

## Experimental Climate Monitoring and Prediction

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### Highlights

- The WRF model predicts up to 36 mm of rainfall in Western regions of the country on 7<sup>th</sup> and 8<sup>th</sup> of July.
- Between 27 Jun- 3 Jul: Rainfall up to 50 mm was recorded in Kegalla district on the 27<sup>th</sup>.
- From 25 Jun- 1 Jul: minimum temperature of 15 °C was recorded from Nuwara Eliya district while Northern and Eastern regions of the island recorded a maximum temperature between 30-35 °C.
- From 26 Jun- 2 Jul: up to 54 km/h, northwesterly winds were experienced by the whole island.
- Average sea surface temperature was observed in the seas around Sri Lanka.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On June 27<sup>th</sup>, Kegalla district received up to 50 mm of rainfall; Puttalam, Kurunegala, Matale, Kandy, Gampaha, Colombo, and Ratnapura districts up to 30 mm; Anuradhapura, Polonnaruwa, Ampara, Badulla, Monaragala, Nuwara Eliya and Kalutara districts 20 mm. On the 28<sup>th</sup> Gampaha district received up to 20 mm of rainfall. No significant rainfalls were recorded in any part of the island during June 29<sup>th</sup>- July 1<sup>st</sup>. On July 2<sup>nd</sup> adjacent Northeastern sea received up to 60 mm. No significant rainfalls were recorded in any part of the island on the 3<sup>rd</sup>.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall of 50-75 mm in Puttalam, Gampaha, Kurunegala, Ratnapura and Kegalla districts; up to 25-50 mm in Anuradhapura, Matale, Ampara, Kandy, Badulla, Kalutara and Galle districts. It shows above average rainfall up to 50 mm Puttalam district; up to 10-25 mm in Matale, Kurunegala and Kegalla districts; and below average rainfall up to and 25-50 mm in Galle district and 10-25 mm in Kalutara, Ratnapura, Matara and Hambantota districts.

**Monthly Monitoring:** During June - below average rainfall conditions were experienced in the entire island except for northern regions of Monaragala and adjacent regions of Ampara district. Ratnapura, Kalutara and Galle districts received up to 240 mm below average rainfall; and Colombo and Nuwara Eliya districts received up to 150 mm; and most parts of the island up to 120 mm. The CPC Unified Precipitation Analysis tool shows ~200 mm of total rainfall in Monaragala and Ampara districts; up to ~150 mm Badulla district; and up to ~100 mm Kurunegala, Gampaha, Colombo, Kalutara, Nuwara Eliya, Kandy, Kegalla, Ratnapura and Galle districts; up to 75 mm in Puttalam, Matale and Matara districts.

#### Ocean State (Text Courtesy IRI)

#### Pacific sea state: June 15, 2017

In mid-June 2017, the tropical Pacific remained in an ENSO-neutral state, with SSTs not far from the El Niño threshold in the east-central tropical Pacific but the atmosphere maintaining ENSO-neutral patterns. The collection of latest ENSO prediction models indicates ENSO-neutral as the most likely condition during summer, with chances for El Niño development rising to about 40-45% during fall and early winter.

## **Indian Ocean State**

Average sea surface temperature was observed in the seas around Sri Lanka.

## **Predictions**

### **Rainfall**

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

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

From 4<sup>th</sup> – 10<sup>th</sup> Jul: Total rainfall between 25-35 mm in Kegalla district; between 15-25 mm in Kurunegala, Gampaha, Nuwara Eliya, Ratnapura and Matara; between 5-15 mm in Puttalam, Matale, Kandy and Badulla districts.

From 11<sup>th</sup> – 17<sup>th</sup> Jul: Total rainfall between 35-45 mm in Kegalla and Ratnapura districts; 25-35 mm in Kurunegala, Gampaha, Kandy, Nuwara Eliya and Matara districts, 15-25 mm in Puttalam, Matale, Polonnaruwa, Batticaloa, Badulla, Ampara and Monaragala districts; 5-15 mm in Jaffna, Kilinochchi, Mullaitivu, Mannar, Vavuniya, Trincomalee, Anuradhapura and Hambantota districts.

##### **IMD WRF & IRI Model Forecast:**

7<sup>th</sup> Jul: Up to 36 mm of rainfall in Puttalam, Kurunegala, Gampaha, Kegalla, Colombo, Kalutara, Ratnapura and Galle districts; up to 8 mm of rainfall in Anuradhapura, Matale, Kandy, Nuwara Eliya, Matara, Monaragala and Ampara districts; up to 3 mm of rainfall in Mannar, Vavuniya and Trincomalee districts.

8<sup>th</sup> Jul: Up to 36 mm of rainfall in Puttalam, Kurunegala, Gampaha, Kegalla, Colombo, Kalutara, Ratnapura and Galle districts; up to 8 mm of rainfall in Anuradhapura, Matale, Kandy, Nuwara Eliya, Matara, Monaragala and Ampara districts; up to 3 mm of rainfall in Mannar, Vavuniya and Trincomalee districts.

##### **Seasonal Prediction:** IRI Multi Model Probability Forecast

Apr to Jun: the total 3-month precipitation shall be climatological for the whole country. The 3-month temperature has more than 70-80% likelihood in the whole of the island of being in the above-normal tercile.

### **MJO based OLR predictions**

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

MJO shall enhance the rainfall in Sri Lanka in the next 10 days and shall not have a significant impact on the following 5 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/>



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## Weekly Hydro- Meteorological Report for Sri Lanka

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#### 1. Monitoring

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- Monthly Rainfall Monitoring
- Dekadal (10 Day) Satellite Derived Rainfall Estimates
- Weekly Average SST Anomalies

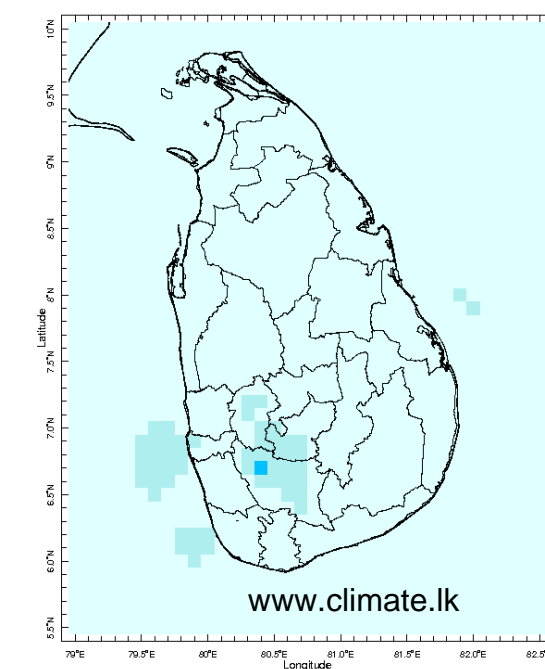
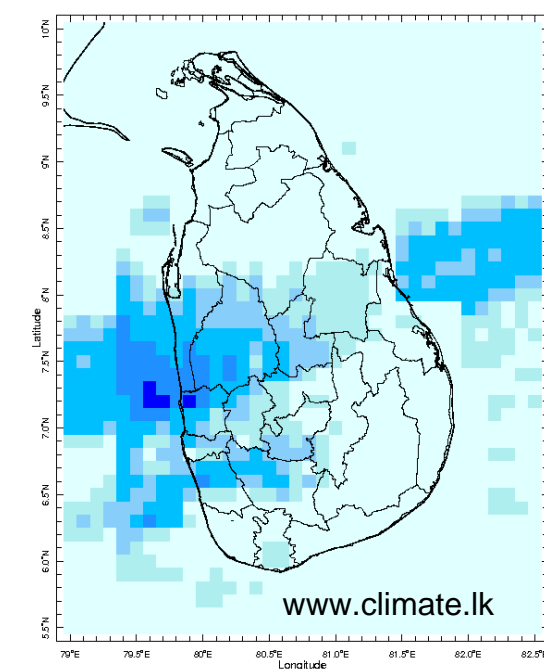
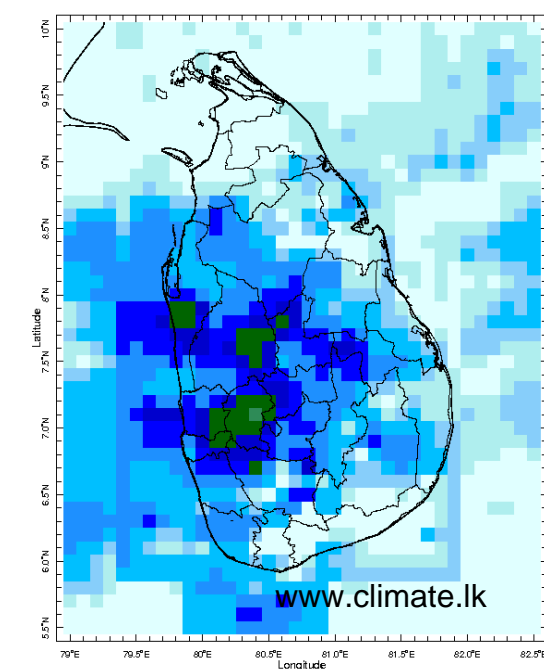
#### 2. Predictions

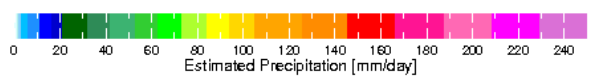
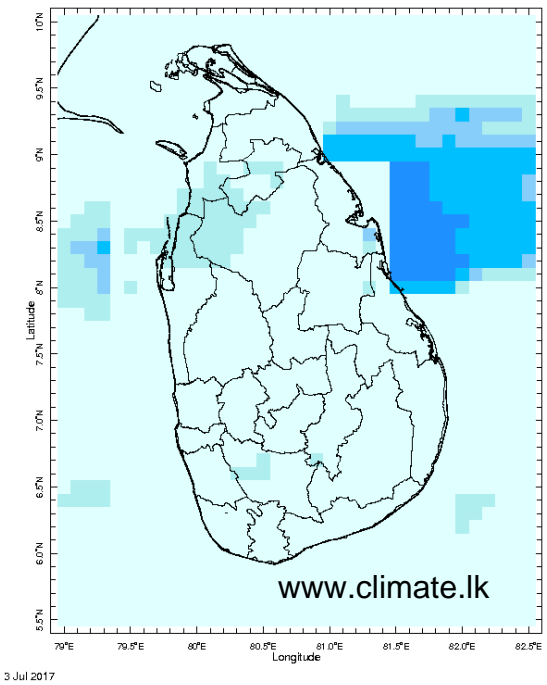
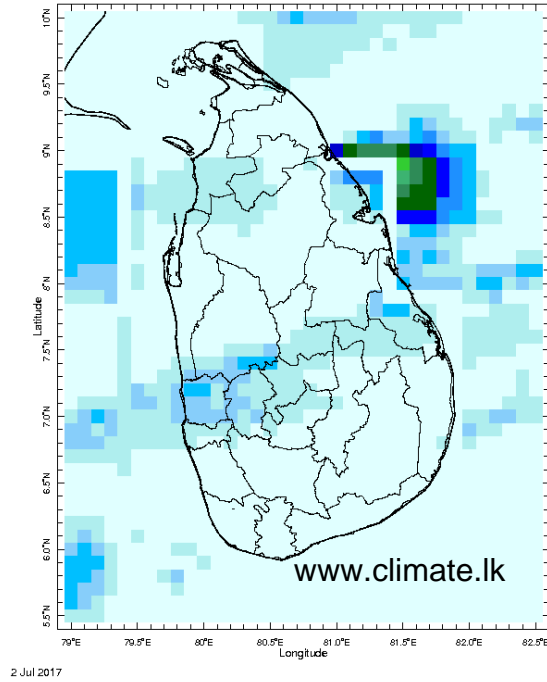
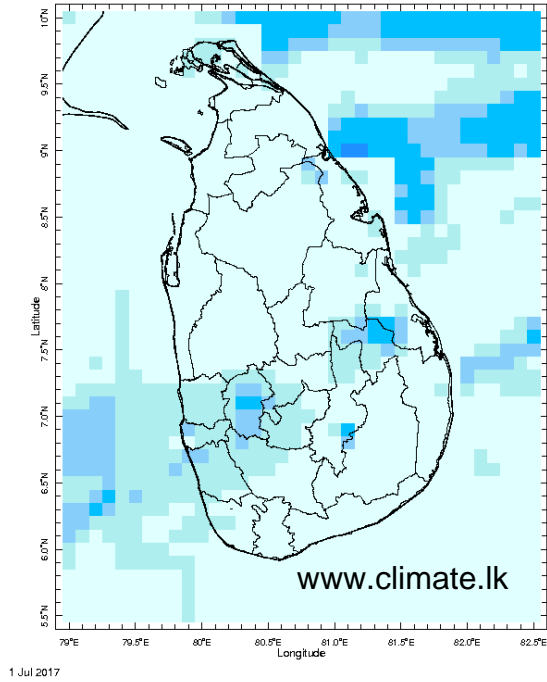
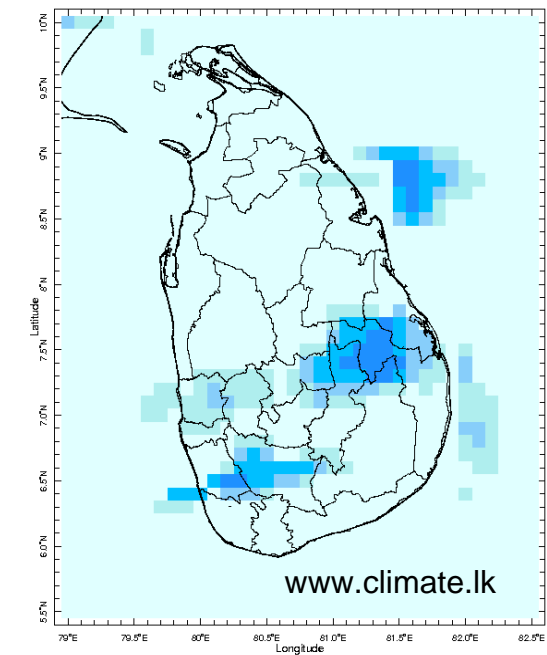
- NCEP GFS Ensemble 1-14 day Rainfall Predictions
- WRF Model Rainfall Forecast from IMD Chennai
- Weekly Precipitation Forecast from IRI
- Seasonal Predictions from IRI

### MONITORING

#### Daily Rainfall Monitoring

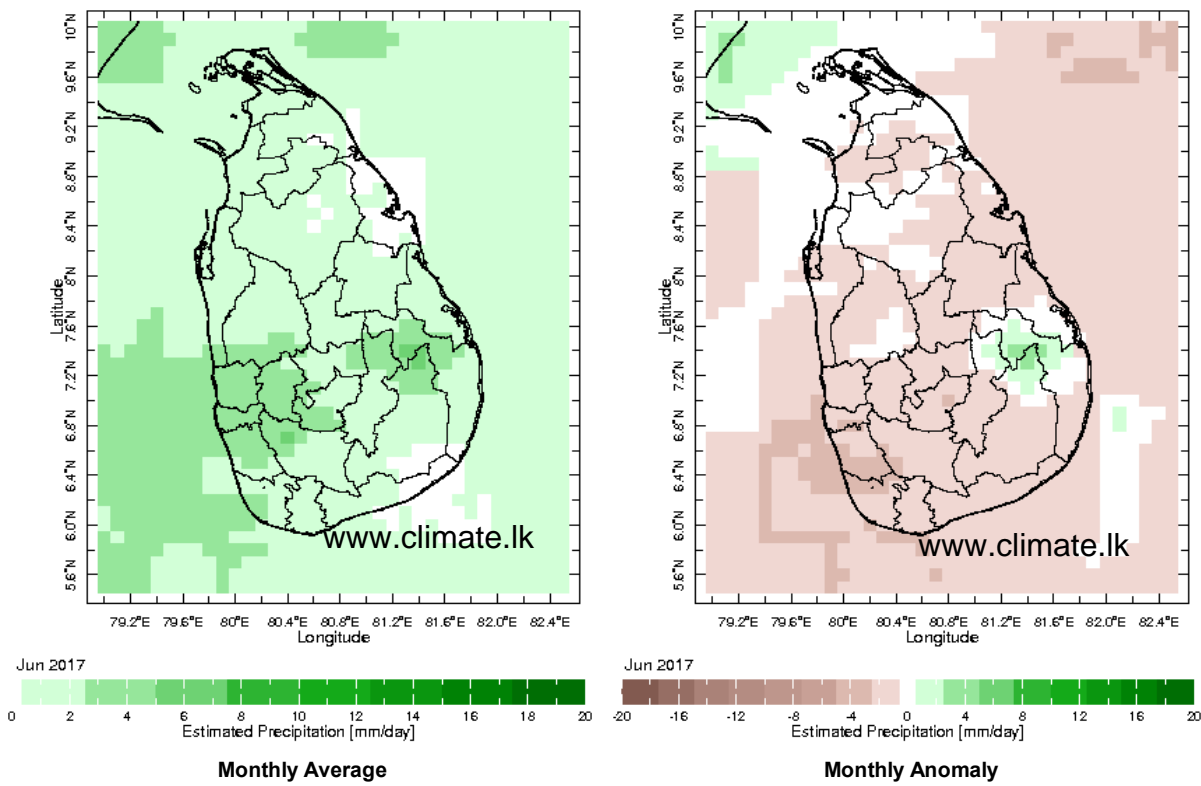
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



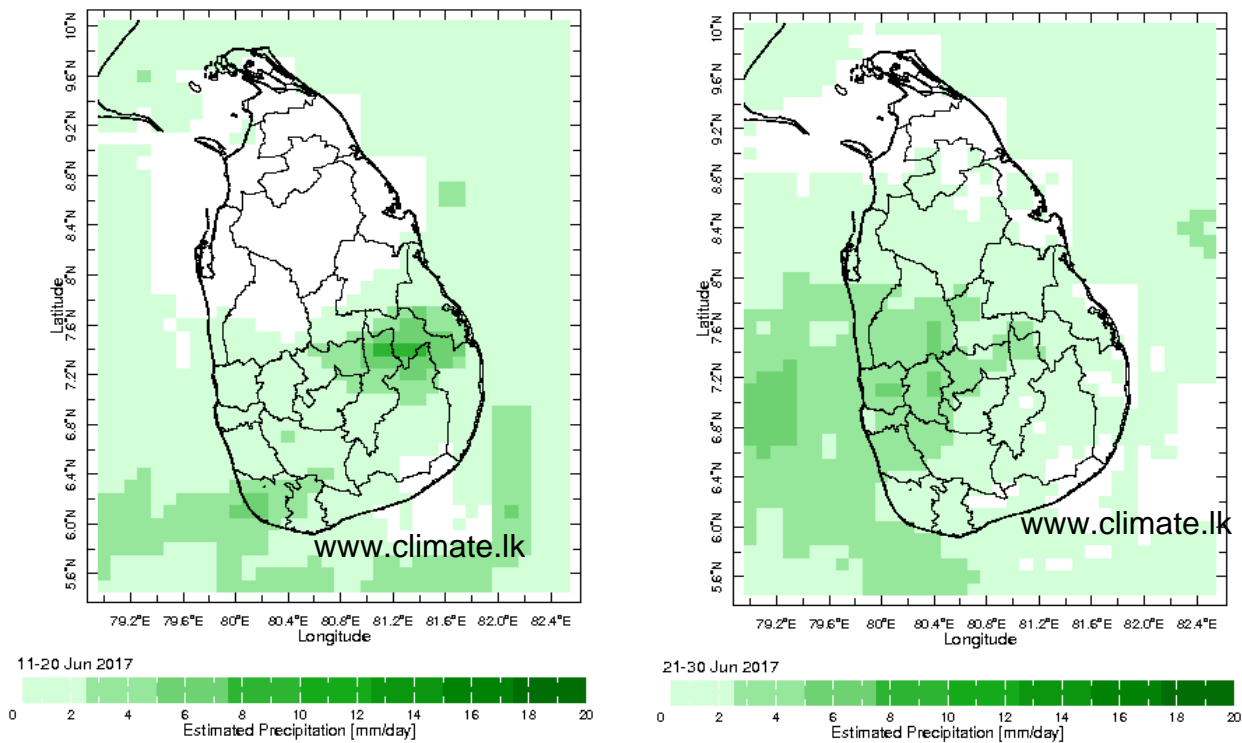


Monthly Rainfall Monitoring

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

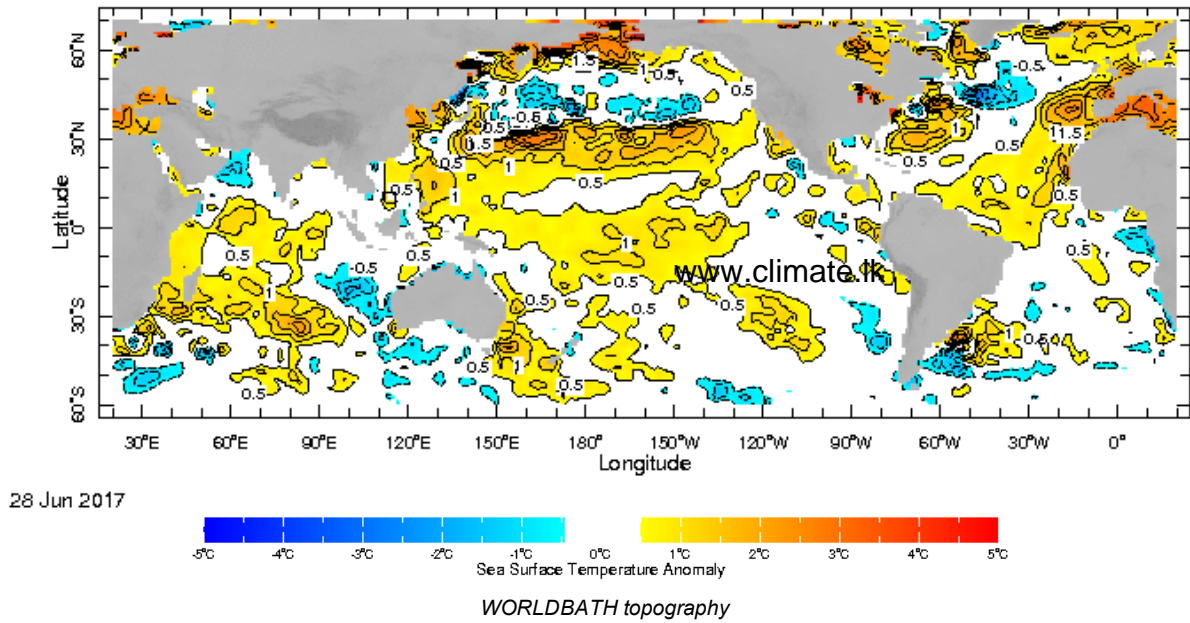


**Dekadal (10 Day) Satellite Derived Rainfall Estimates**

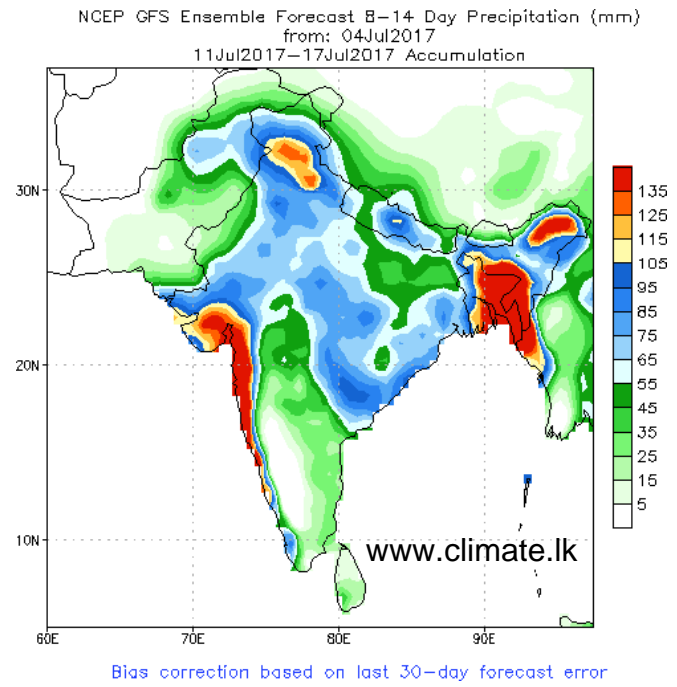
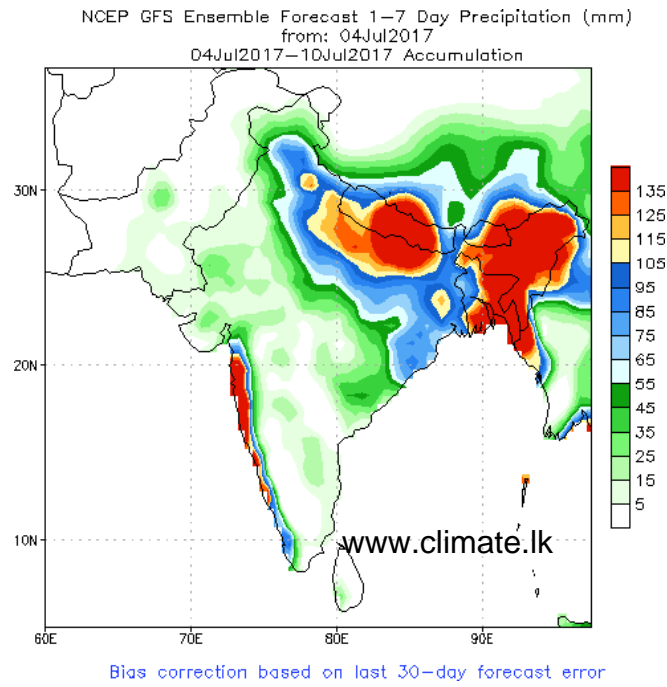


**Weekly Average SST Anomalies**

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

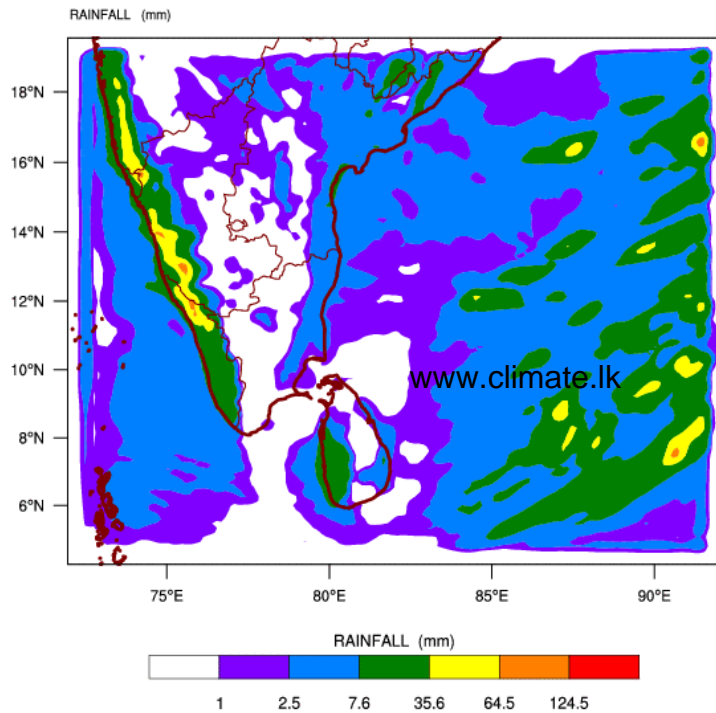


## NCEP GFS 1- 14 Day prediction

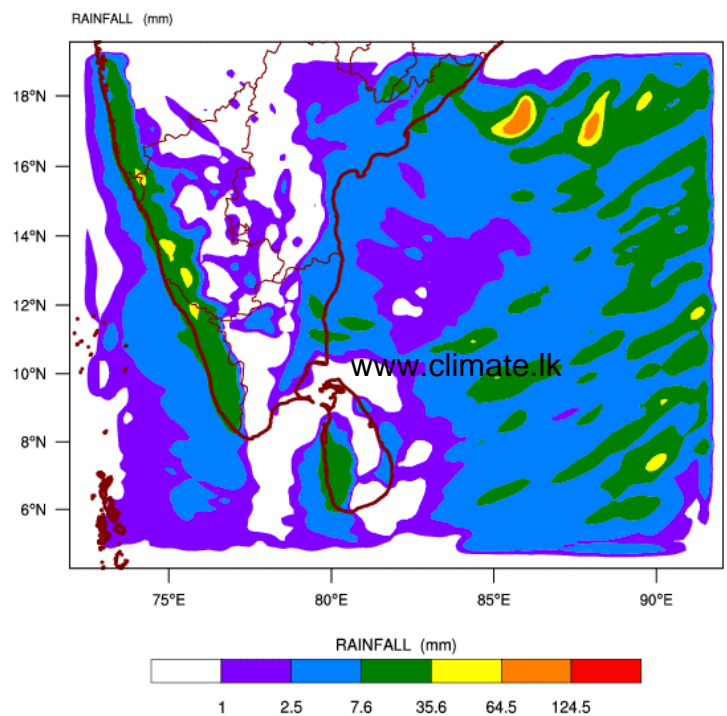


## WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 05-07-2017 valid for 03 UTC of 07-07-2017

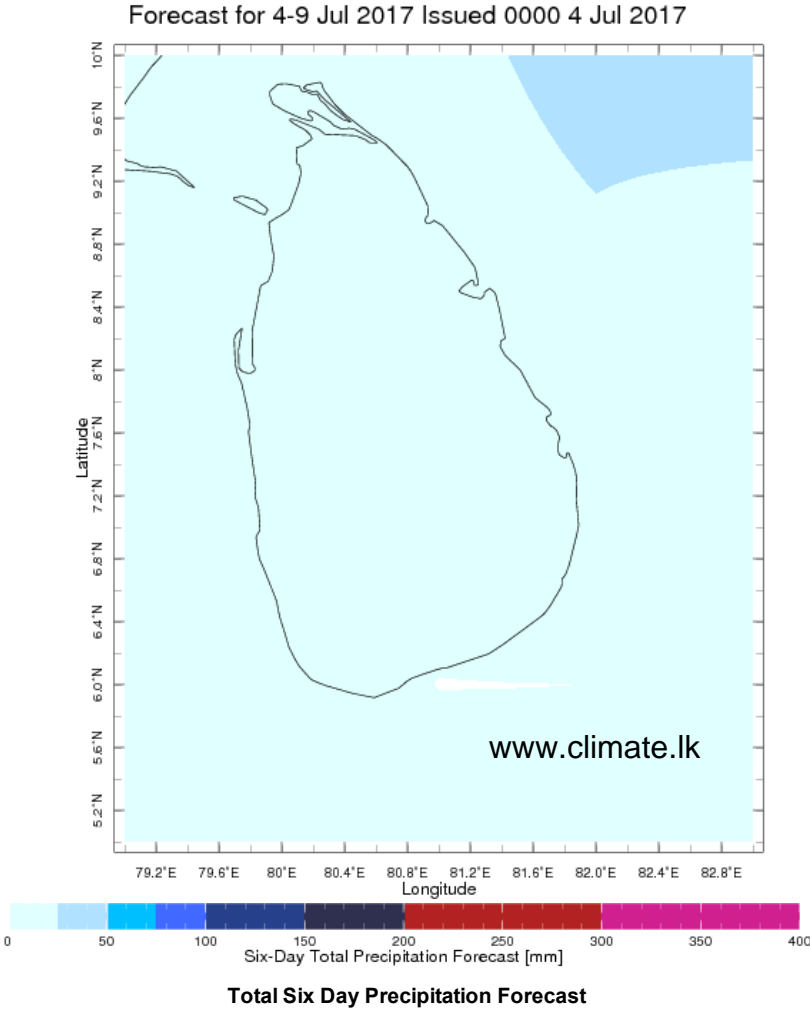
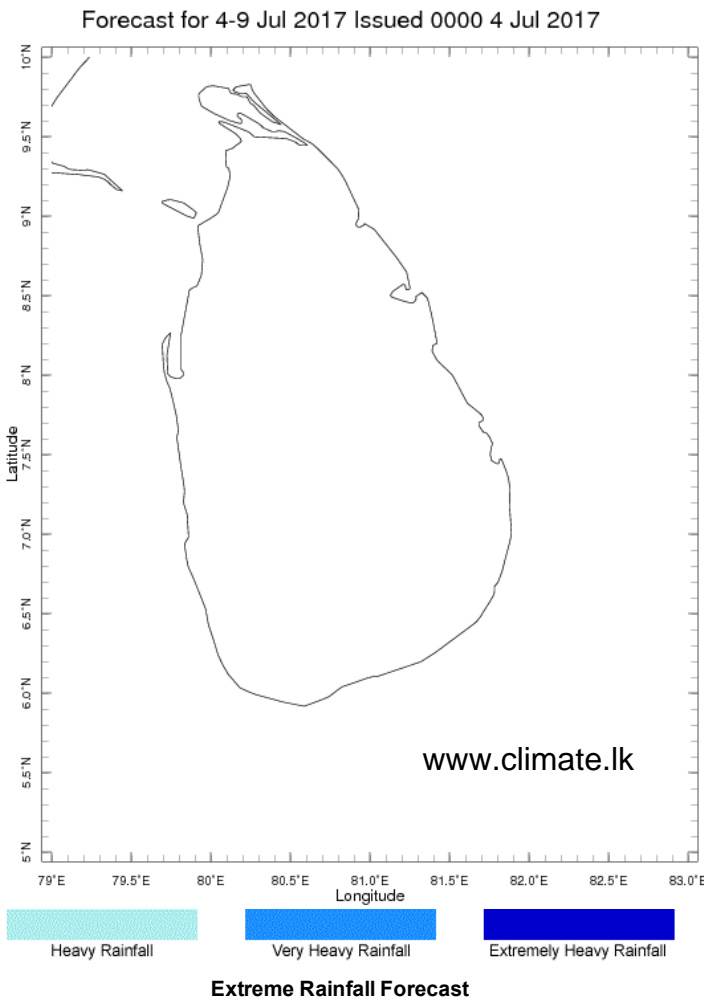


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 05-07-2017 valid for 03 UTC of 08-07-2017



Weekly Rainfall Forecast from IRI

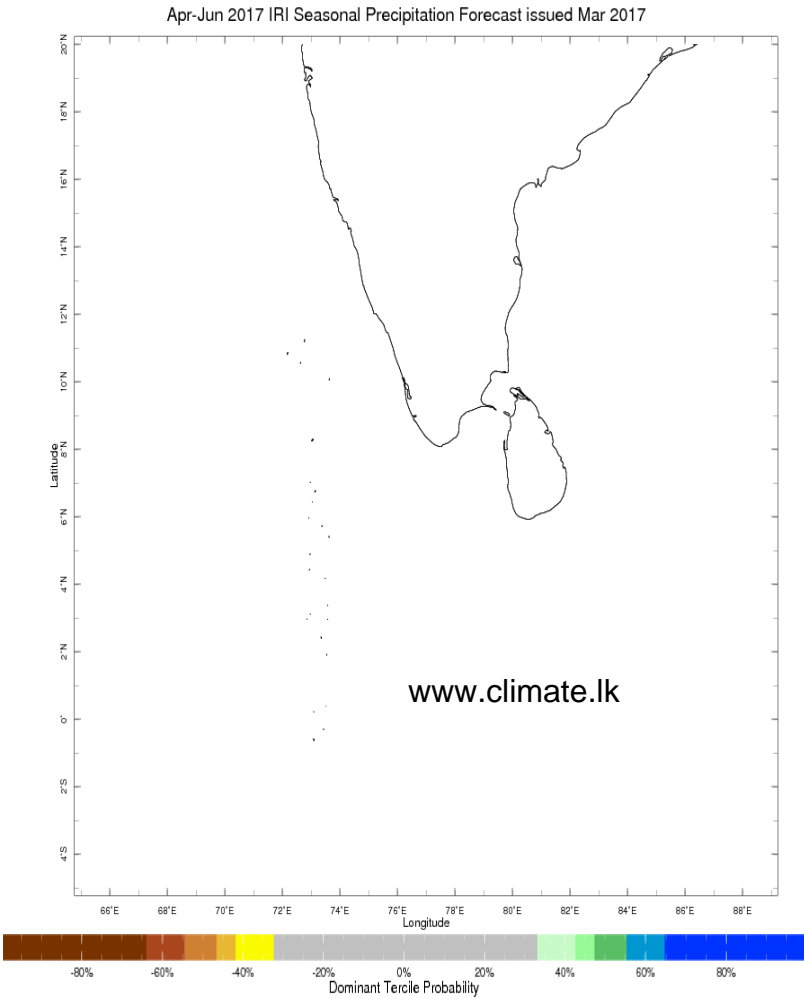
Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.



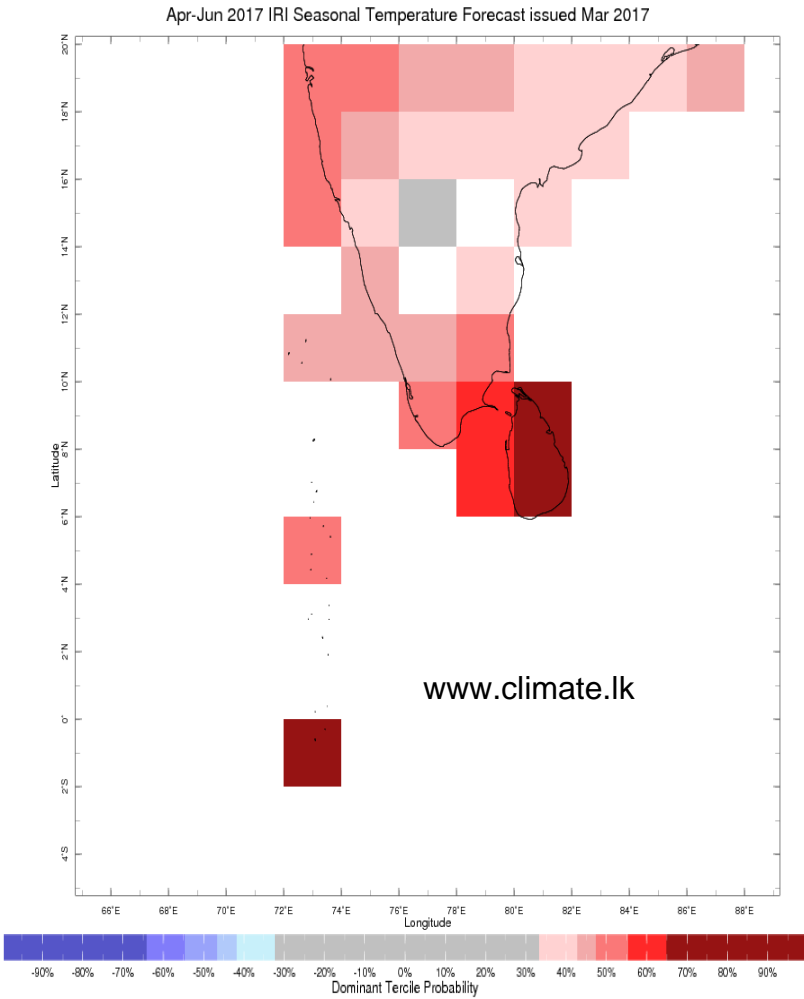


Seasonal Rainfall and Temperature Forecast

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 likewise for the below-normal tercile. The gray color indicates an enhanced probability for the near-normal tercile (nearly always limited to 40%).



Precipitation Forecast



Temperature Forecast

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Foundation for Environment, Climate & Technology

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