

## Experimental Climate Monitoring and Prediction

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### Highlights

- The WRF model predicts up to 125 mm of rainfall in Gampaha and Puttalam districts on 12<sup>th</sup> May.
- Between 3-9 May: highest rainfalls of 120 mm were recorded on the 7<sup>th</sup> in Anuradhapura districts.
- From 30 Apr-6 May: minimum temperature of 15 °C was recorded from Nuwara Eliya district while northern half of the island recorded a maximum temperature between 30-35 °C.
- From 2-8 May: up to 11 km/h, Southeasterly winds were experienced by the eastern coastal regions; and speeds less than 7 km/h in rest of the island.
- Average sea surface temperature was observed in the seas around Sri Lanka.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On May 3<sup>rd</sup>, Ratnapura district received up to 15 mm of rainfall; and several regions of Jaffna, Kilinochchi, Anuradhapura, Polonnaruwa, Matale, Kandy, Kegalla, Kalutara, Galle and Matara districts received up to 10 mm of rainfall. On the 4<sup>th</sup> Vavuniya, Anuradhapura and Ratnapura districts received up to 20 mm of rainfall. On the 5<sup>th</sup> several regions of Jaffna, Mannar and Kurunegala districts received up to 10 mm of rainfall. On the 6<sup>th</sup> Anuradhapura district received up to 70 mm of rainfall; Mannar and Kurunegala districts up to 50 mm; Vavuniya and Puttalam districts up to 30 mm; Jaffna, Mullaitivu, Kalutara, Kegalla and Ratnapura districts up to 20 mm; and most parts of the island up to 10 mm. On the 7<sup>th</sup> Anuradhapura district received up to 120 mm of rainfall; Puttalam district up to 100 mm; Kurunegala and Matale district up to 90 mm; Kilinochchi district up to 50 mm; Mannar, Polonnaruwa, and Gampaha districts up to 40 mm; Jaffna, Mullaitivu, Vavuniya, Badulla, Ampara, Colombo, Kalutara and Ratnapura districts up to 30 mm; and Trincomalee, Kandy and Nuwara Eliya districts up to 20 mm. On the 8<sup>th</sup> Ratnapura district received up to 90 mm of rainfall; Nuwara Eliya district up to 40 mm; Kegalla, Gampaha, Colombo, Kalutara and Galle districts up to 30 mm; and Matara, Kandy, Badulla and Monaragala districts up to 20 mm. On the 9<sup>th</sup> Kandy district received up to 30 mm of rainfall; Polonnaruwa, Matale, Ampara, Badulla, Monaragala, Nuwara Eliya, Kegalla, Ratnapura and Kalutara districts up to 20 mm; and most parts of the island up to 10 mm.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall up to 100 mm in Anuradhapura, Puttalam, Kurunegala and Ratnapura districts; up to 75 mm in Vavuniya, Matale, Polonnaruwa, Colombo, Kalutara, Nuwara Eliya and Kegalla districts; and up to 50 mm in Jaffna, Mullaitivu, Mannar, Kandy, Badulla, Monaragala, Ampara, Galle and Matara districts. It shows above average rainfall of 100-200 mm for Anuradhapura and Puttalam districts; and up to 50-100 mm for Mannar, Kurunegala, Gampaha and Ratnapura districts; and up to 25-50 for Jaffna, Kilinochchi, Mullaitivu, Vavuniya, Matale, Kandy, Nuwara Eliya, Colombo and Kalutara districts.

**Monthly Monitoring:** During April - below average rainfall conditions were experienced in the entire island. Matale, Gampaha, Colombo, Ratnapura and Kandy districts received up to 210 mm below average rainfall; and many parts of the island received up to 150 mm. Monthly average rainfall for Anuradhapura, Kurunegala, Gampaha, Colombo, Ratnapura, Kegalla, Galle and Matara districts amounted to 210 mm/month; and 150 mm/month for Puttalam, Kandy, Matale, Badulla, Hambantota and Monaragala districts. The CPC Unified Precipitation Analysis tool shows ~200 mm of total rainfall in Anuradhapura, Gampaha, Colombo, Kalutara, Galle and Ratnapura districts; up to ~100 mm in Matale, Kandy, Nuwara Eliya, Badulla, Monaragala, Kurunegala and Hambantota districts; and up to ~75 mm Ampara, Puttalam and Mannar districts;

#### Ocean State (Text Courtesy IRI)

#### Pacific sea state: April 20, 2017

By mid-April 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. Across the western and central Pacific, the pattern of cloudiness, rainfall, and winds remains suggestive of La Nina conditions. The collection of ENSO prediction models indicates increasing chances of El Nino into the summer and fall of 2017.

## **Indian Ocean State**

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

## **Predictions**

### **Rainfall**

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

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

From 10<sup>th</sup> -16<sup>th</sup> May: Total rainfall between 45-55 mm in Ratnapura and Matara districts; between 35-45 mm in Colombo and Hambantota districts; between 25-35 mm in Gampaha, Kegalla, Kady, Nuwara Eliya, Monaragala and Badulla; between 15-25 mm in Mannar, Vavuniya, Puttalam, Kurunegala, Matale and Ampara districts; between 5-15 mm in Jaffna, Kilinochchi, Mullaitivu, Trincomalee, Batticaloa.

From 17<sup>th</sup> – 23<sup>rd</sup> May: Total rainfall between 75-85 mm in Matara, Hambantota and Ratnapura districts; between 65-75 mm in Kegalla, Nuwara Eliya and Monaragala districts; between 55-65 mm in Kandy and Badulla districts; between 45-55 mm in Gampaha, Kurunegala, Matale, Ampara and Anuradhapura districts; 35-45 mm in Puttalam Polonnaruwa, Batticaloa, Mannar, Vavuniya, Mullaitivu, Kilinochchi and Jaffna districts.

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

11th May: Up to 65 mm of rainfall in Puttalam, Gampaha and Polonnaruwa districts; up to 36 mm of rainfall in Kurunegala, Kegalla, Colombo, Nuwara Eliya, Kalutara, Ratnapura, Galle, Trincomalee and Batticaloa districts; up to 8 mm of rainfall in Matale, Kandy, Badulla, Monaragala, Ampara and Hambantota districts; up to 3 mm of rainfall in Jaffna, Kilinochchi, Mullaitivu, Mannar, Vavuniya districts.

12th May: Up to 125 mm of rainfall in Gampaha and Batticaloa districts; up to 65 mm of rainfall in Kurunegala, Colombo, Kalutara, Ratnapura, Ampara, Batticaloa, Polonnaruwa, Trincomalee and Badulla districts; up to 36 mm of rainfall in Galle, Matara, Nuwara Eliya, Kegalla, Kandy and Monaragala districts; up to 8 mm of rainfall in Hambantota, Anuradhapura, Matale districts and Northern province.

##### **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 not have a significant impact on rainfall for the next 5 days and shall enhance the rainfall 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/>



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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

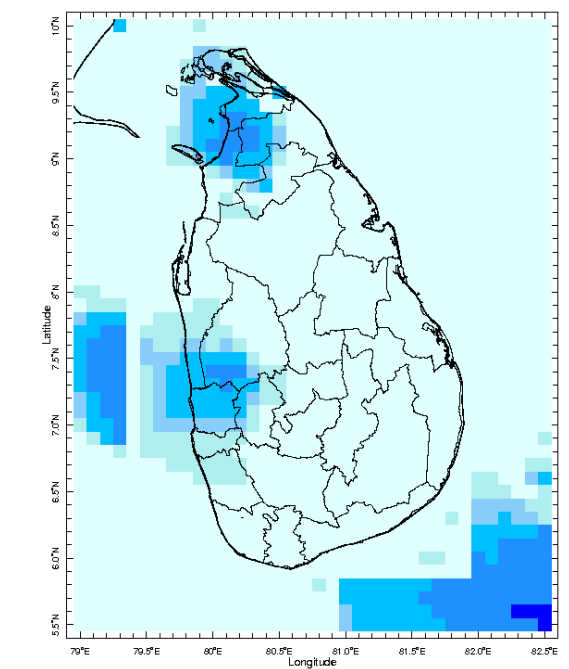
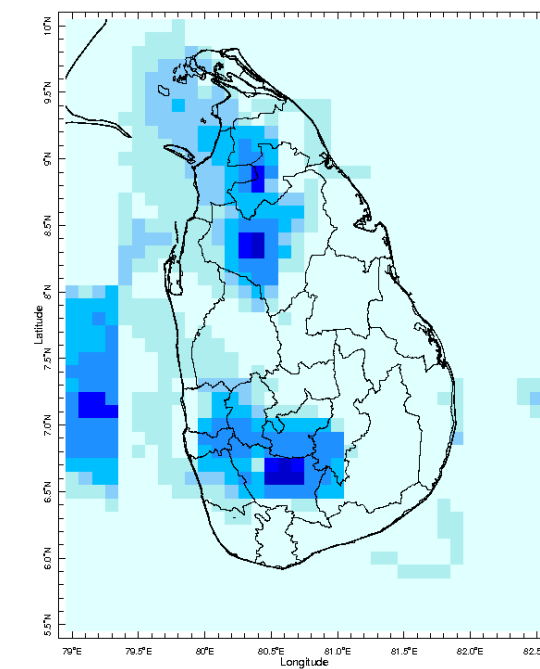
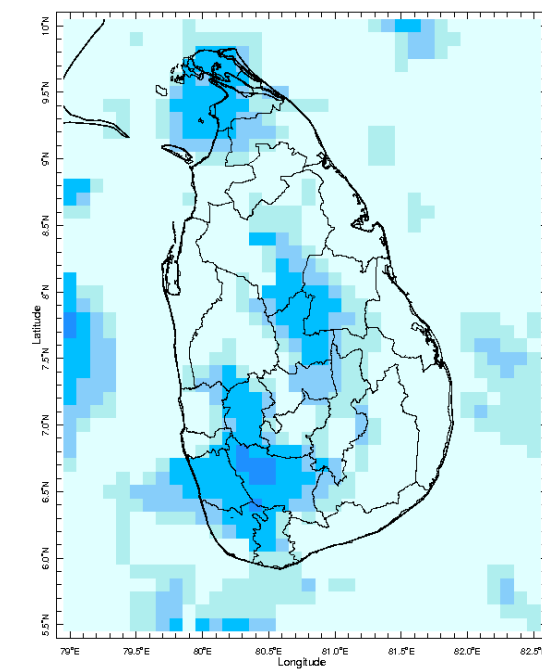
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

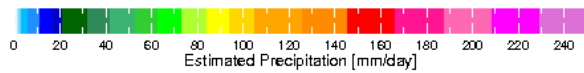
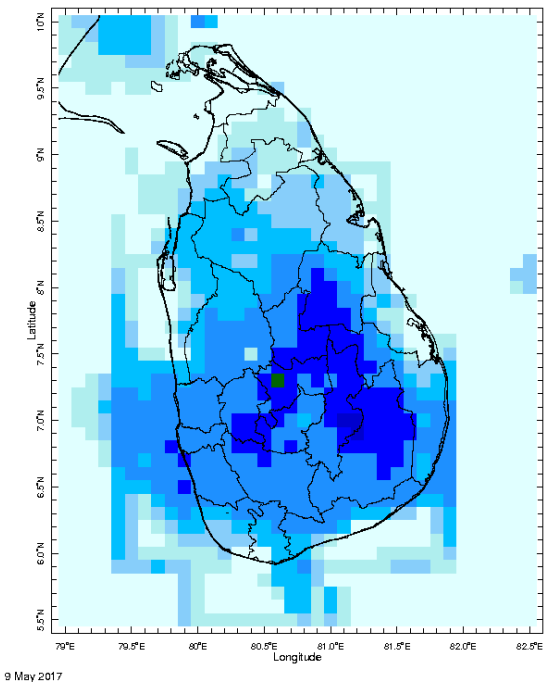
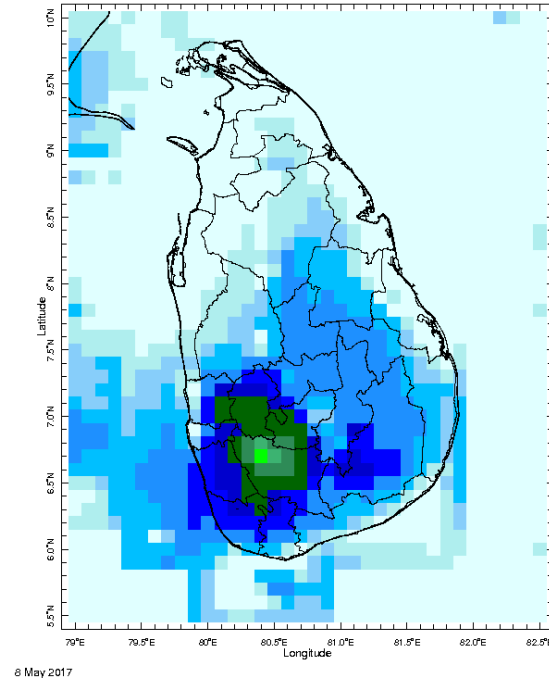
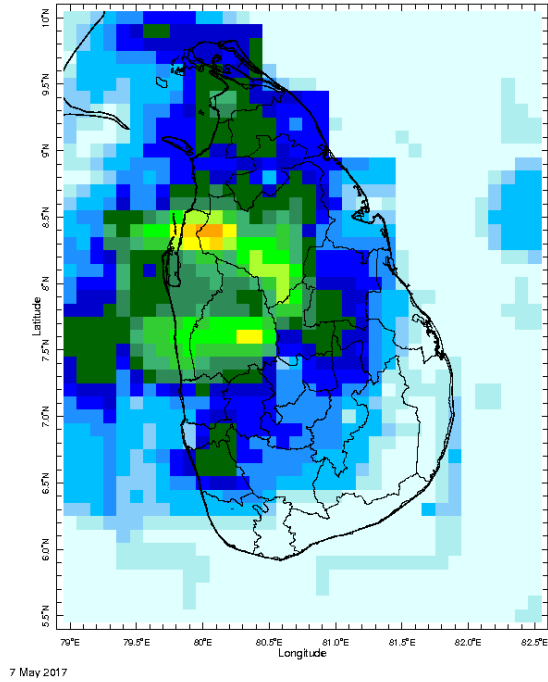
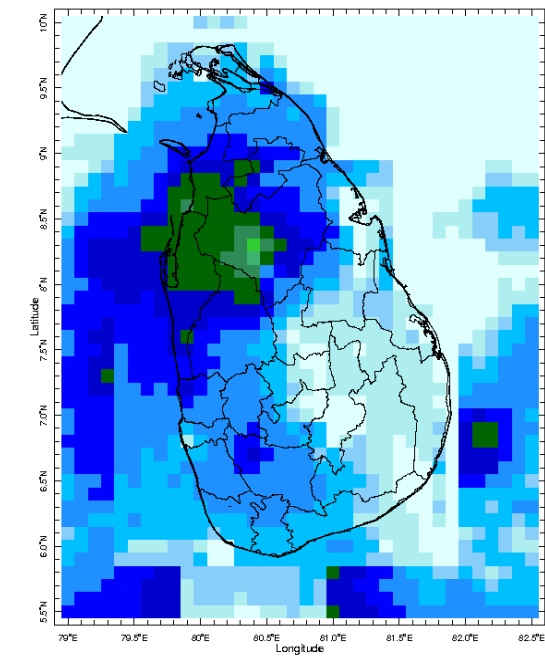


### MONITORING

#### Daily Rainfall Monitoring

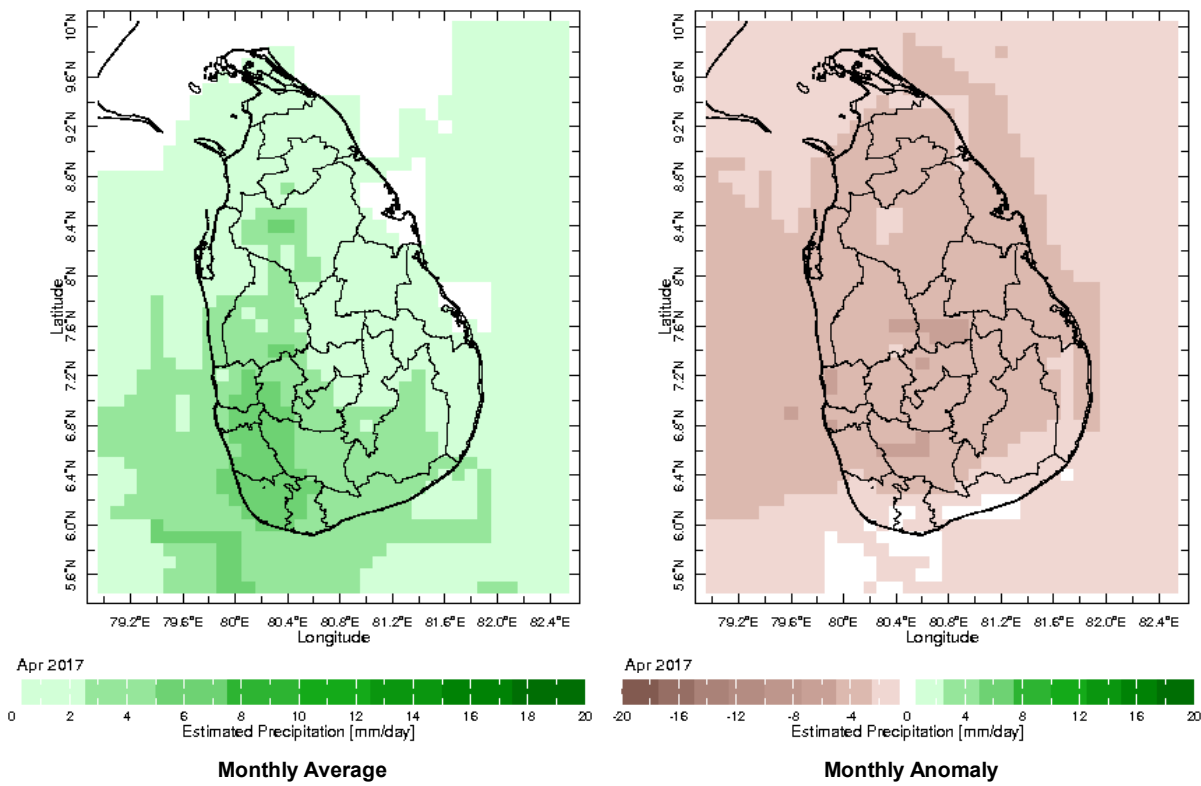
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



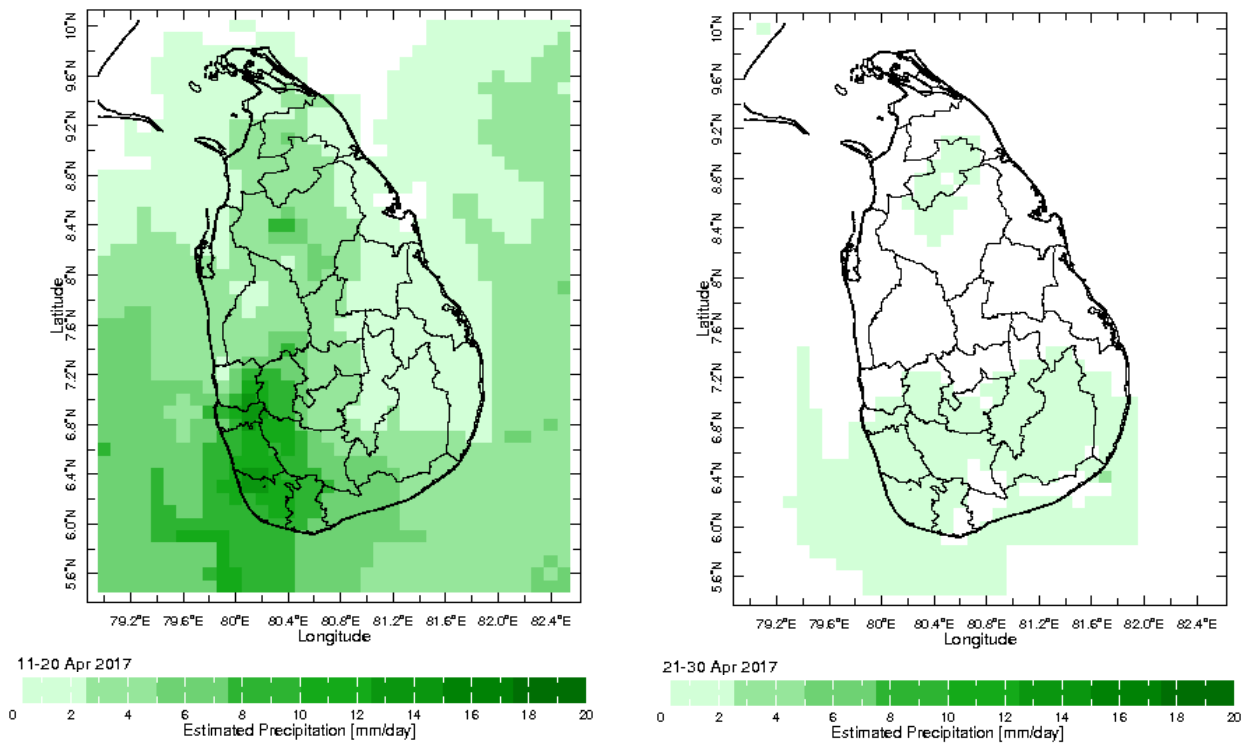


Monthly Rainfall Monitoring

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

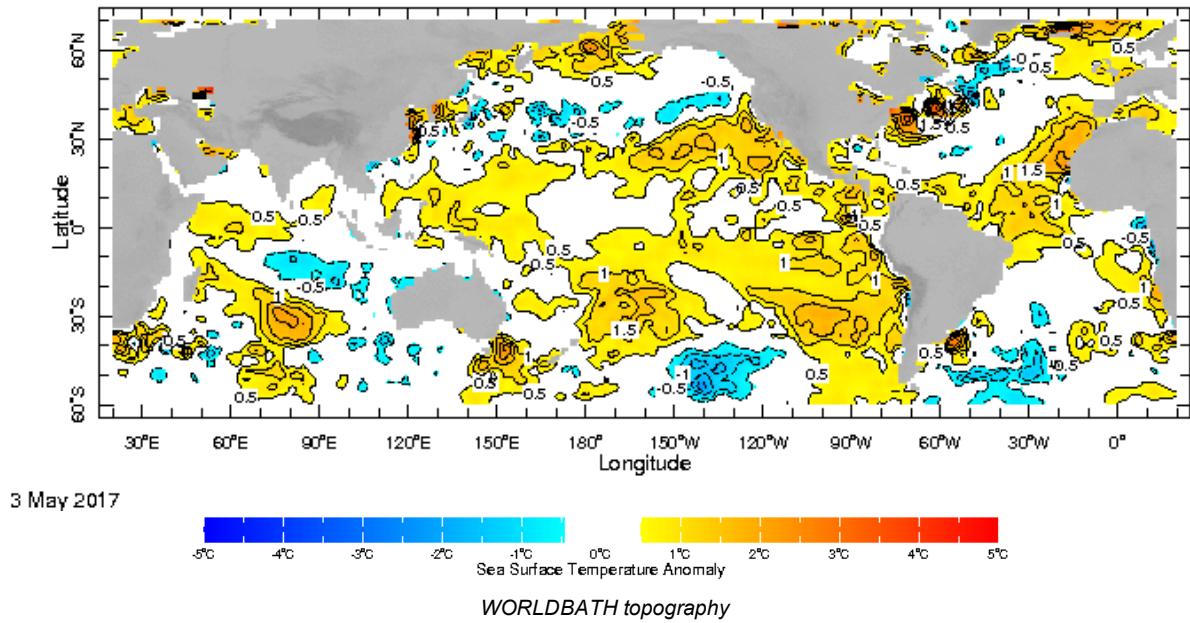


**Dekadal (10 Day) Satellite Derived Rainfall Estimates**

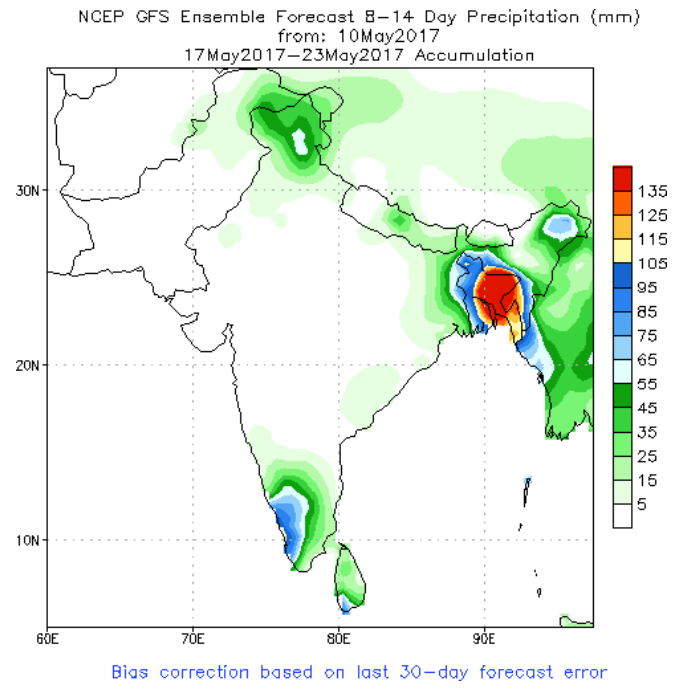
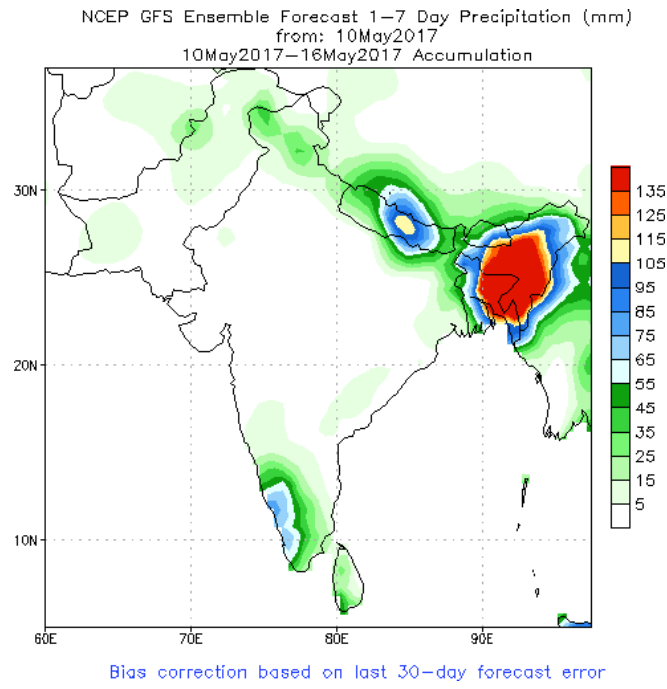


**Weekly Average SST Anomalies**

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

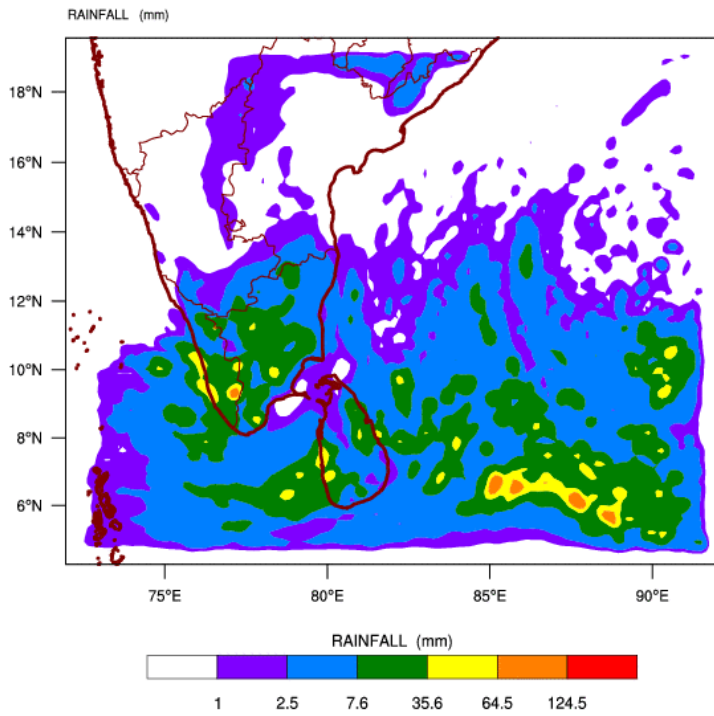


## NCEP GFS 1- 14 Day prediction

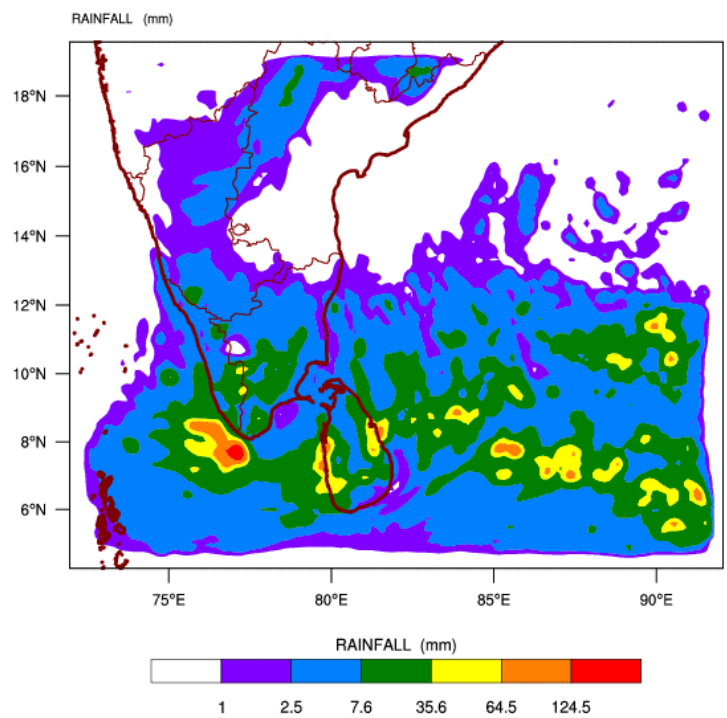


## WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 09-05-2017 valid for 03 UTC of 11-05-2017

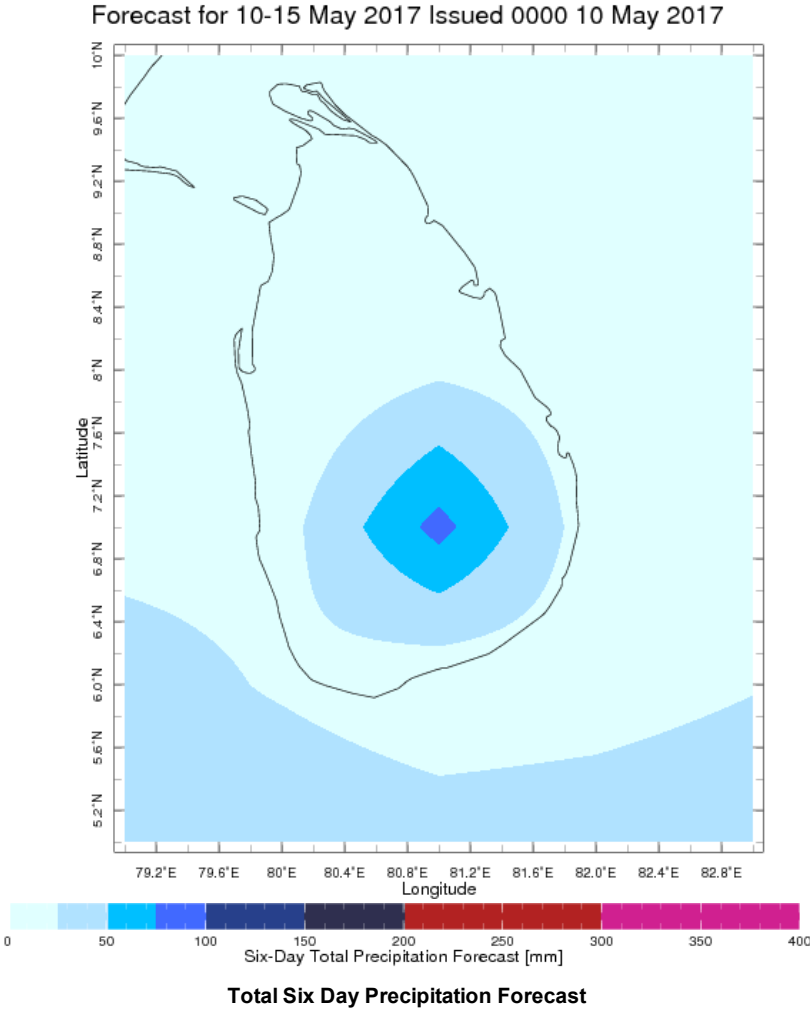
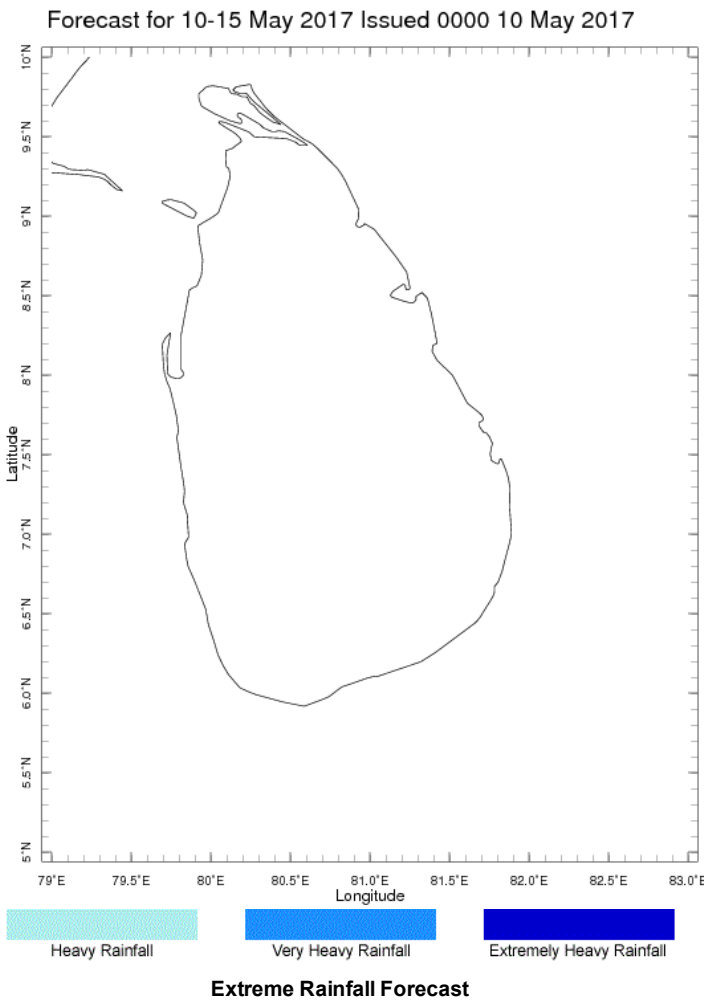


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 09-05-2017 valid for 03 UTC of 12-05-2017



Weekly Rainfall Forecast from IRI

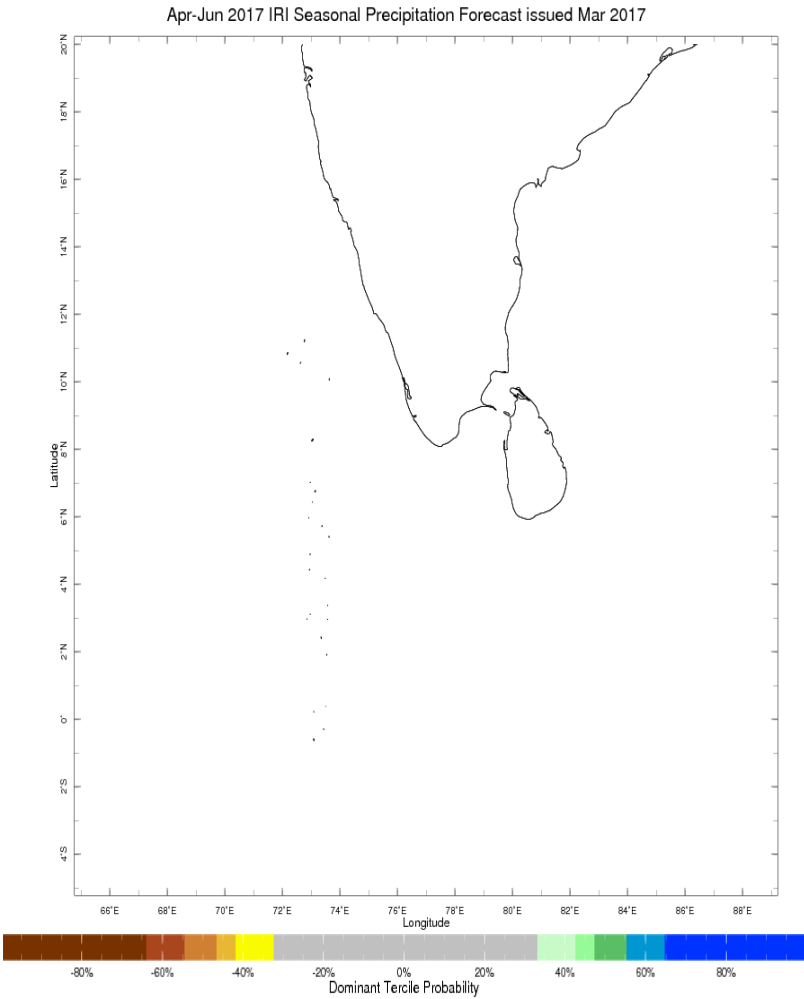
Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.



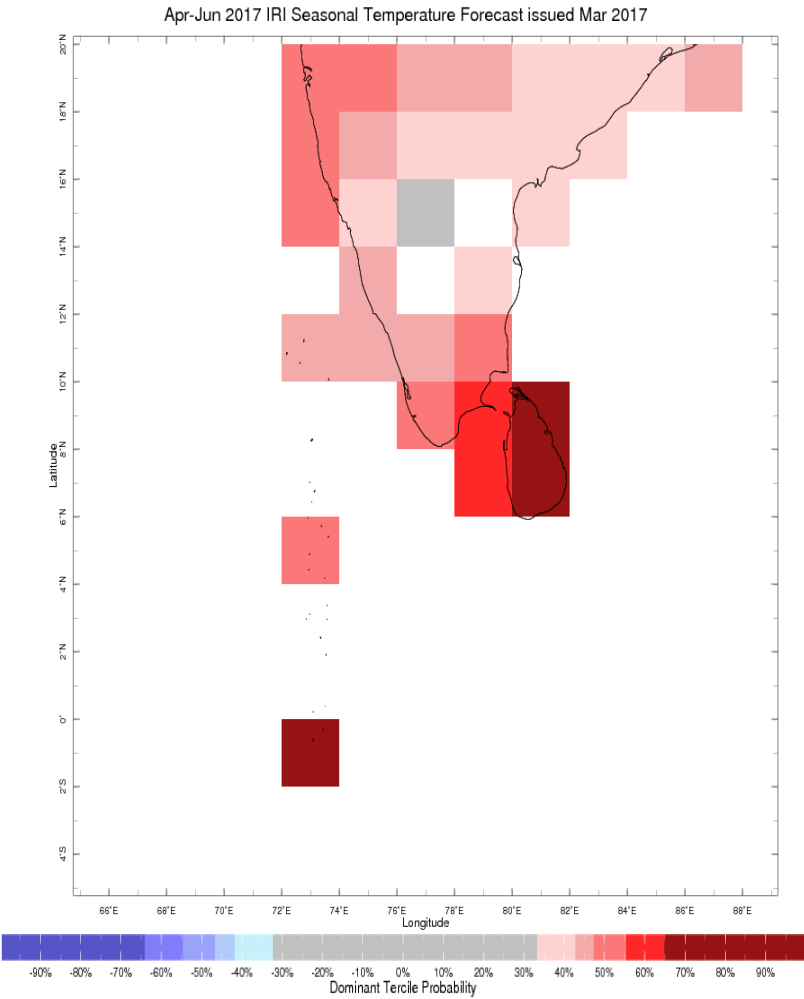


Seasonal Rainfall and Temperature Forecast

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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