

## Experimental Climate Monitoring and Prediction

by: Ruchira Lokuhetti, Prabodha Agalawatte, Manusha Lakmali, Zeenas Yahiya,

Lareef Zubair and Michael Bell<sup>1</sup> (FECT and IRI<sup>1</sup>)

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### Highlights

- The NOAA NCEP model predicts heavy rainfall (up to 125 mm) from 23<sup>rd</sup>– 29<sup>th</sup> November for the coastal regions of Colombo.
- Heavy rainfall events were experienced throughout the island during 16–22 November, with the highest recorded rainfall of 140 mm on the 22<sup>nd</sup> in Hanwella and Giriulla.
- Minimum temperature of 15 °C was recorded from Nuwara Eliya district while most parts of the island recorded a maximum temperature between 30-35 °C.
- Up to 20 km/h north easterly winds were experienced by the entire country.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On November 16<sup>th</sup> received rainfall up to 50 mm by Western province, Kilinochchi district and western and north western sea regions adjacent to the island; up to 30 mm by Puttalam, Kegalla, Ratnapura and Badulla districts; up to 20 mm by North Central, Central, Eastern and Southern provinces including Jaffna, Mullaitivu, Mannar, Trincomalee and Kurunegala districts. On November 17<sup>th</sup> rainfall was received, up to 50mm in North Central and North Western provinces including Gampaha, Colombo and Jaffna districts; up to 30 mm in Sabaragamuwa, Eastern provinces, Kalutara, Kandy, Badulla, Kilinochchi, Mannar, Vavuniya and Mullaitivu districts; up to 90 mm along the adjacent north eastern sea region; and up to 20 mm in rest of the districts in Sri Lanka. On November 18<sup>th</sup> rainfall was received, up to 80 mm by Kilinochchi, Polonnaruwa, Ampara, Badulla and Monaragala districts; up to 60 mm in the coastal areas of Ampara district and the adjacent eastern sea area; up to 50 mm by the Central and Western provinces, with Jaffna, Mannar, Kegalla, Anuradhapura and Vavuniya districts; up to 30mm by Mullaitivu, Puttalam and Ratnapura districts; and up to 20 mm in rest of the districts. November 19<sup>th</sup> received rainfall, up to 90 mm in Jaffna peninsula and adjacent northern sea; up to 80 mm in Kilinochchi district; up to 50mm in Mullaitivu, Matale, Kandy, Batticaloa and Ampara districts; up to 30 mm in Trincomalee, Mannar, Vavuniya, Anuradhapura, Polonnaruwa and Kurunegala districts; and up to 20 mm in Colombo, Kalutara, Galle, Badulla and Monaragala districts. On November 20<sup>th</sup> rainfall was received, up to 50 mm in Jaffna district; up to 20 mm in Kilinochchi, Mannar and Puttalam districts; and up to 80 mm by the Eastern Sea adjacent to the island. On November 21<sup>st</sup> rainfall was received up to 80mm by Matara, Hambantota districts and adjacent eastern and western sea regions of the island; up to 50 mm in Jaffna and Galle districts; up to 30 mm in Kilinochchi, Mullaitivu, Kalutara, Ratnapura and Batticaloa districts; and up to 20 mm by Mannar, Anuradhapura, Polonnaruwa and Trincomalee districts. On November 22<sup>nd</sup> surrounding areas of Giriulla and Hanwella received rainfall up to 140 mm; Puttalam, Gampaha and Kegalla districts up to 90mm of rainfall, Kilinochchi and Jaffna districts received up to 50 mm of rainfall; and Mullaitivu, Vavuniya, Kandy, Nuwara Eliya and Galle districts received up to 20 mm of rainfall.

**Monthly Monitoring:** Below average rainfall conditions were experienced in the entire island in the month of October except for coastal regions of Galle district, where monthly average rainfall amounted to 450 mm/month. Rainfall did not exceed 210 mm/month for the rest of the island. The CPC Unified Precipitation Analysis tool shows ~100 mm of total rainfall in Gampaha, Colombo, Ratnapura, Galle, Matara, Anuradhapura, Mannar, Vavuniya,, Matale, Kandy and Nuwara Eliya districts ; and ~25 mm of total rainfall in Ampara, Badulla, Monaragala, Kegalla and Jaffna districts.

#### Ocean State

##### **Pacific sea state: November 17, 2016**

During mid-November 2016 the tropical Pacific SST anomaly was slightly cooler than -0.5C, the threshold for weak La Niña. Also, most of the atmospheric variables across the tropical Pacific have been consistent with weak La Niña conditions. The upper and lower atmospheric winds have been suggestive of a strengthened Walker circulation, and the cloudiness and rainfall have also been consistent with weak La Niña conditions. The collection of ENSO prediction models indicates SSTs near or slightly cooler than the threshold of La Niña during the remainder of fall, persisting through mid-winter, then weakening to cool-neutral by later winter. (Text Courtesy IRI)

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

0.5 °C above average sea surface temperature was observed in the northern, north eastern and eastern sea of Sri Lanka.

## Predictions

### Rainfall

**14-day prediction:** From 23<sup>rd</sup>-29<sup>th</sup> November, the NOAA NCEP models predicts total rainfall up to 125 mm for coastal regions of Colombo district; 115-125 mm in Ampara, Batticaloa, Gampaha, Nuwara Eliya, Ratnapura, Galle and Kegalla districts; 95-105mm in Gampaha, Ratnapura, Kegalla and Galle districts; 85-95mm in Polonnaruwa, Kurunegala and Matara districts; 75-85 mm in Matale, Kandy Nuwara Eliya, Monaragala and Badulla districts; and total rainfall between 45-55mm in Puttalam, Anuradhapura and Mullaitivu districts. From 30<sup>th</sup> November – 6<sup>th</sup> December a total rainfall between 125-135 mm is expected in the coastal regions of Batticaloa; 115-125 mm in the coastal regions of Colombo; 105-115 mm in Batticaloa, Trincomalee, Ratnapura and Galle districts, and more than 65 mm in rest of the country.

**IMD WRF & IRI Model Forecast:** According to the IMD WRF model, on the 25<sup>th</sup> up to 35 mm of rainfall is expected in Ratnapura and Colombo districts; and up to 7 mm of rainfall in rest of the south western regions of the island. On 26<sup>th</sup>, rainfall is expected to increase with Ampara district receiving rainfall up to 64 mm and Ratnapura, Trincomalee, Nuwara Eliya, Badulla, Monaragala and Kegalla regions receiving rainfall up to 35 mm. Most of the eastern and southern regions of the country are expected to receive up to 7 mm of rainfall.

**Seasonal Prediction:** As per IRI Multi Model Probability Forecast for December to February 2017, the total 3-month precipitation shall be climatological for the whole island. The 3-month temperature has more than 70-80% likelihood in the entire country of being in the above-normal tercile during this period.

### MJO based OLR predictions

MJO shall enhance the rainfall during the next 10 days and shall not have a significant impact on the rainfall in Sri Lanka for 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

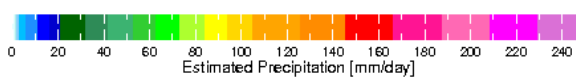
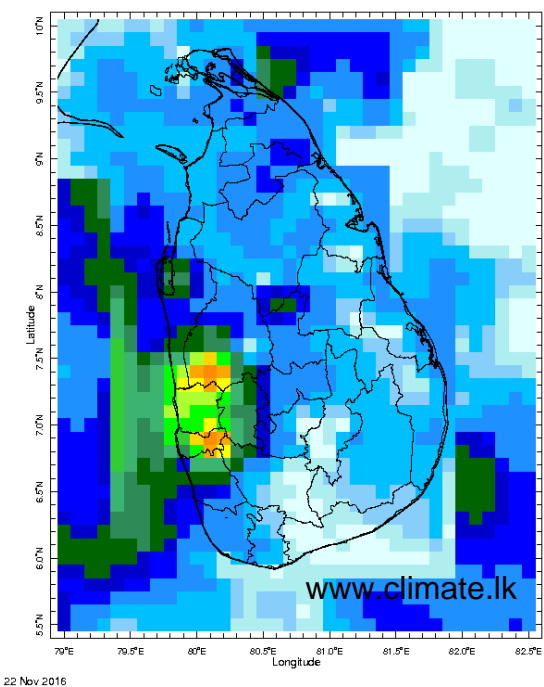
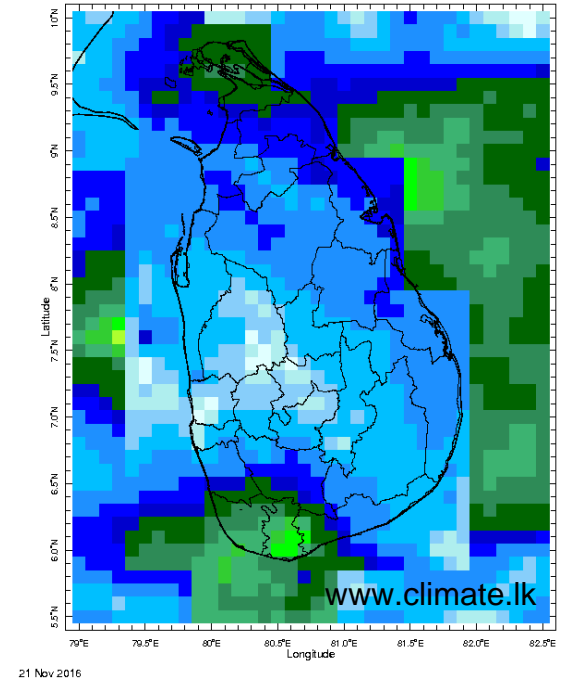
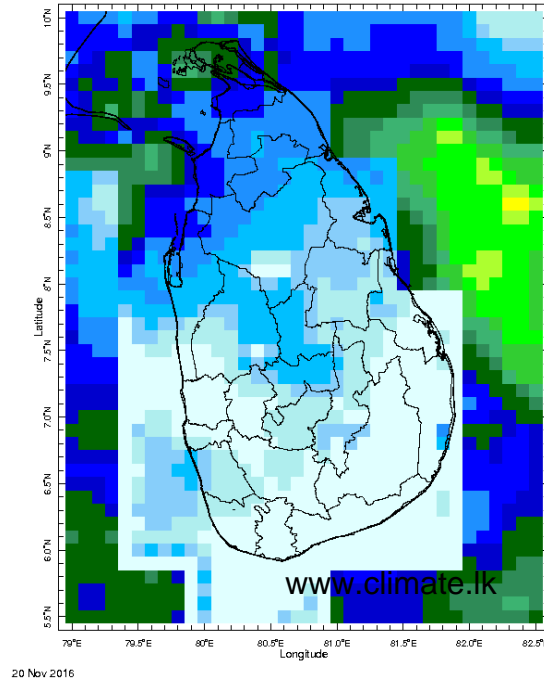
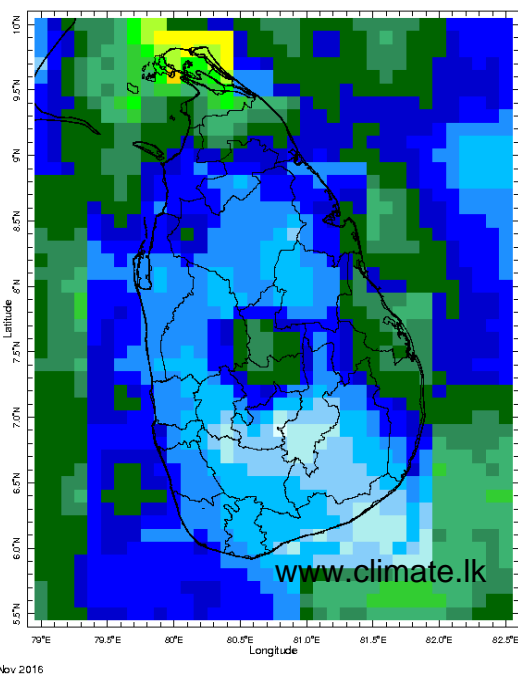
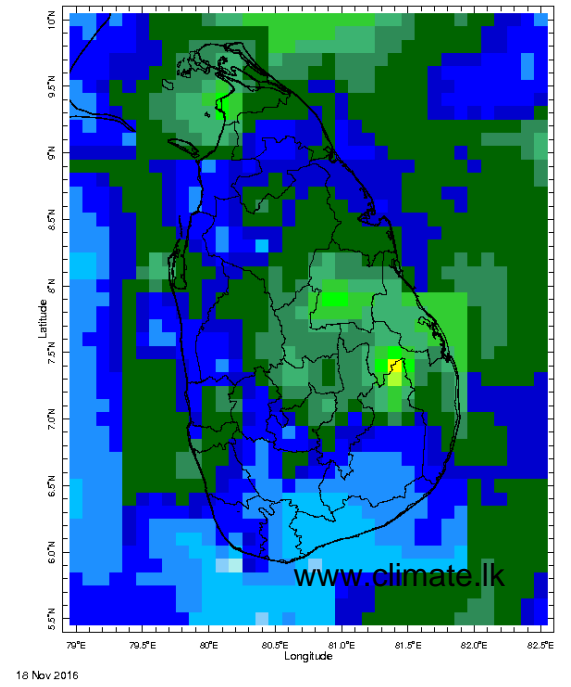
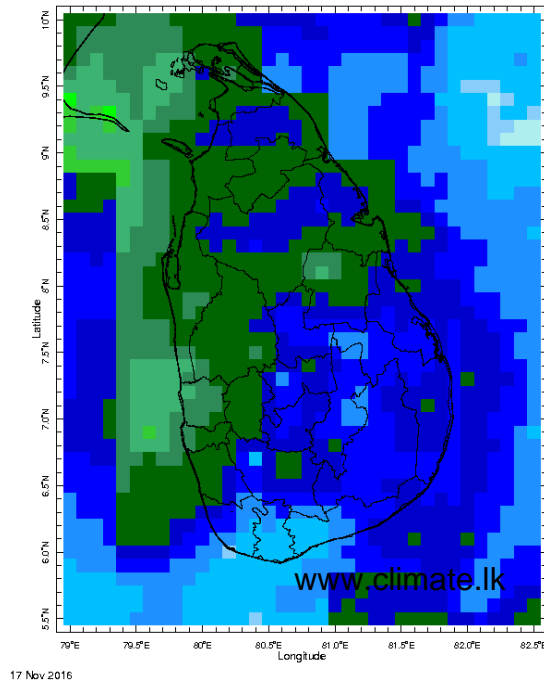
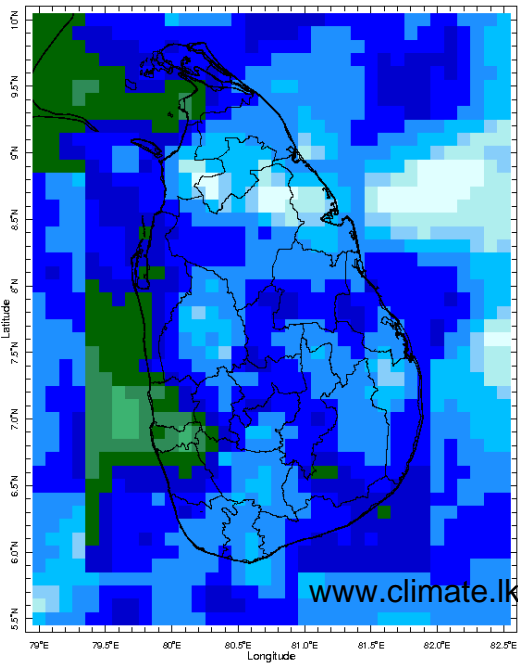
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- b. GFS (T574) Model Rainfall Forecast from RMSC New Delhi
- c. WRF Model Rainfall Forecast from IMD Chennai
- d. MJO Related OLR Forecast
- e. Weekly Precipitation Forecast from IRI
- f. Weekly Temperature Forecast
- g. Weekly Wind Forecast
- h. Seasonal Predictions from IRI

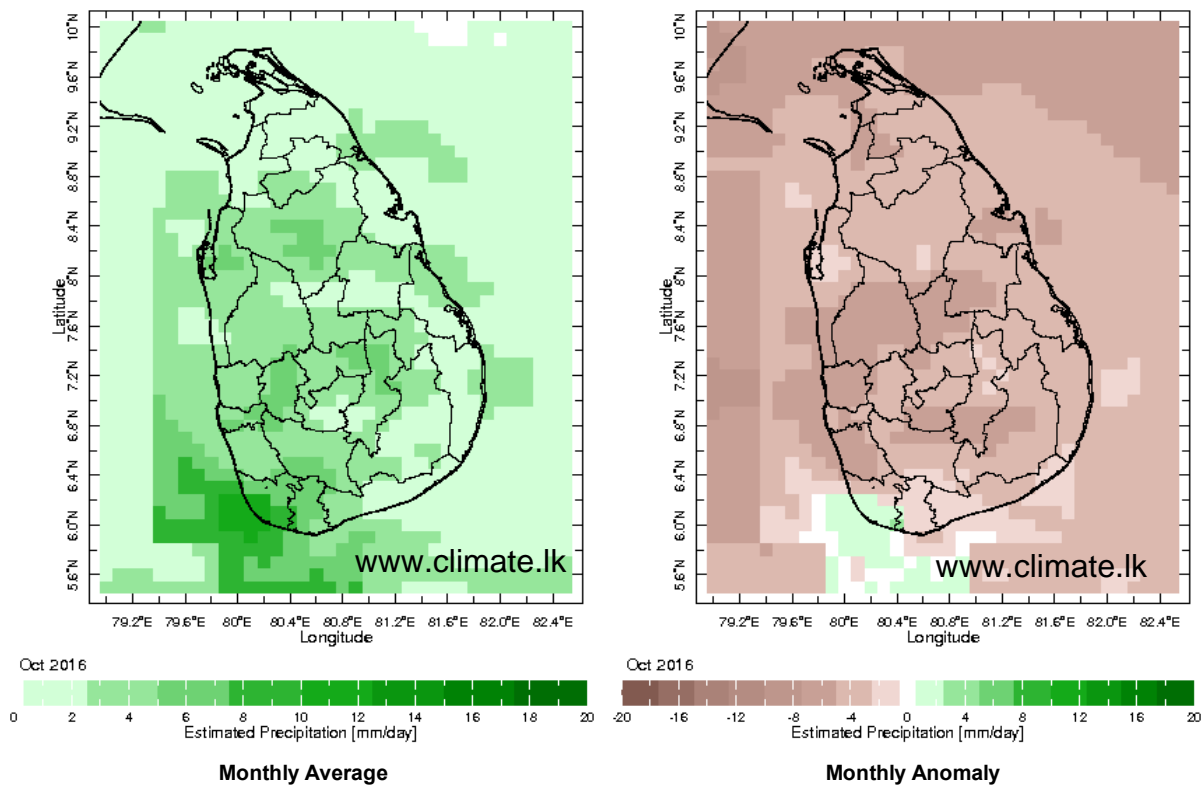
## Daily Rainfall Monitoring

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

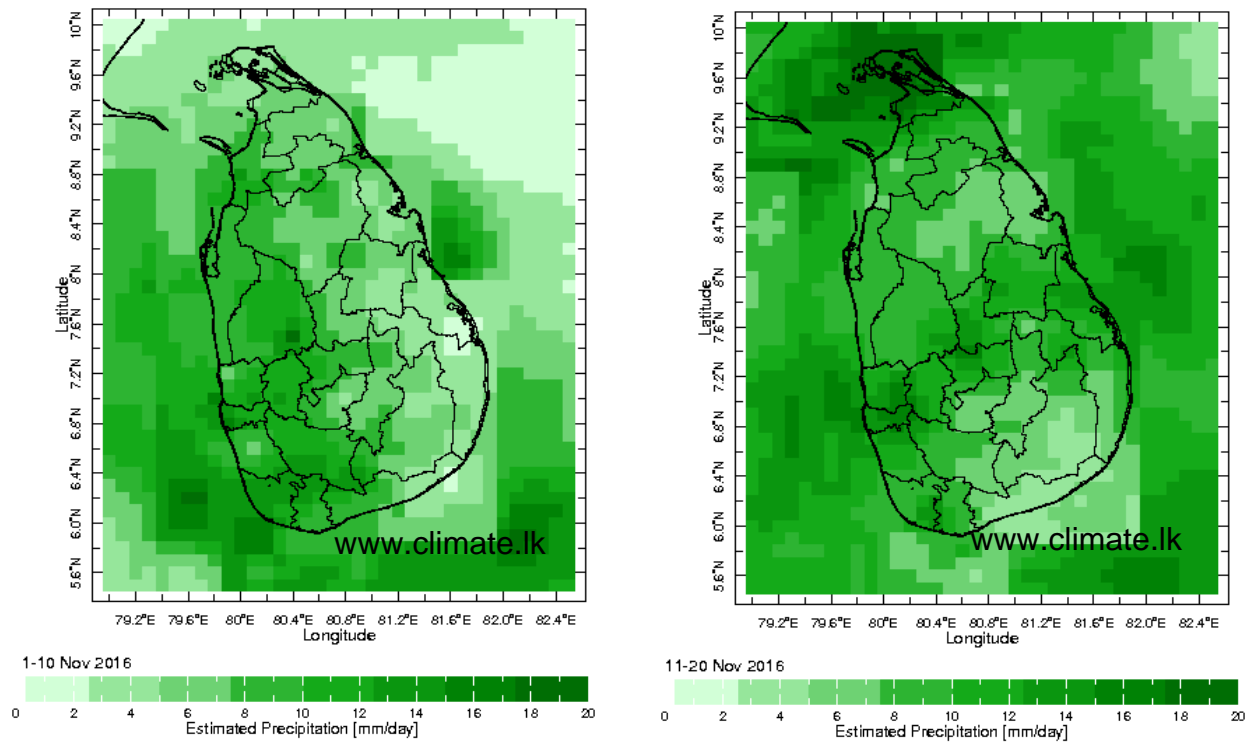


Monthly Rainfall Monitoring

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

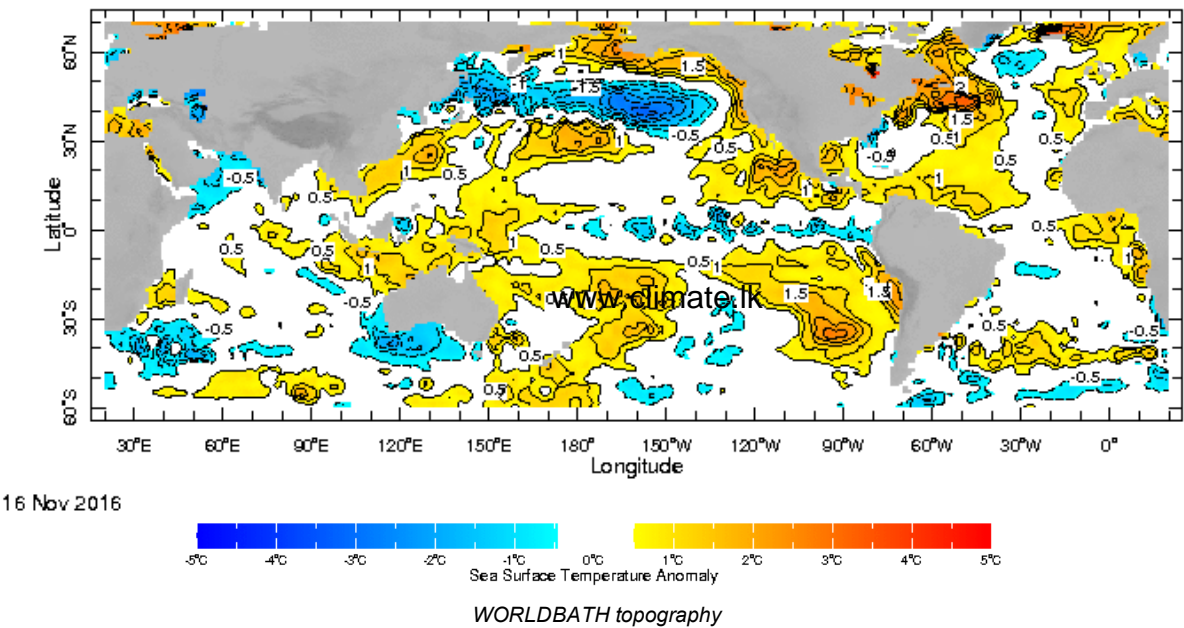


Dekadal (10 Day) Satellite Derived Rainfall Estimates



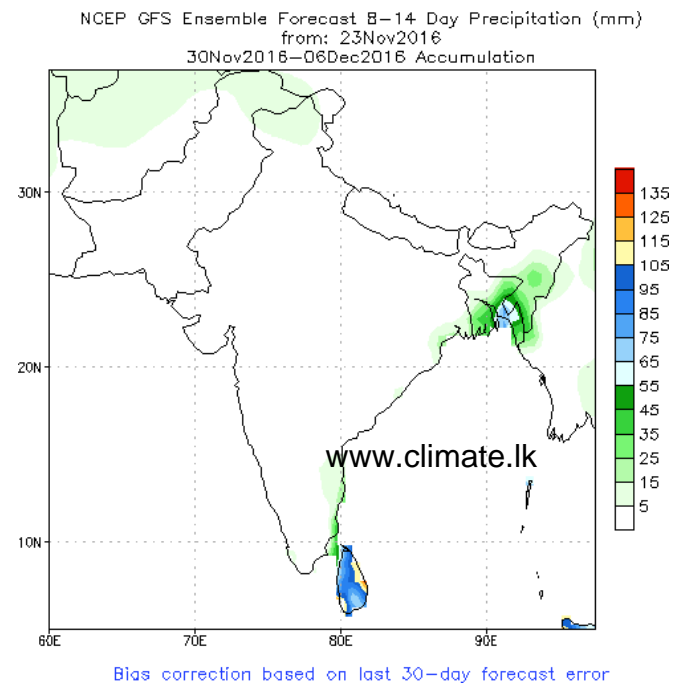
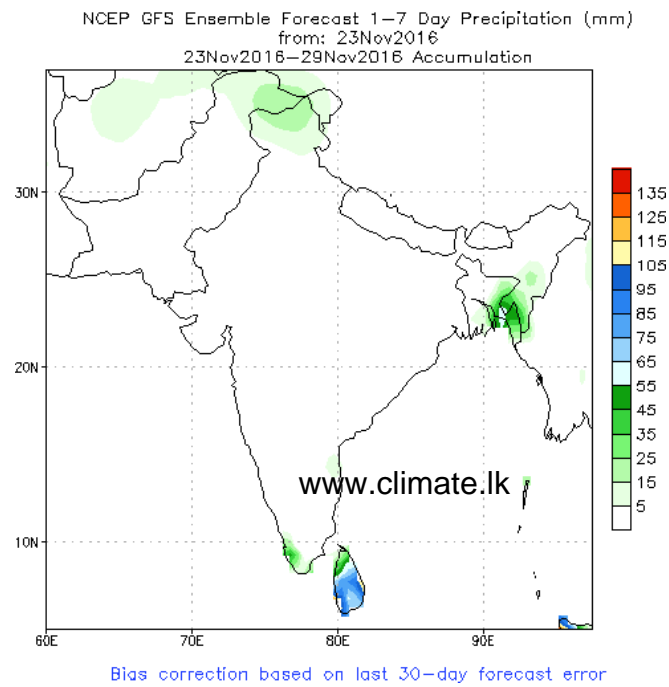
Weekly Average SST Anomalies

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



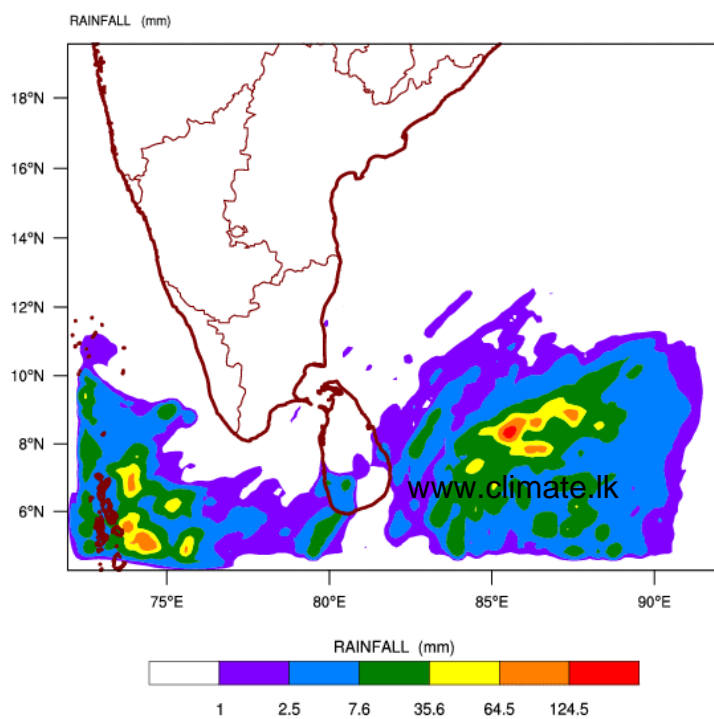
## PREDICTIONS

### NCEP GFS 1- 14 Day prediction

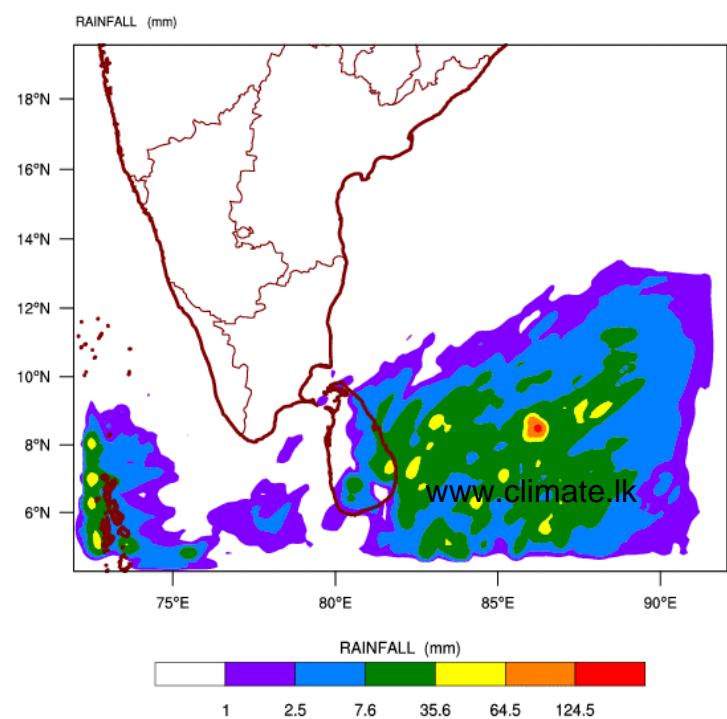


### WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 23-11-2016 valid for 03 UTC of 25-11-2016

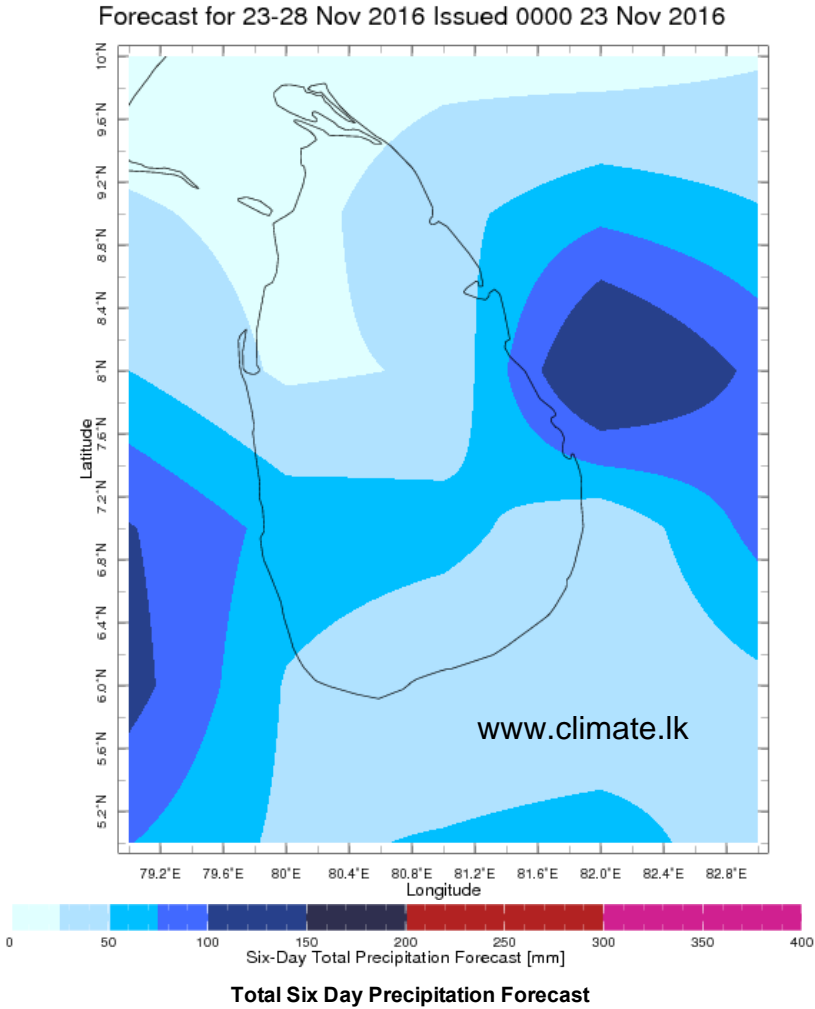
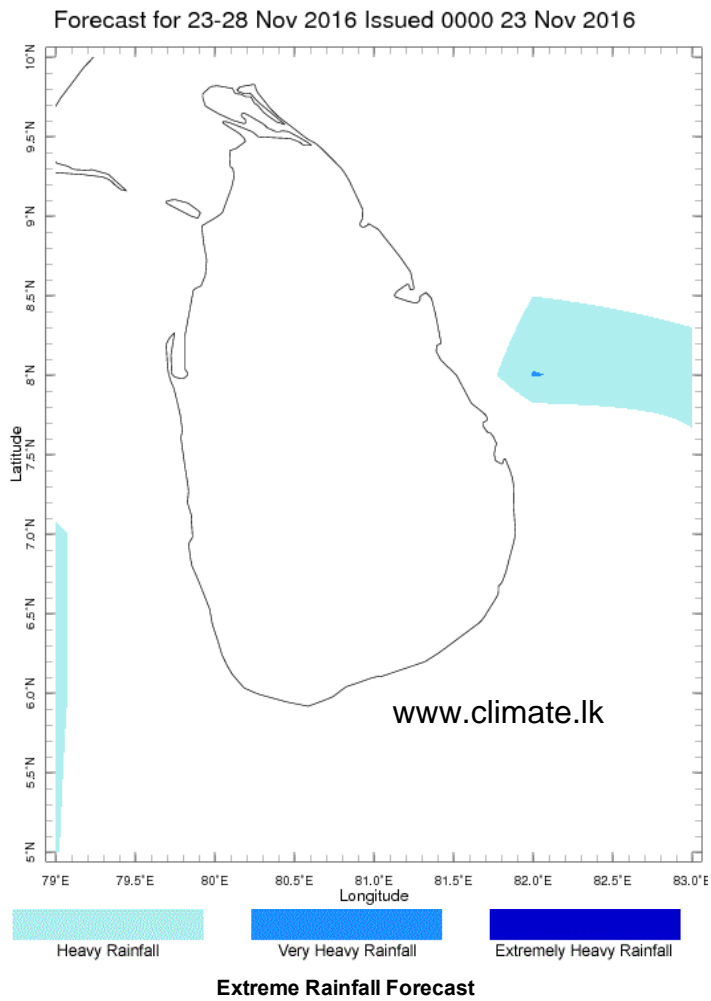


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 23-11-2016 valid for 03 UTC of 26-11-2016



Weekly Rainfall Forecast from IRI

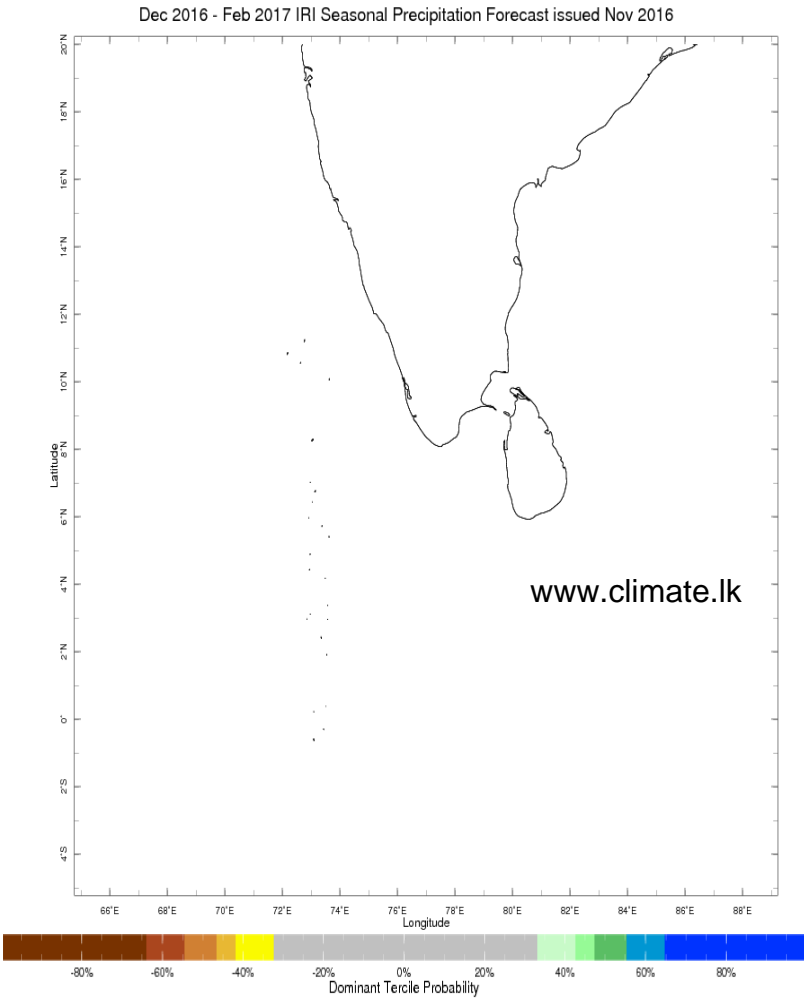
Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.



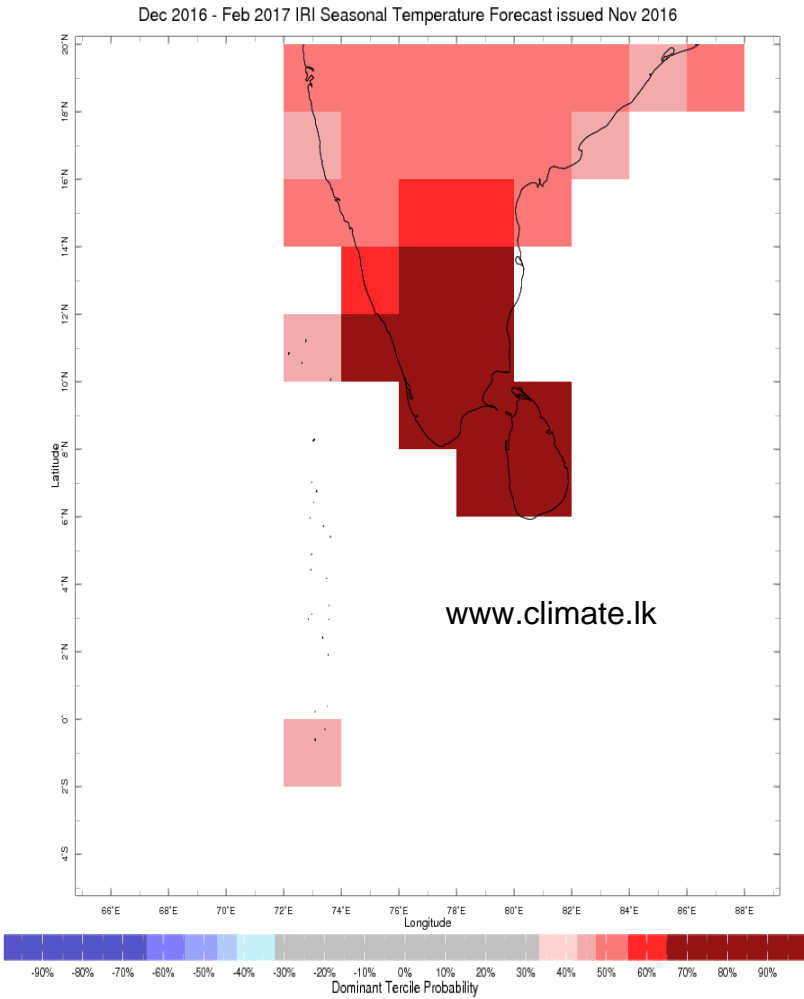


Seasonal Rainfall and Temperature Forecast

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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