

## Experimental Climate Monitoring and Prediction

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### Highlights

- The WRF model predicts up to 36 mm of rainfall in Kegalla district on the 9th of June.
- Between 31 May-5 Jun: Rainfall up to 90 mm was recorded in Ampara and Monaragala districts on the 5<sup>th</sup>.
- From 28 May- 3 Jun: minimum temperature of 15 °C was recorded from Nuwara Eliya district while Northern and Eastern coastal regions of the island recorded a maximum temperature between 30-35 °C.
- From 29 May- 4 Jun: up to 72 km/h, northwesterly winds were experienced by the southern regions; and up to 36 km/ in the northern and central regions of the island.
- 0.5 °C below average sea surface temperature was observed in the western and southern seas of Sri Lanka.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On May 31<sup>st</sup>, Ratnapura, Nuwara Eliya, Colombo and Kalutara districts received up to 20 mm of rainfall; and most southwestern regions of the island up to 10 mm. No significant rainfalls were recorded on June 1<sup>st</sup>. On the 2<sup>nd</sup> Giritilla region in Kurunegala district received up to 50 mm of rainfall; Gampaha and Colombo districts up to 40 mm; Kalutara, Ratnapura and Kegalla district received up to 30 mm; and Nuwara Eliya and Galle districts up to 20 mm. On the 3<sup>rd</sup> Kalutara and Ratnapura and Giritilla of Kurunegala districts received up to 30 mm of rainfall; Kegalla, Gampaha and Nuwara Eliya districts up to 20 mm. On the 4<sup>th</sup> Kalutara district received up to 20 mm of rainfall. On the 5<sup>th</sup> Ampara and Monaragala district received up to 90 mm; Kegalla, Ratnapura and Badulla districts up to 40 mm; Kegalla and Nuwara Eliya districts received up to 30 mm; and Colombo, Kalutara, Kandy and Batticaloa districts up to 20 mm.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall of 200-300 mm in Ratnapura, Ampara and Monaragala districts; up to 150-200 mm in Puttalam, Kurunegala, Gampaha, Colombo, Kalutara, Kegalla and Nuwara Eliya districts; up to 100-150 mm Kandy, Badulla, Galle and Matara districts. It shows above average rainfall more than 100 mm for Ampara and Monaragala districts; up to 25-50 mm in Puttalam, Kurunegala, Ratnapura and Nuwara Eliya districts.

**Monthly Monitoring:** During May - above average rainfall conditions were experienced in the entire island except for Batticaloa, Ampara and Jaffna districts. Ratnapura district received up to 450 mm above average rainfall; and Kegalla, Kalutara, Matara and Galle districts received up to 360 mm; Nuwara Eliya district up to 240 mm and many parts of the island up to 120 mm. Monthly total rainfall for Ratnapura, Kalutara and Galle districts amounted to 540 mm; up to 420 mm for Kegalla district; and 360 mm for Nuwara Eliya, Colombo and Gampaha districts. The CPC Unified Precipitation Analysis tool shows ~1000 mm of total rainfall in Ratnapura district; up to ~750 mm in Kegalla, Colombo, Kalutara and Galle districts; and up to ~500 mm Kurunegala, Gampaha, Nuwara Eliya and Matara districts; up to 300 mm in Puttalam, Kandy, Badulla, Monaragala and Hambantota districts; and up to 200 mm in Anuradhapura, Polonnaruwa and Matale districts.

#### Ocean State (Text Courtesy IRI)

##### **Pacific sea state: May 18, 2017**

By mid-May 2017, the tropical Pacific remained in an ENSO-neutral state, with above-average SSTs present in the eastern Pacific Ocean, and near-average SSTs across the central and east-central part of the basin. The collection of ENSO prediction models indicates increasing chances of El Niño into the summer and fall of 2017.

## **Indian Ocean State**

0.5 °C below average sea surface temperature was observed in the western and southern seas of Sri Lanka.

## **Predictions**

### **Rainfall**

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

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

From 6<sup>th</sup> – 12<sup>th</sup> Jun: Total rainfall between 135-145 mm in Kegalle district; between 115-125 mm in Gampaha, Ratnapura, Colombo and Galle districts; between 95-105 mm in Kurunegala, Puttalam, Kandy, Nuwara Eliya and Matara districts; between 45-55 mm in Matale and Badulla districts; 35-45 mm in Anuradhapura and Vavuniya districts; between 25-35 mm in Trincomalee, Polonnaruwa, Hambantota and Monaragala districts; between 5-15 mm in Jaffna, Kilinochchi, Mannar, Mullaitivu and Ampara districts.

From 13<sup>th</sup> – 19<sup>th</sup> Jun: Total rainfall between 115-125 in Kegalle district; between 105-115 mm in Gampaha, Colombo and Kalutara districts; between 95-105 mm in Kandy, Nuwara Eliya, Ratnapura and Matara districts; between 45-55 mm in Anuradhapura, Kurunegala, Matara and Badulla districts; between 25-35 mm in Northern Province and Puttalam, Trincomalee, Polonnaruwa and Monaragala districts.

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

9<sup>th</sup> Jun: Up to 36 mm of rainfall in Kegalla district; up to 8 mm of rainfall in Puttalam, Kurunegala, Gampaha, Kandy, Colombo, Nuwara Eliya, Kalutara and Ratnapura districts; up to 3 mm of rainfall in Matale, Badulla, Galle and Matara districts.

10<sup>th</sup> Jun: Up to 8 mm of rainfall in Puttalam, Kurunegala, Gampaha, Kandy, Colombo, Nuwara Eliya, Kalutara and Ratnapura districts; up to 3 mm of rainfall in Matale, Badulla, Galle and Matara 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 5 days and shall suppress the rainfall for 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/>



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## Weekly Hydro- Meteorological Report for Sri Lanka

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- d. Weekly Average SST Anomalies

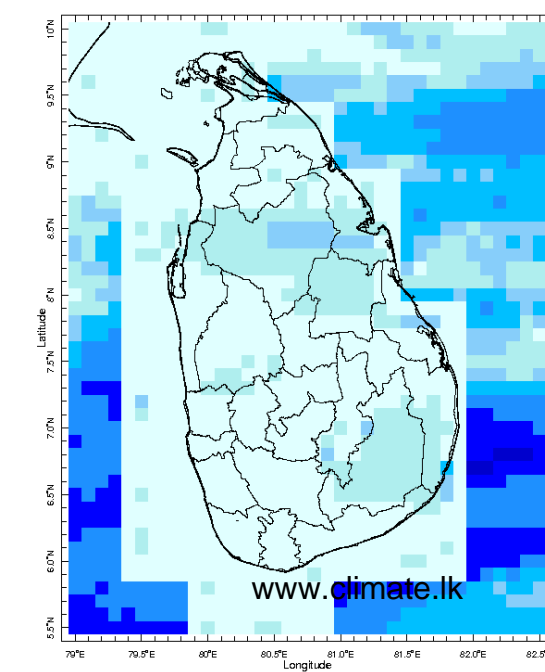
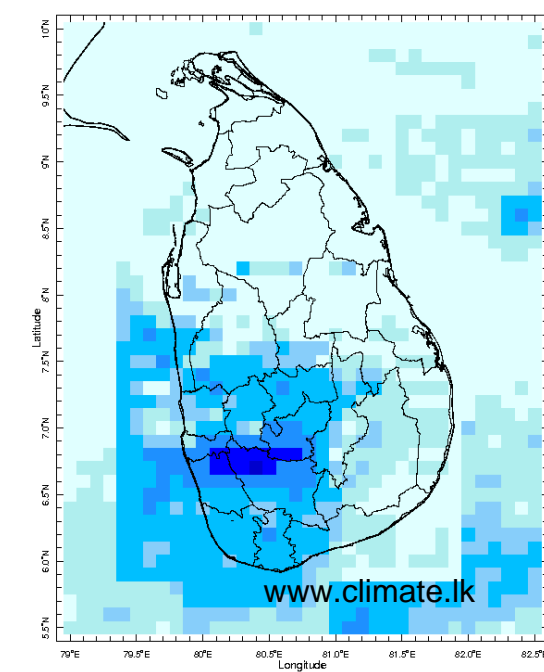
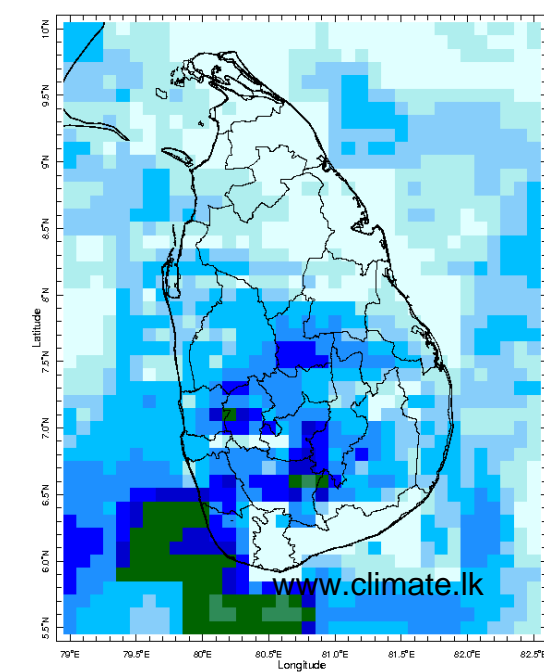
#### 2. Predictions

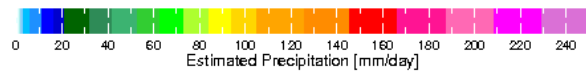
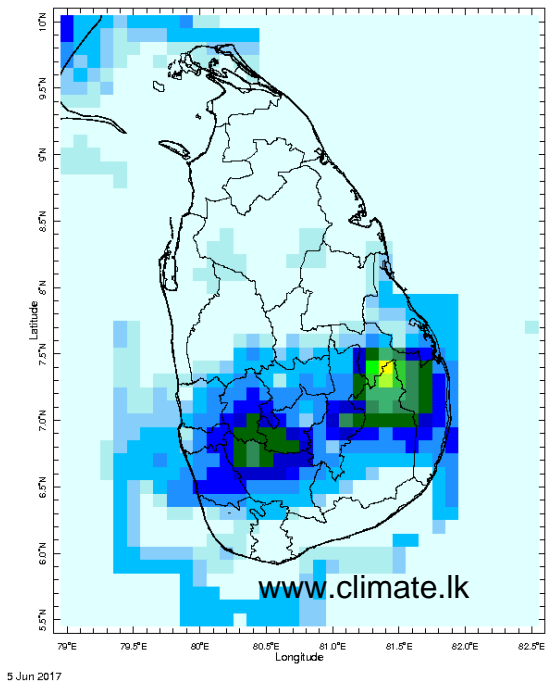
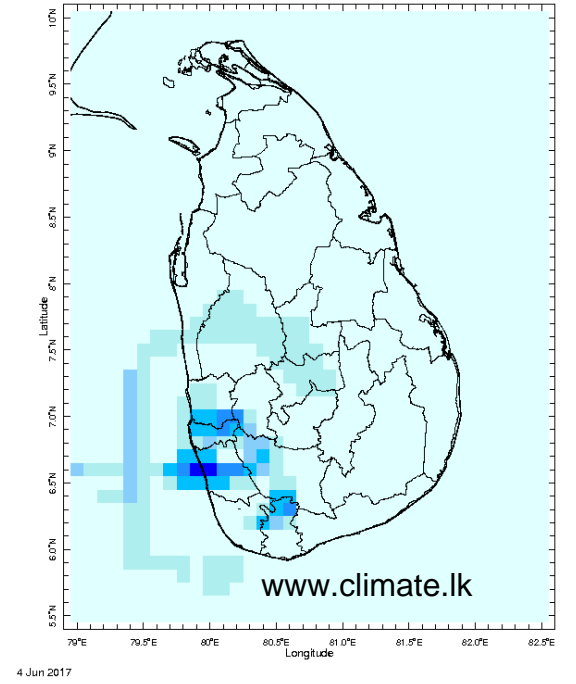
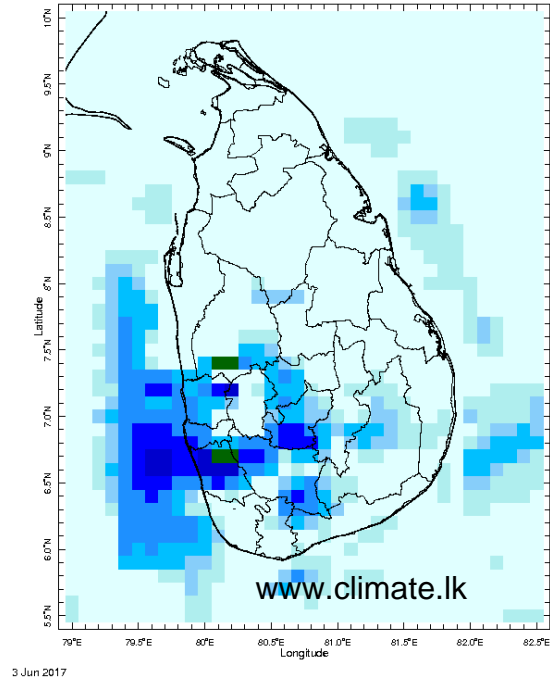
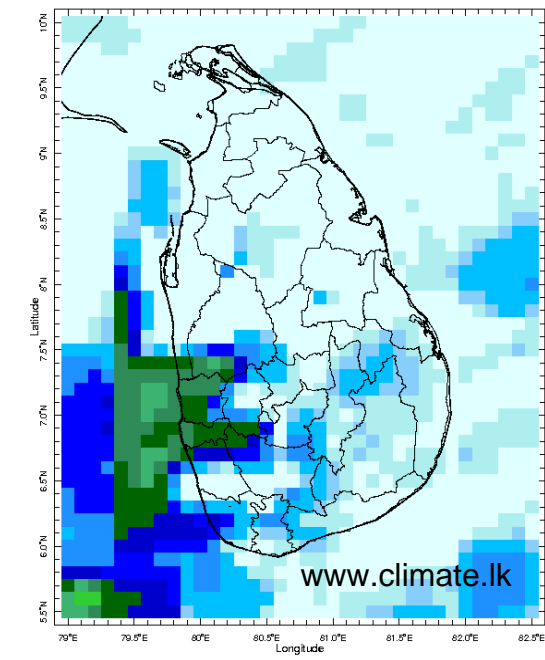
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

### MONITORING

#### Daily Rainfall Monitoring

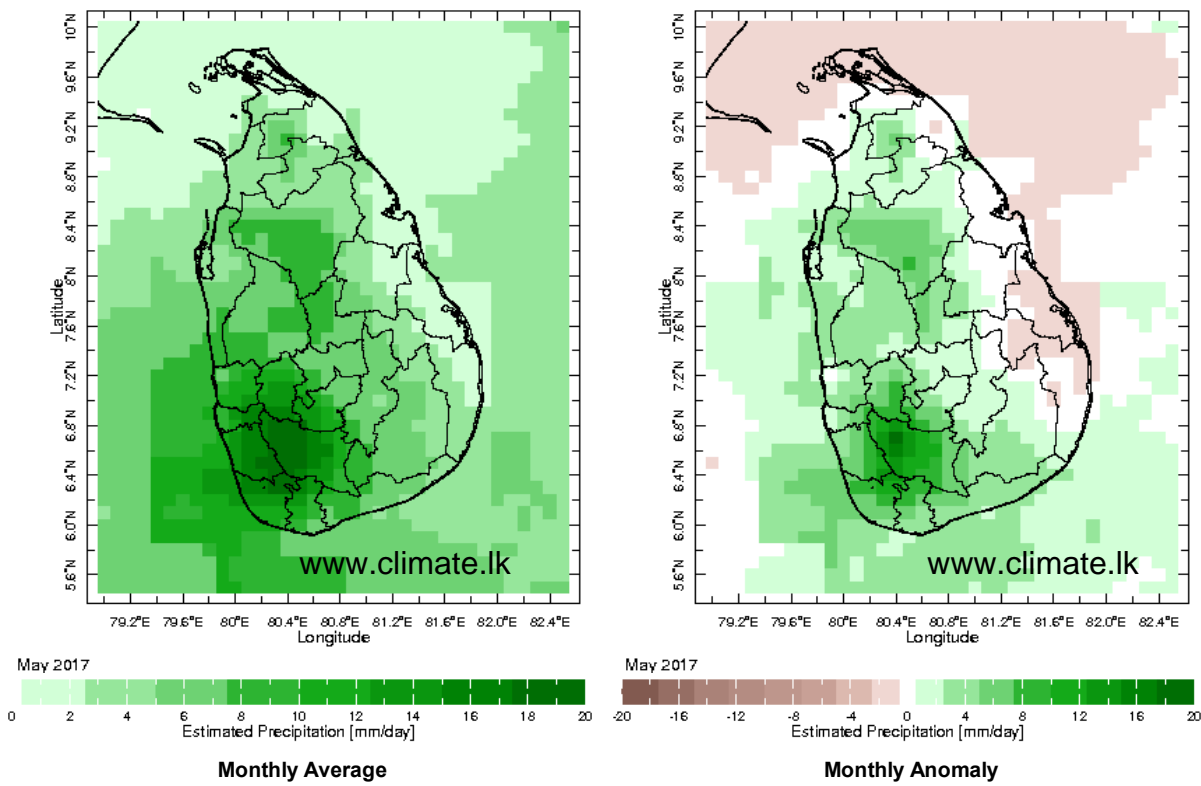
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



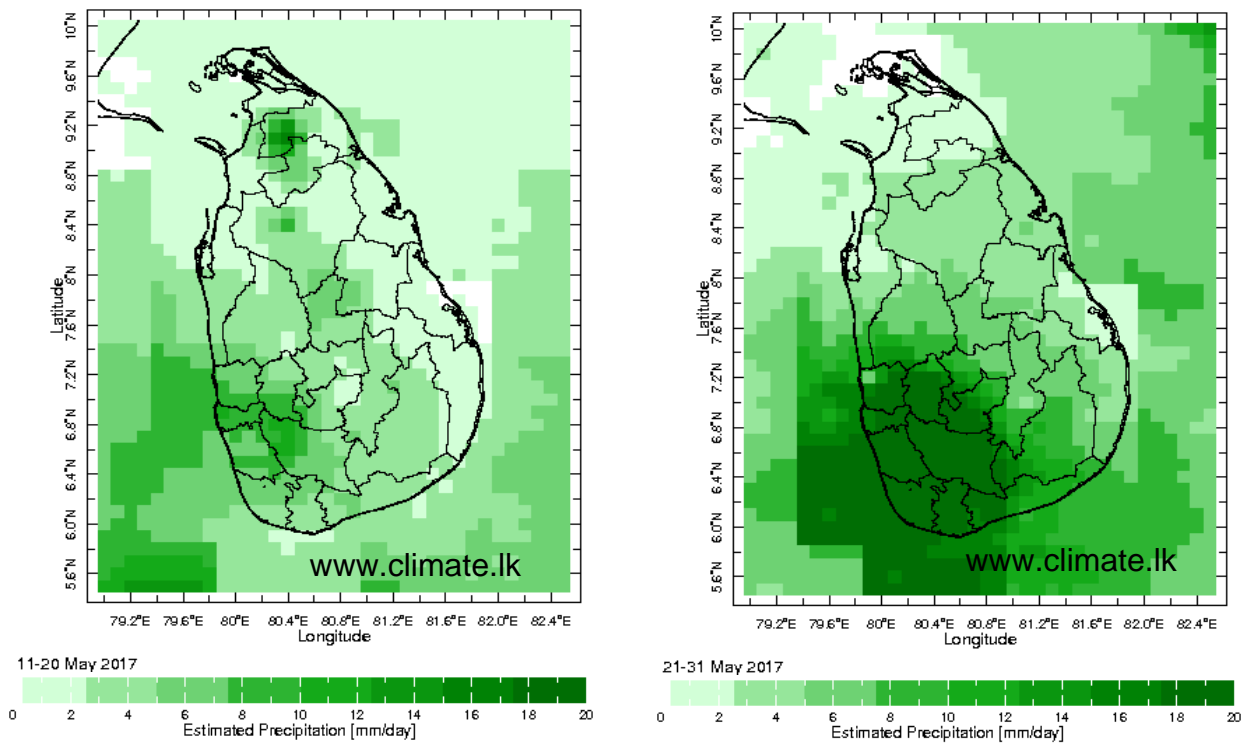


Monthly Rainfall Monitoring

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

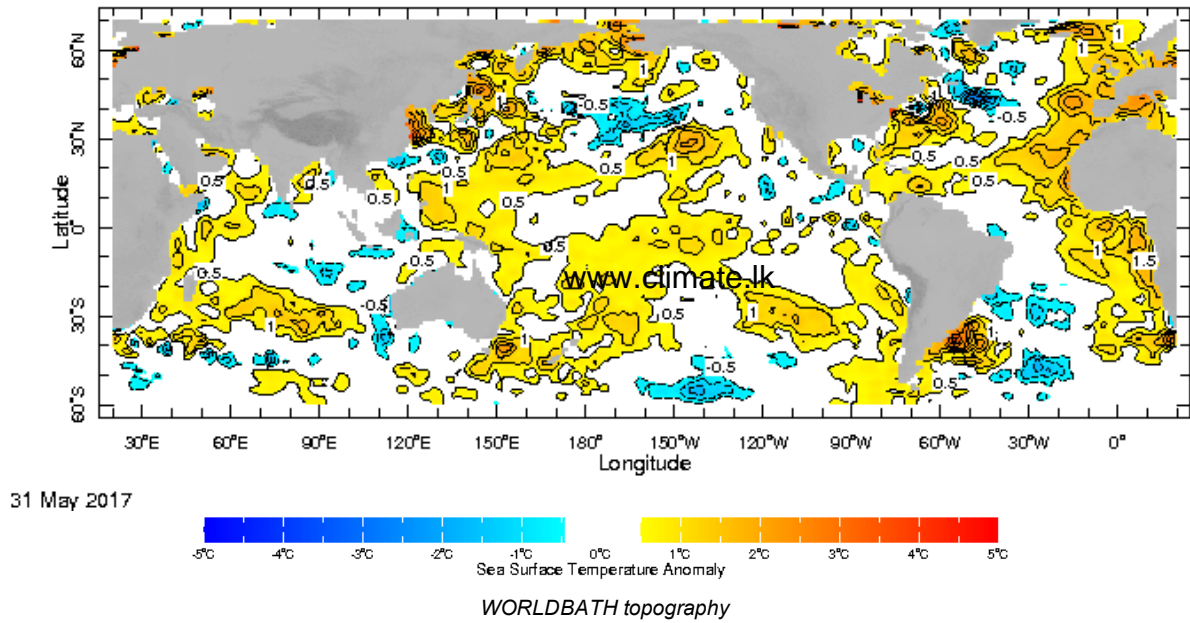


**Dekadal (10 Day) Satellite Derived Rainfall Estimates**

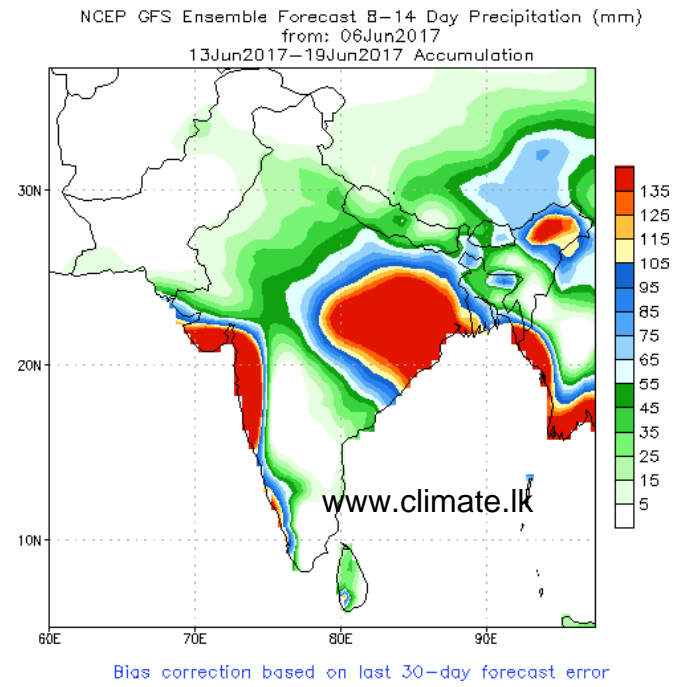
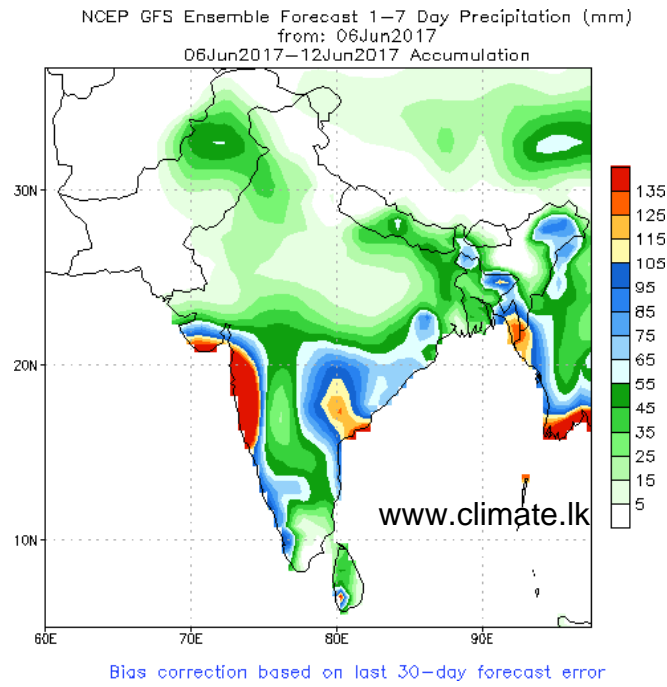


**Weekly Average SST Anomalies**

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

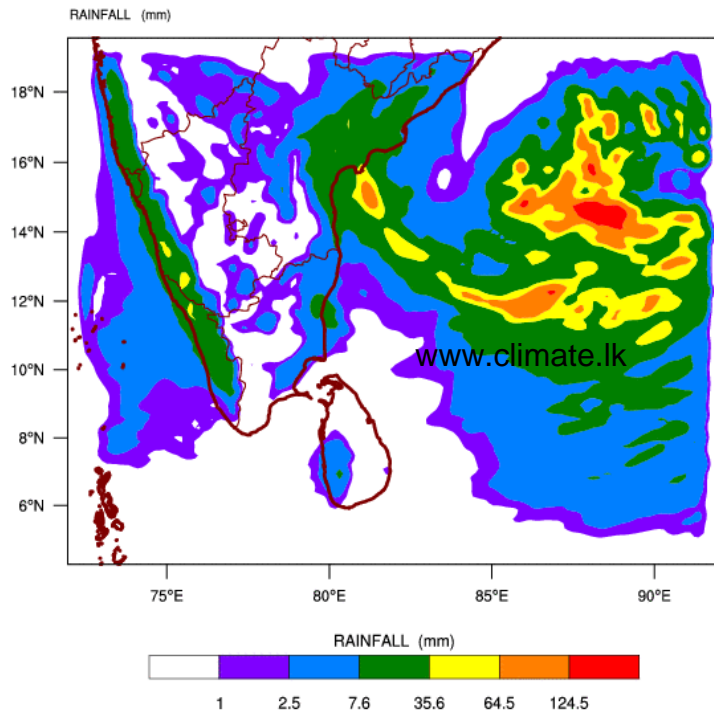


## NCEP GFS 1- 14 Day prediction

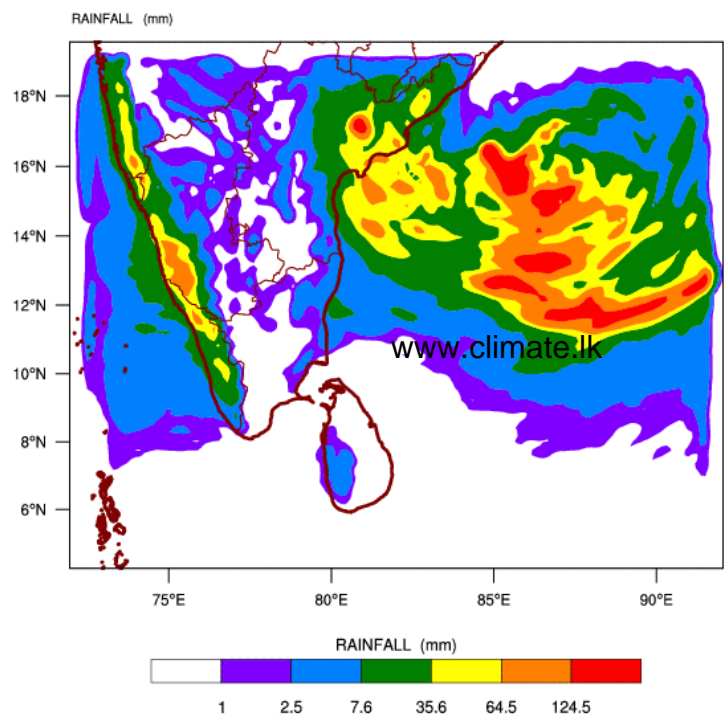


## WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 07-06-2017 valid for 03 UTC of 09-06-2017

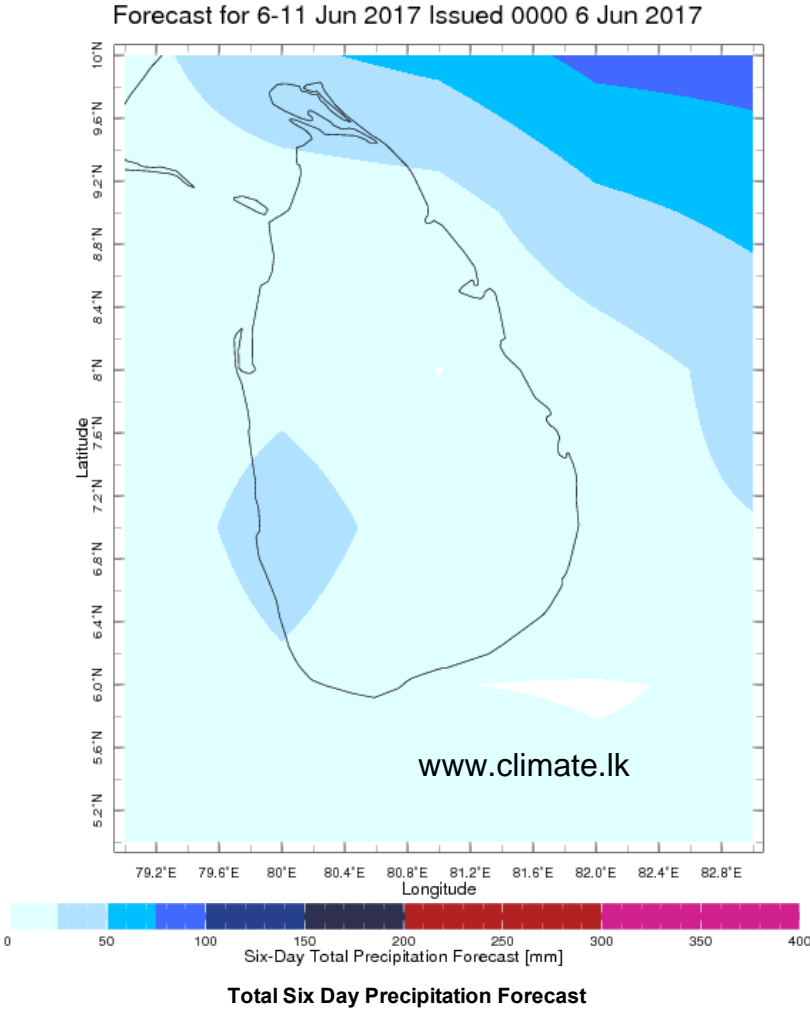
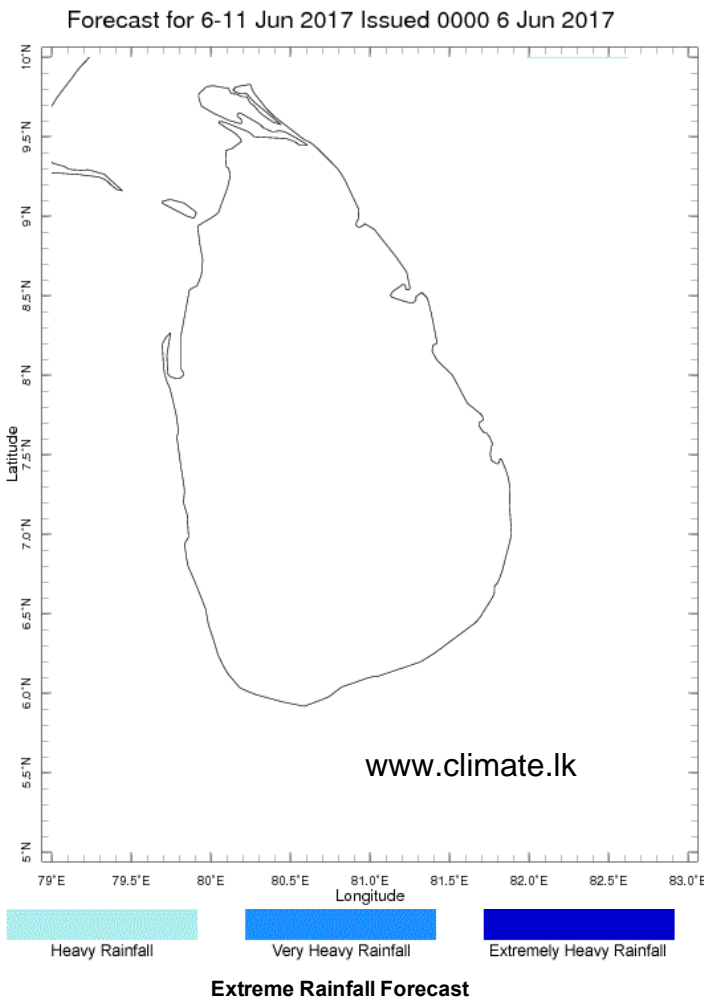


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 07-06-2017 valid for 03 UTC of 10-06-2017



Weekly Rainfall Forecast from IRI

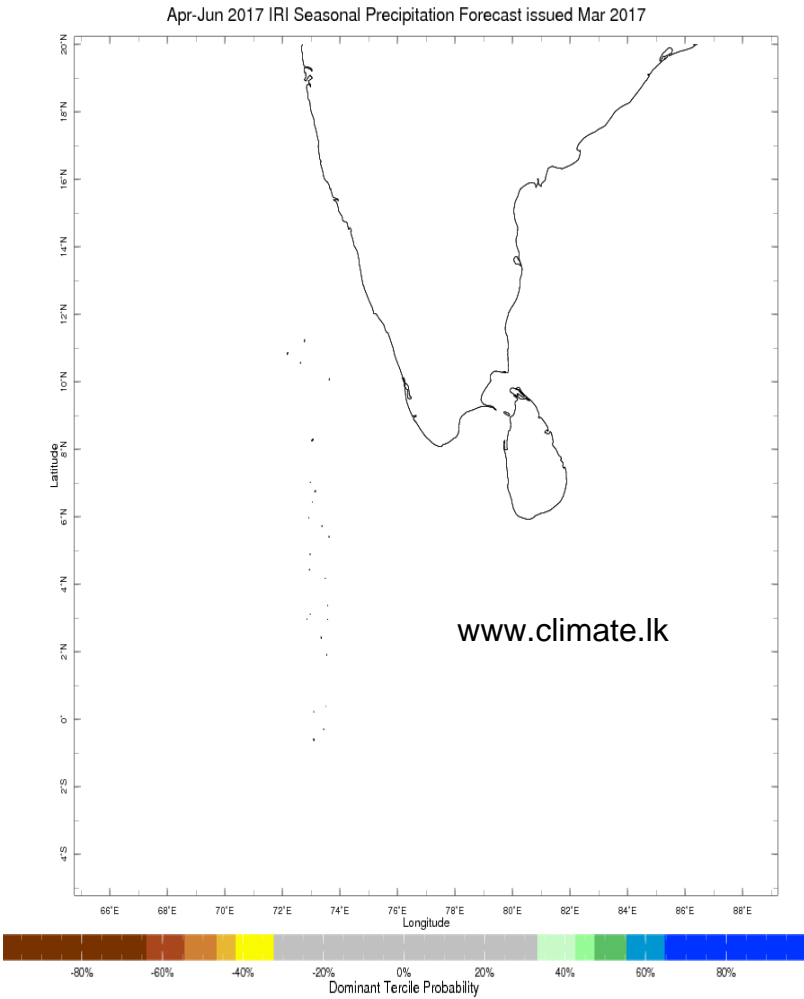
Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.



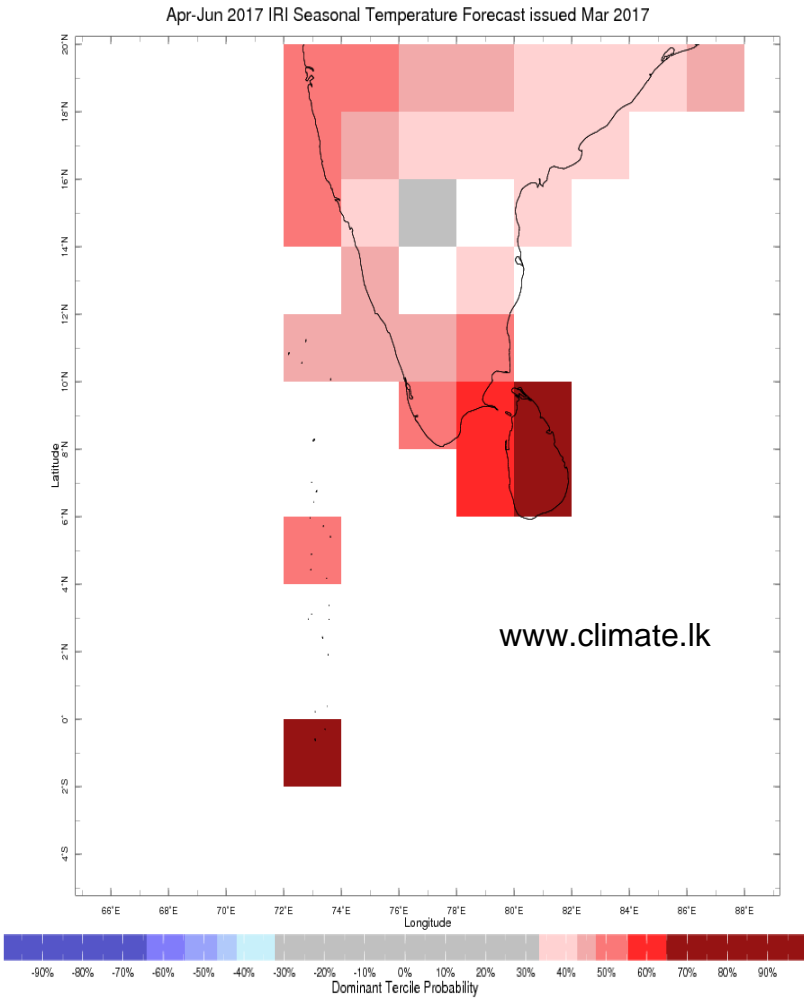


Seasonal Rainfall and Temperature Forecast

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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