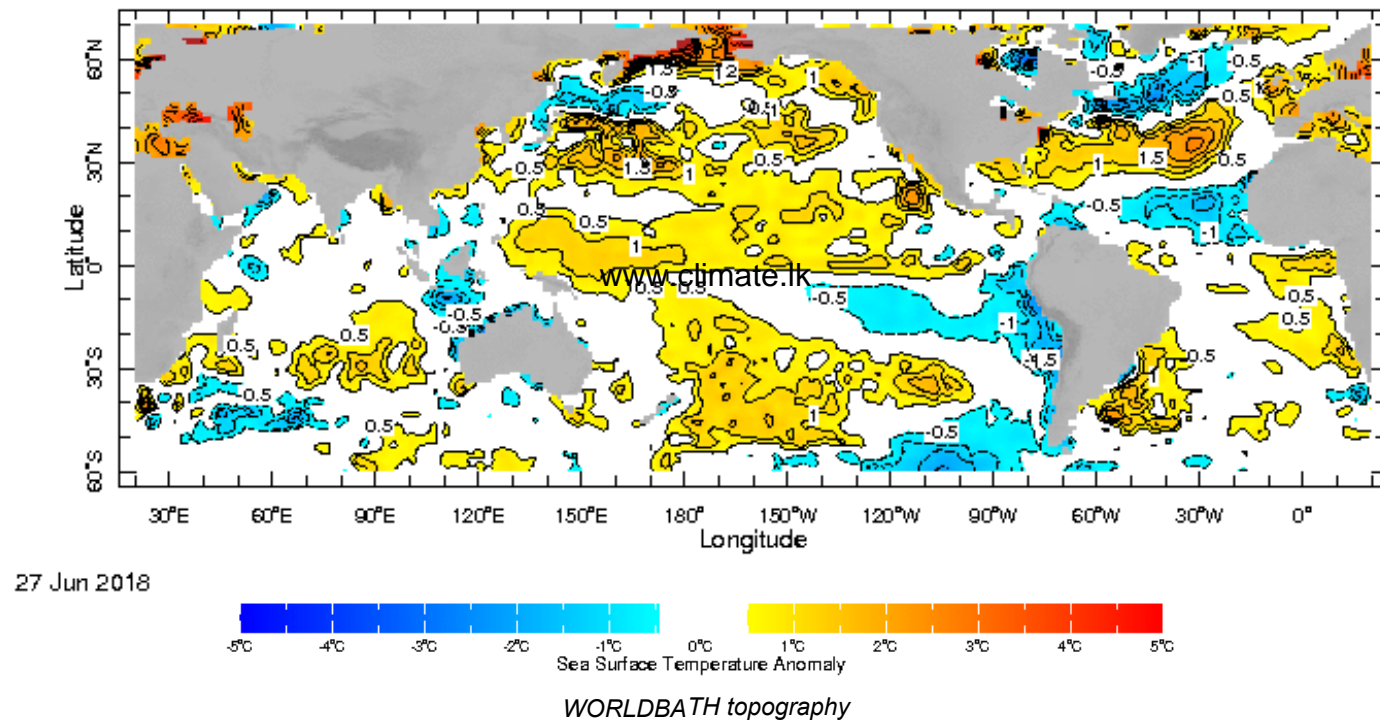
**Dekadal (10 Day) Satellite Derived Rainfall Estimates**



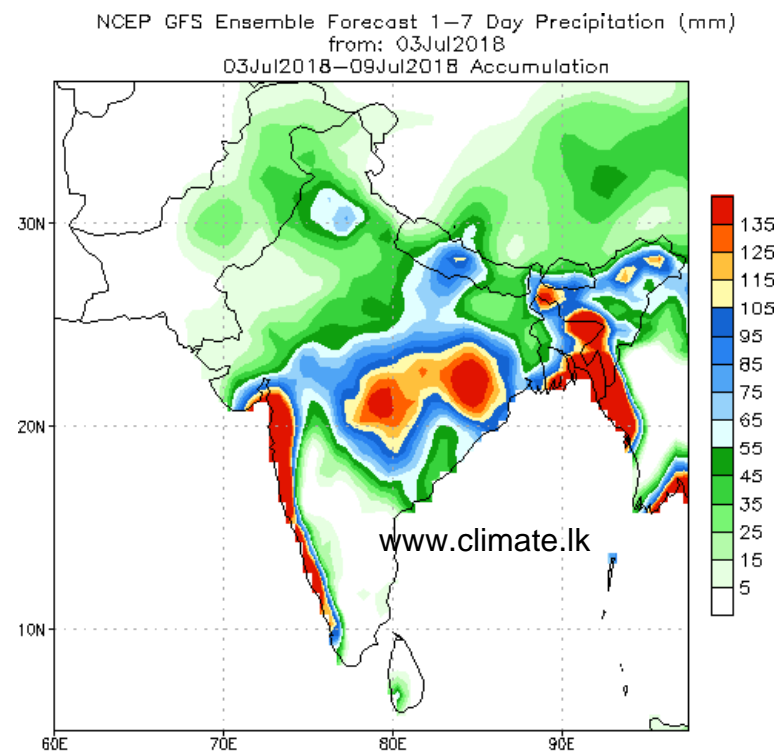


## Weekly Average SST Anomalies

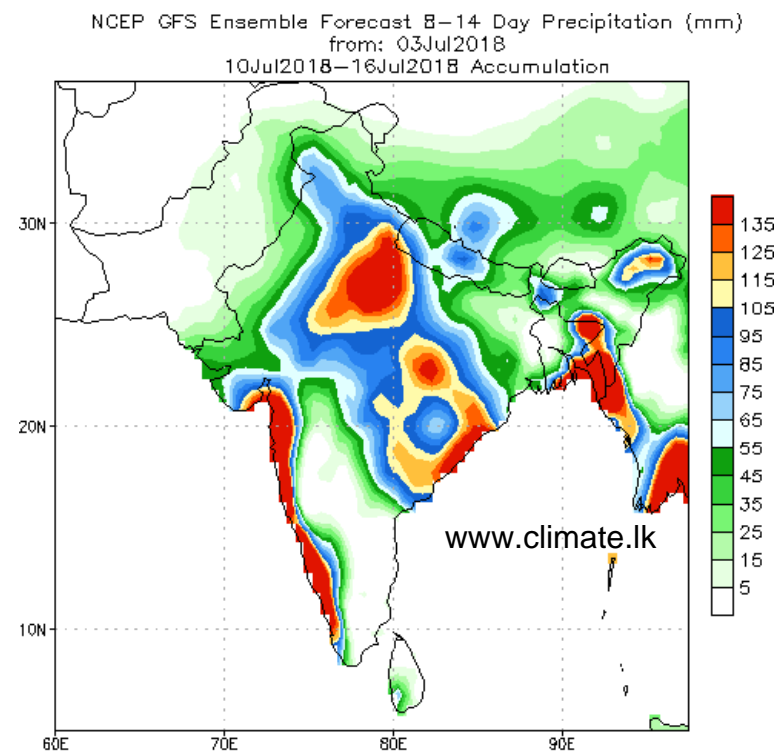
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



## NCEP GFS 1- 14 Day prediction



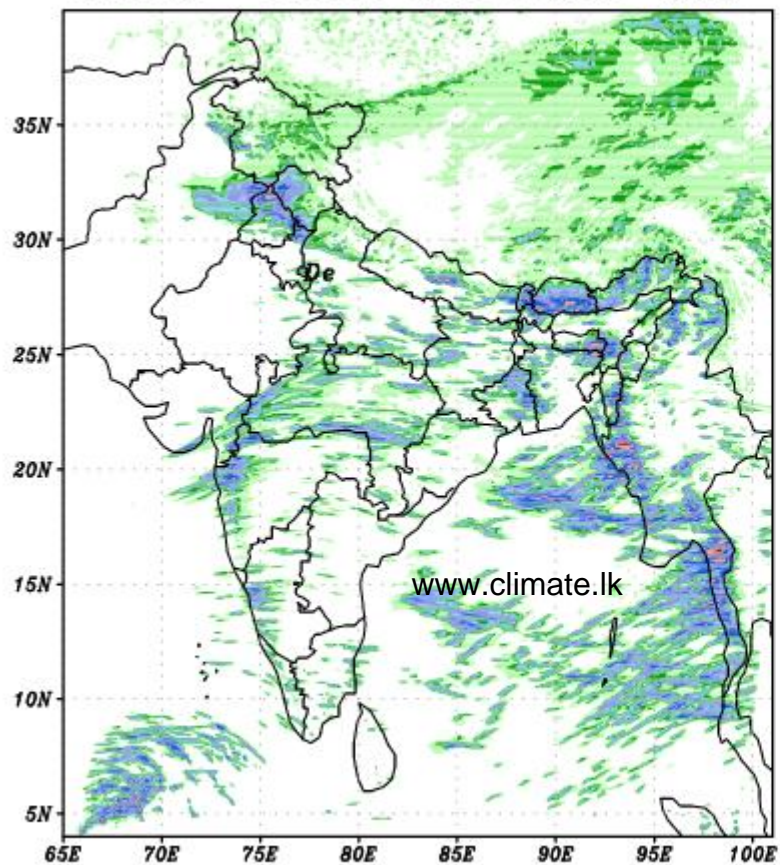
Bias correction based on last 30-day forecast error



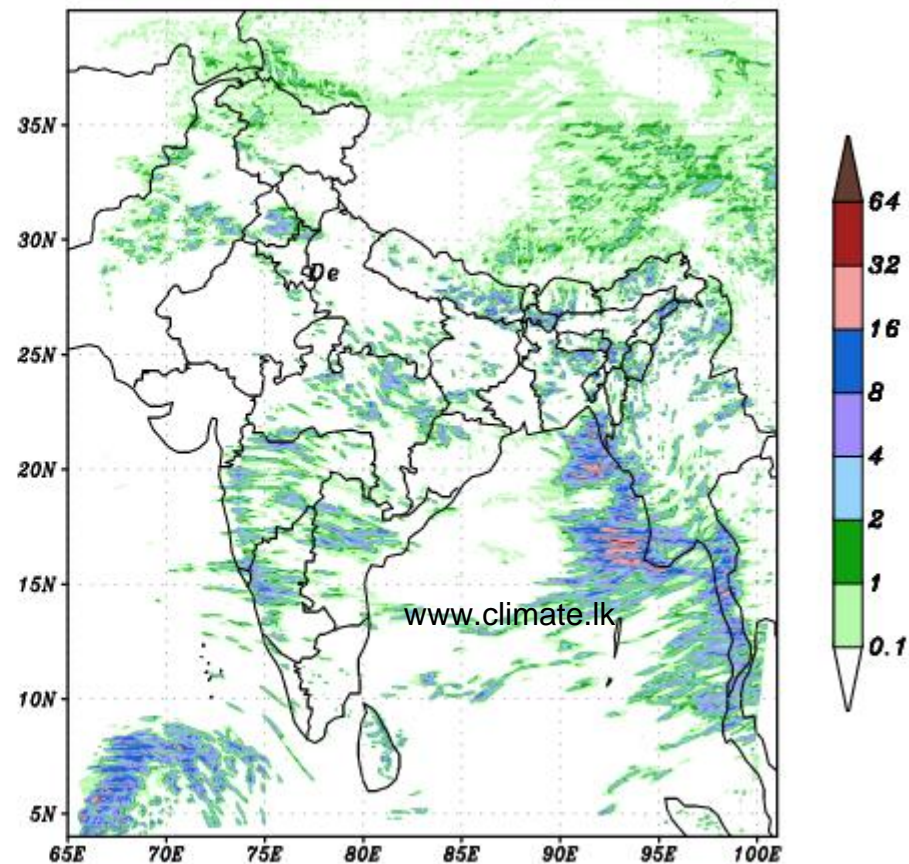
Bias correction based on last 30-day forecast error

## WRF Model Forecast (from IMD Chennai)

DAY 2 FORECAST VALID ON 00Z5JUL2018  
Total Precipitation(cm) CI=0.1,1,2,4,8,...  
NCMRWF UNIFIED MODEL (REG-4Km)

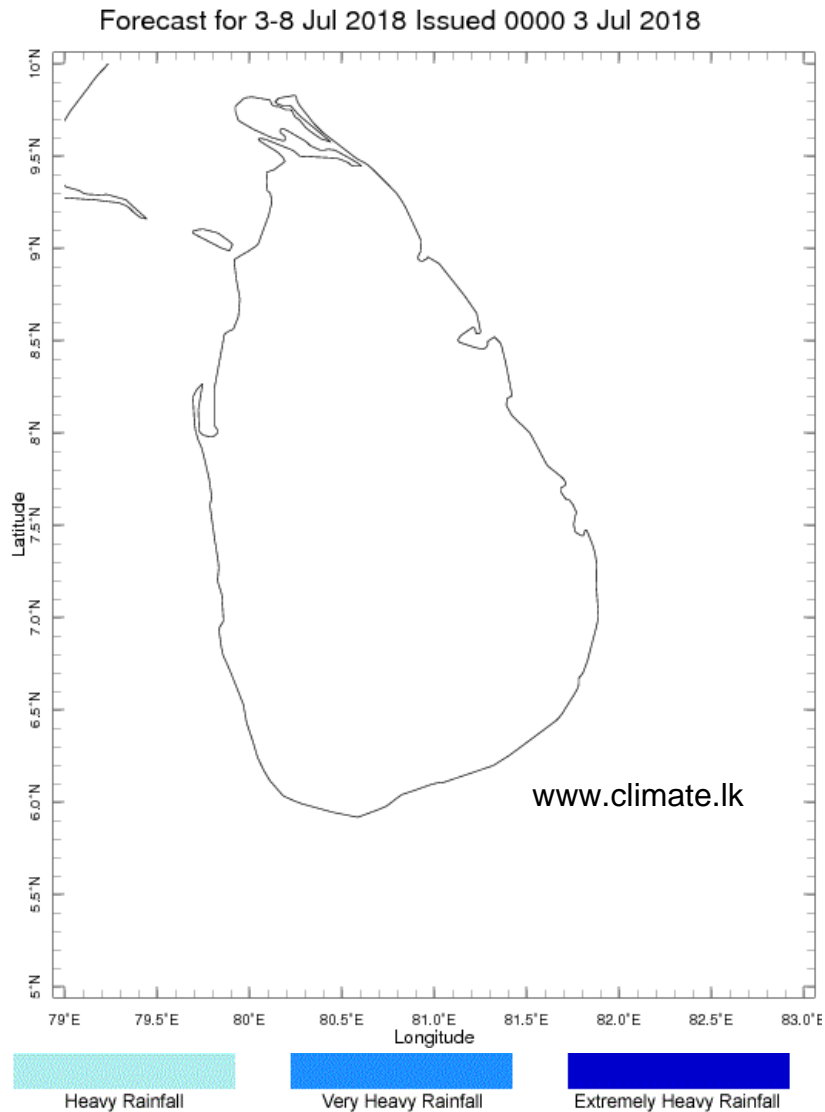


DAY 3 FORECAST VALID ON 00Z6JUL2018  
Total Precipitation(cm) CI=0.1,1,2,4,8,...  
NCMRWF UNIFIED MODEL (REG-4Km)

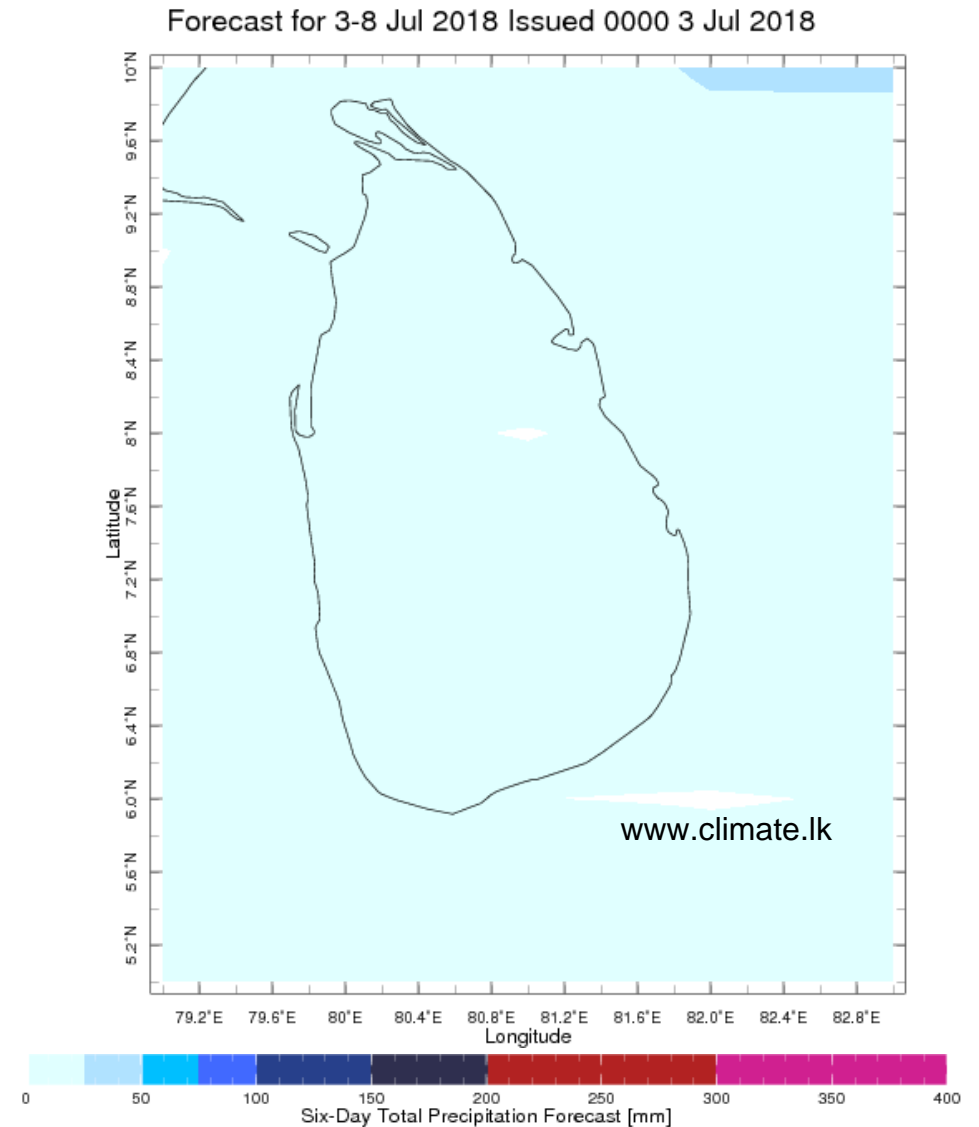


## Weekly Rainfall Forecast from IRI

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.



Extreme Rainfall Forecast



Total Six Day Precipitation Forecast