

## Experimental Climate Monitoring and Prediction

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### Highlights

- The IMD WRF model predicts rainfall up to 35 mm on 30<sup>th</sup> December in northern and eastern parts of the island.
- Between Dec 20–26: highest rainfall of 50 mm was recorded on the 26<sup>th</sup> in the surrounding regions of Padawiya in Anuradhapura district.
- From Dec 18–24: minimum temperature of 15 °C was recorded from Nuwara Eliya district while many parts of the island recorded a maximum temperature between 30–35 °C.
- From Dec 20–26: up to 18 km/h north easterly winds were experienced by the entire island.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On December 20<sup>th</sup> Padukka, Labugama regions in Colombo district and Ratnapura town area received up to 20 mm of rainfall. During the period 21<sup>st</sup>–25<sup>th</sup> Dec no significant rainfalls were recorded in any part of the island. On 26<sup>th</sup> Vavuniya and Anuradhapura districts received up to 50 mm of rainfall; Mullaitivu, Trincomalee, Polonnaruwa, Batticaloa and Ampara districts up to 30 mm; and Kilinochchi district received up to 20 mm of rainfall.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall up to 75 mm for Vavuniya district and for the coastal regions of Colombo district; up to 50 mm for Jaffna, Mullaitivu, Anuradhapura, Polonnaruwa, Trincomalee, Batticaloa, Ampara and Badulla districts; and up to 25 mm for many parts of the island. It shows above average rainfall of 100–200 mm for the coastal regions of the Colombo district; 25–50 mm for the eastern regions of Vavuniya district; below average rainfall of 25–50 mm for Mannar, Anuradhapura, Polonnaruwa, Trincomalee, Batticaloa, Ampara, Monaragala, Hambantota, Matara, Galle, Kurunegala and Puttalam districts; and 10–25 mm for rest of the island.

**Monthly Monitoring:** During November - above average rainfall conditions were experienced in Jaffna, Kilinochchi, Kegalla, Gampaha, Colombo, Galle, Matara and several regions of Kurunegala and Puttalam districts. Monthly average rainfall for these regions amounted to 360 mm/month; rest of the island experienced below average rainfall conditions with a monthly average not exceeding 180 mm/month. The CPC Unified Precipitation Analysis tool shows ~300 mm of total rainfall in Kilinochchi, Mullaitivu, Gampaha, Colombo, Ratnapura, Batticaloa, Kalutara, Hambantota, Galle and Matara districts; ~200 mm in Vavuniya, Mannar, Anuradhapura, Polonnaruwa, Puttalam, Kurunegala, Kegalla and Monaragala districts; and 150 mm in rest of the island.

#### Ocean State (Text Courtesy IRI)

##### **Pacific sea state: December 15, 2016**

During mid-December 2016 the tropical Pacific SST anomaly was near -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, although subseasonal atmospheric variability weakened some of them in late November. 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 the threshold of La Niña persisting through mid-winter, then weakening to cool-neutral by later winter.

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

Sea surface temperature was climatological in the seas around Sri Lanka.

## Predictions

### Rainfall

#### 14-day prediction:

##### NOAA NCEP models:

From 28<sup>th</sup> Dec – 3<sup>rd</sup> Jan: Total rainfall up to 55 mm for the eastern coastal regions of Hambantota district; 35-45 mm for Ampara district; 25-35 mm for Monaragala and Matara districts; and 15-25 mm in Badulla, Galle and eastern regions of Ratnapura districts. From 4<sup>th</sup> – 10<sup>th</sup> January: Total rainfall between 25-35 mm is expected in the eastern coastal regions of Hambantota district; and 15-25 mm in Ampara, Monaragala, and Matara districts.

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

Up to 35 mm of rainfall is expected on the 30<sup>th</sup> in Mannar, Vavuniya, Trincomalee, Anuradhapura, Batticaloa and Ampara districts; and up to 7 mm of rainfall in many parts of the island. On the 31<sup>st</sup>, Batticaloa, Ampara and northern regions of Badulla and Monaragala districts will receive up to 30 mm of rainfall and rest of the eastern coastal regions will receive up to 7 mm of rainfall.

**Seasonal Prediction:** As per IRI Multi Model Probability Forecast for January to March 2017, the total 3-month precipitation has 40-50% likelihood of being in the above-normal tercile 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

For the next 15 days: MJO shall suppress 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/>



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## Weekly Hydro- Meteorological Report for Sri Lanka

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#### 1. Monitoring

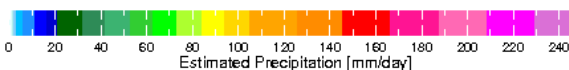
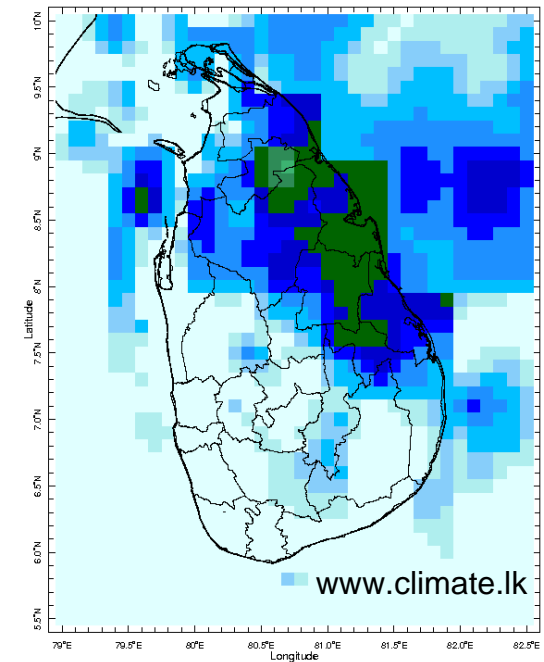
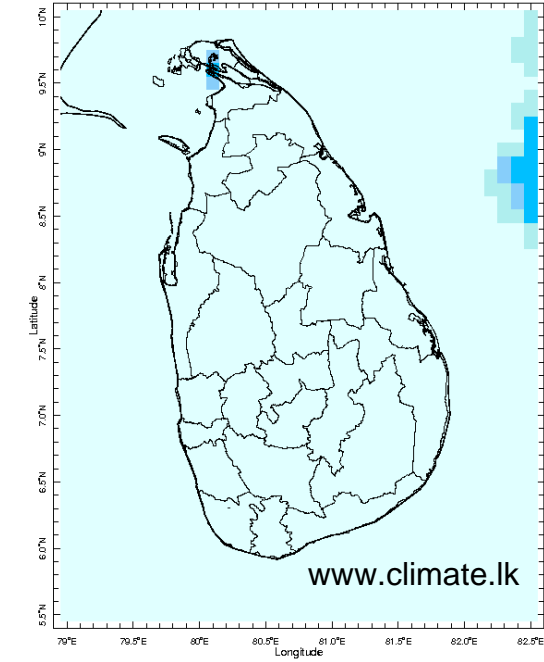
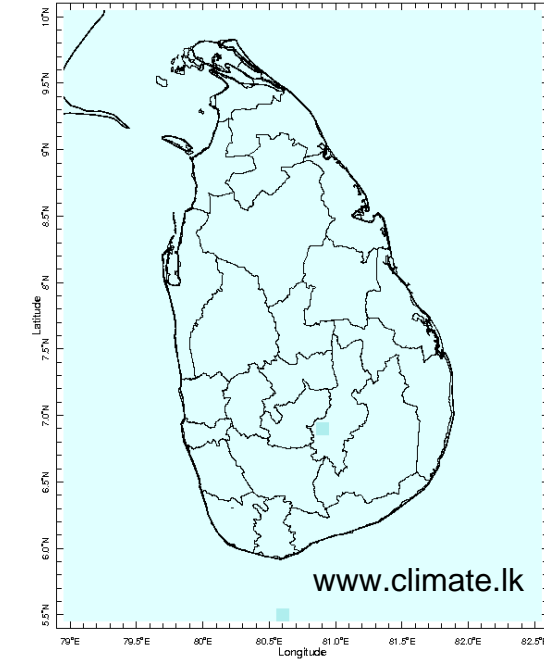
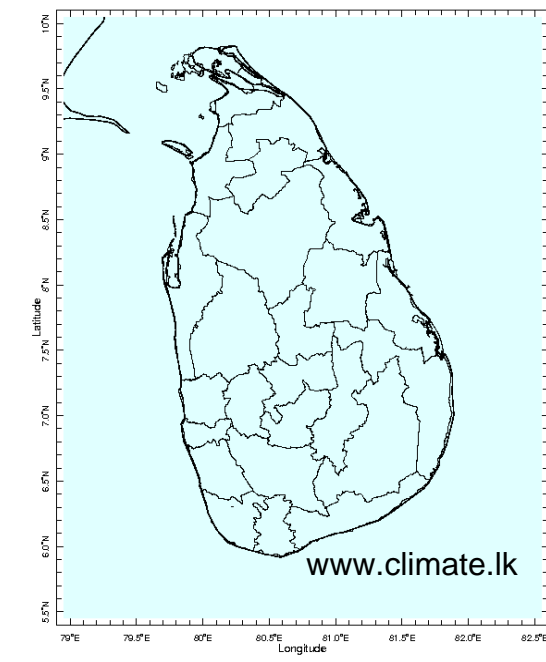
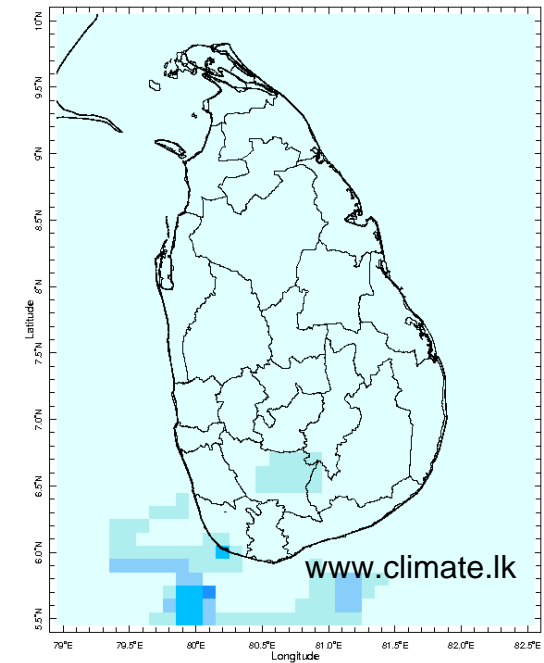
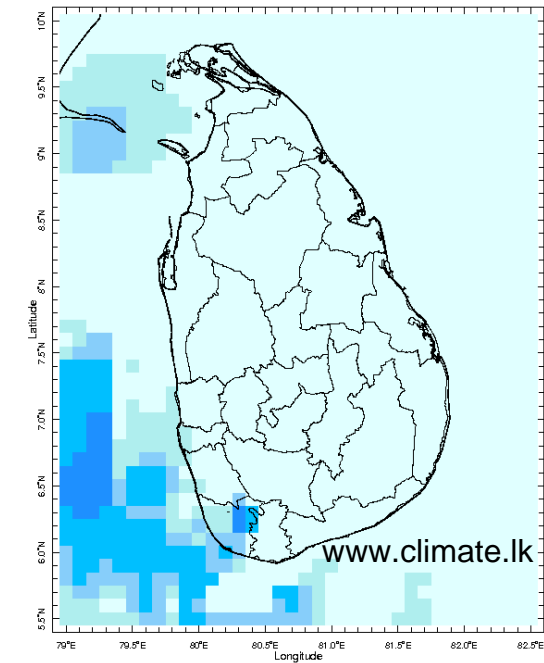
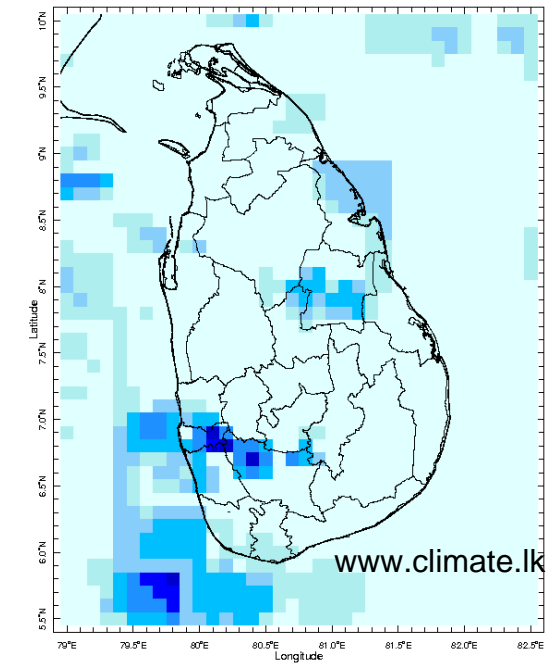
- a. Daily Rainfall Monitoring
- b. Monthly Rainfall Monitoring
- c. Dekadal (10 Day) Satellite Derived Rainfall Estimates
- d. Weekly Average SST Anomalies

#### 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

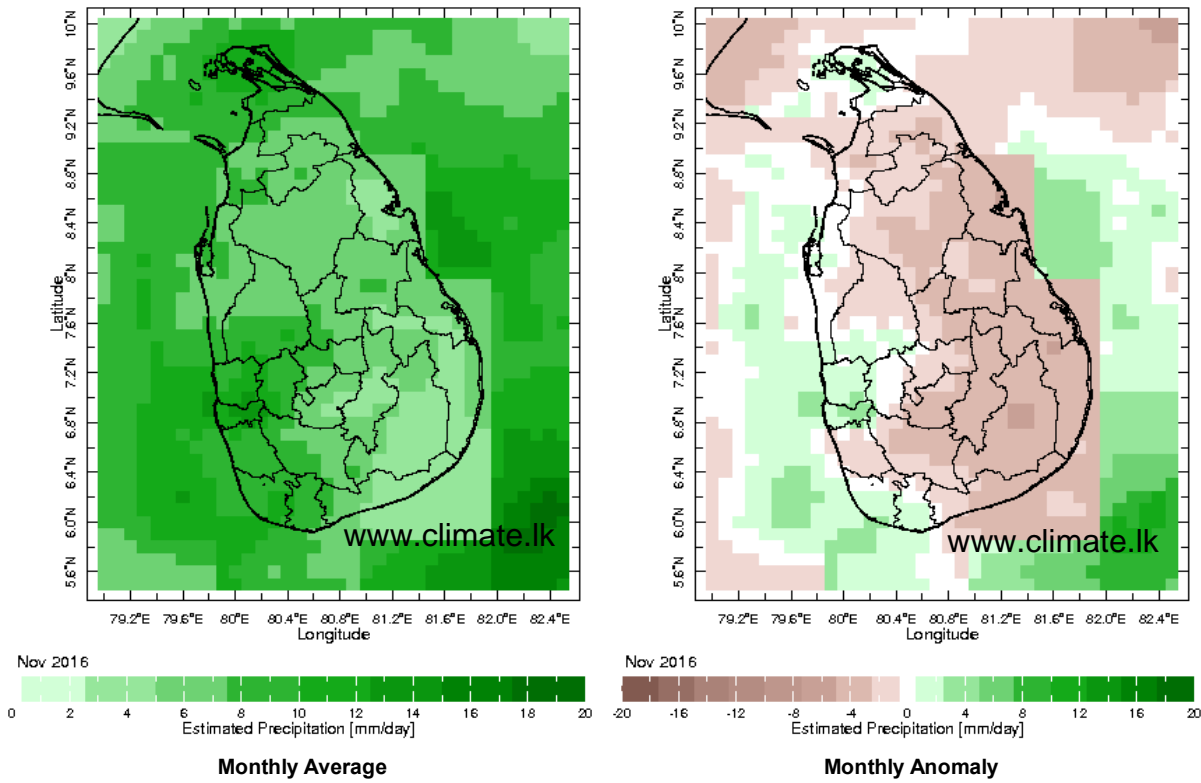
Daily Rainfall Monitoring

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

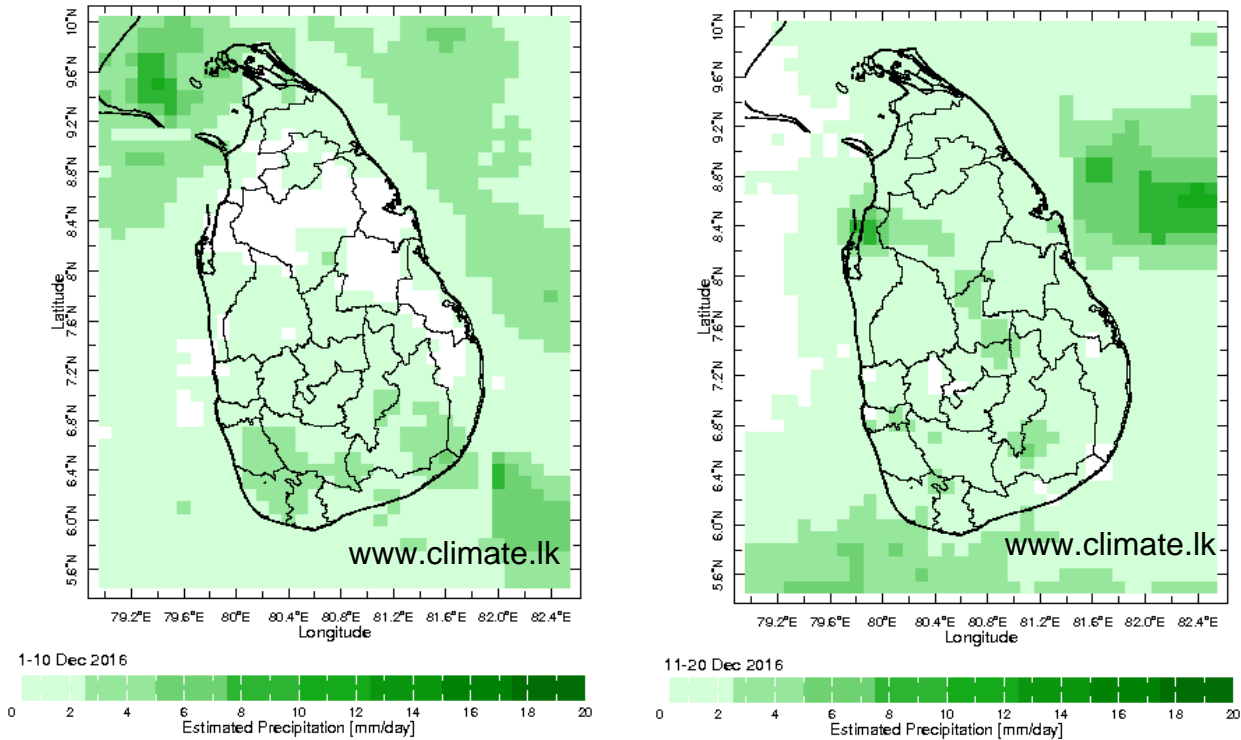


Monthly Rainfall Monitoring

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

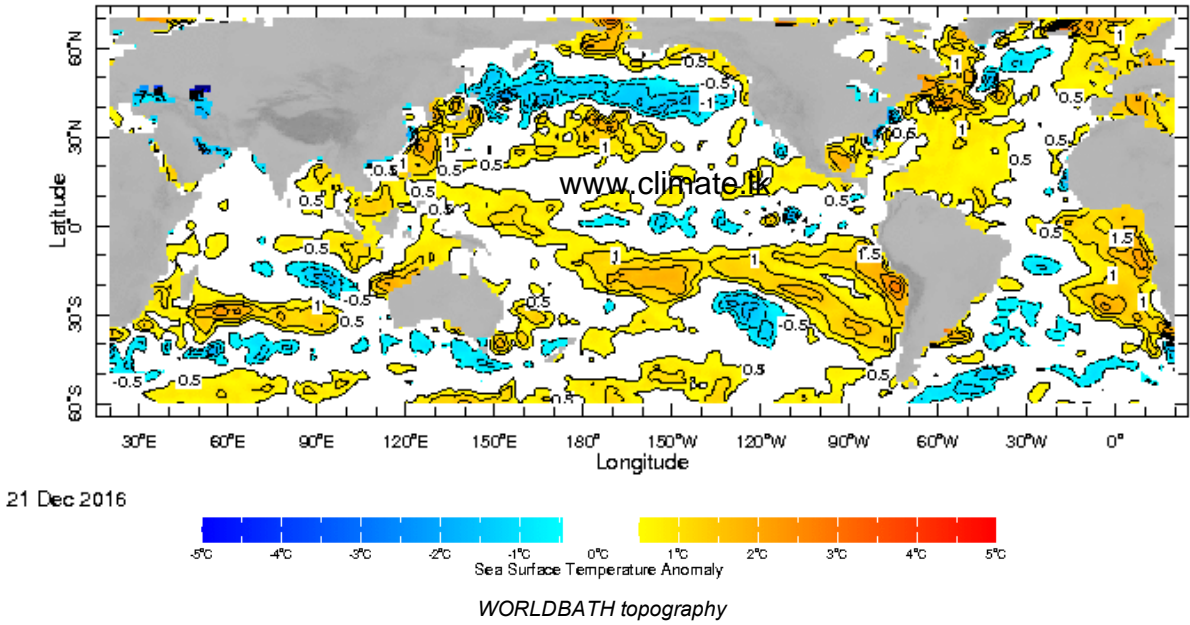


Dekadal (10 Day) Satellite Derived Rainfall Estimates



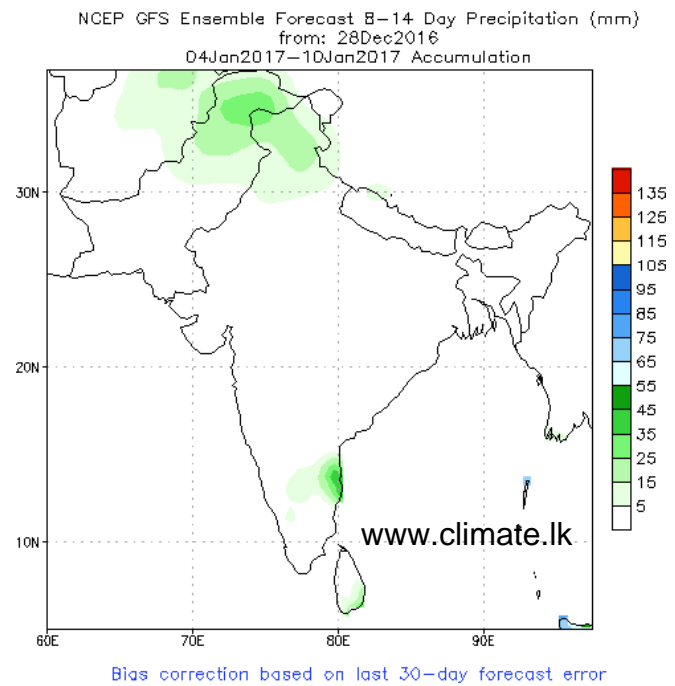
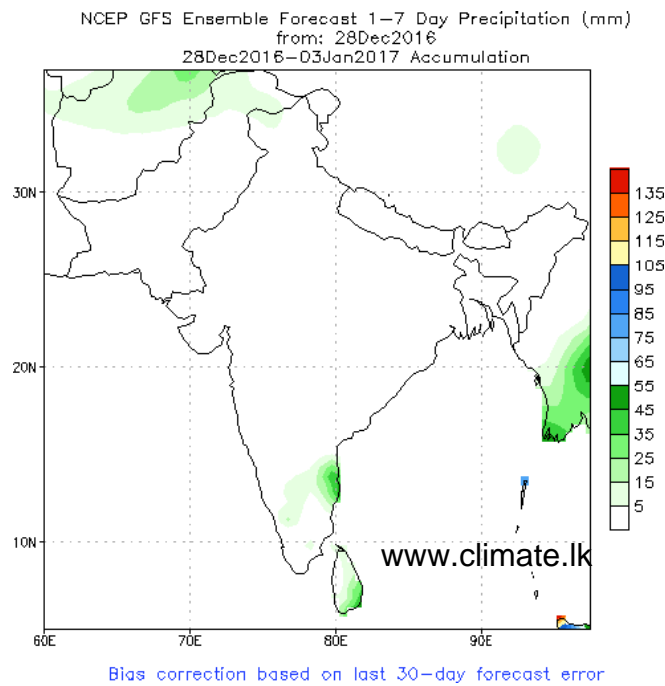
Weekly Average SST Anomalies

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



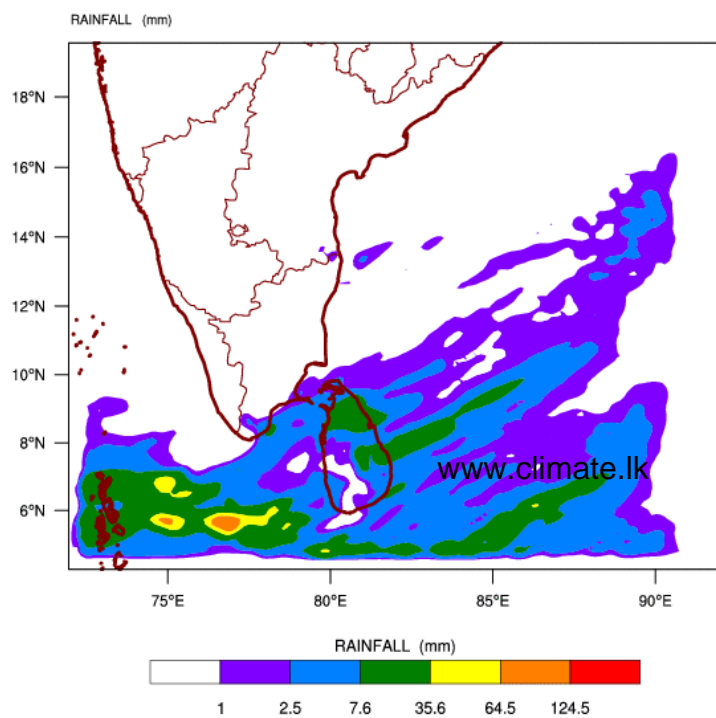
## PREDICTIONS

### NCEP GFS 1- 14 Day prediction

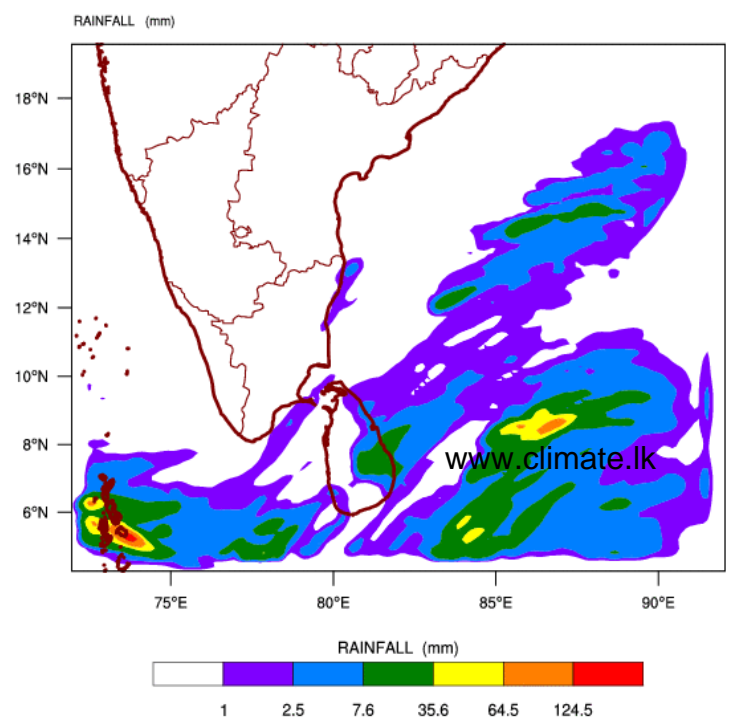


### WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 28-12-2016 valid for 03 UTC of 30-12-2016



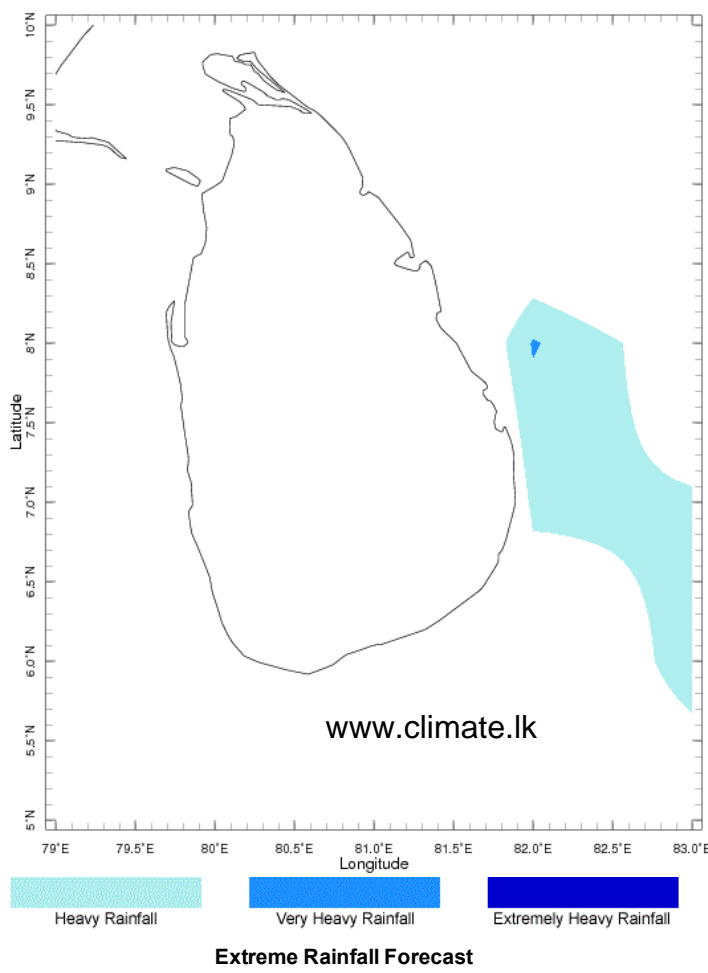
WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 28-12-2016 valid for 03 UTC of 31-12-2016



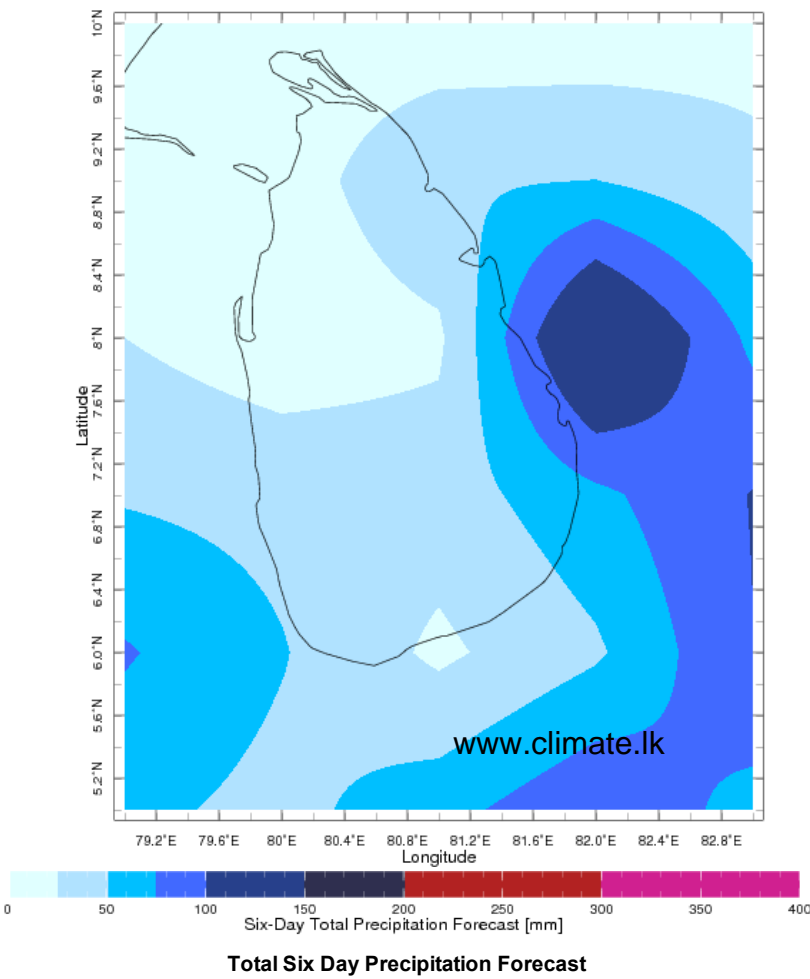
Weekly Rainfall Forecast from IRI

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.

Forecast for 28 Dec 2016 - 2 Jan 2017 Issued 0000 28 Dec 2016



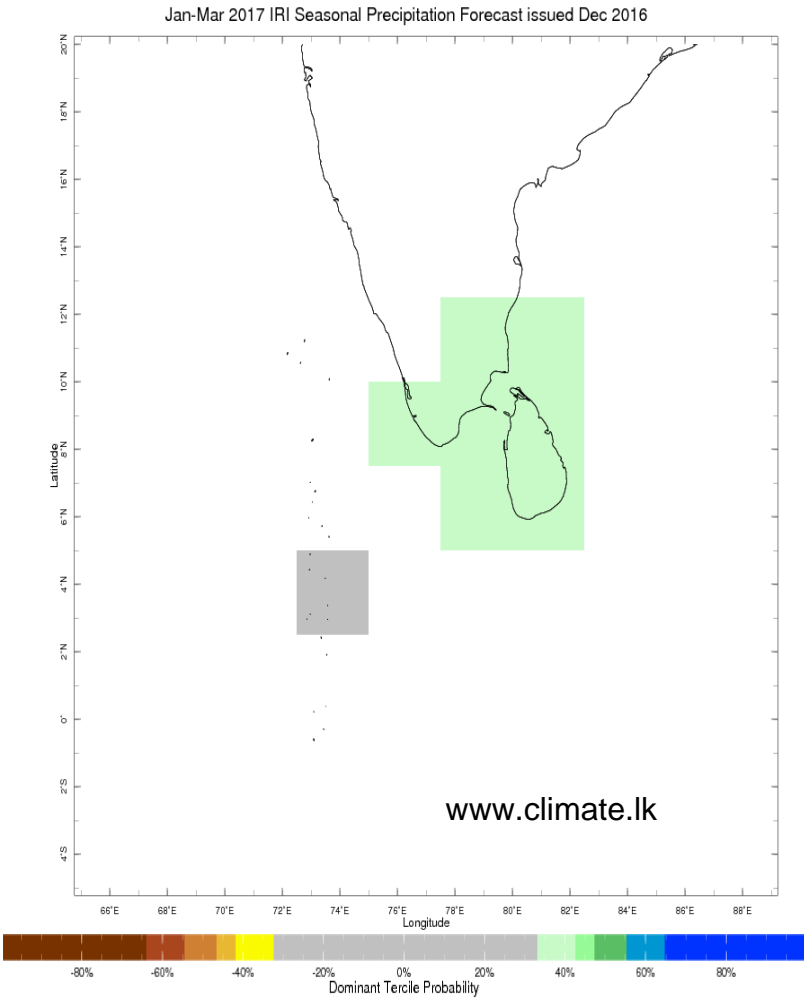
Forecast for 28 Dec 2016 - 2 Jan 2017 Issued 0000 28 Dec 2016



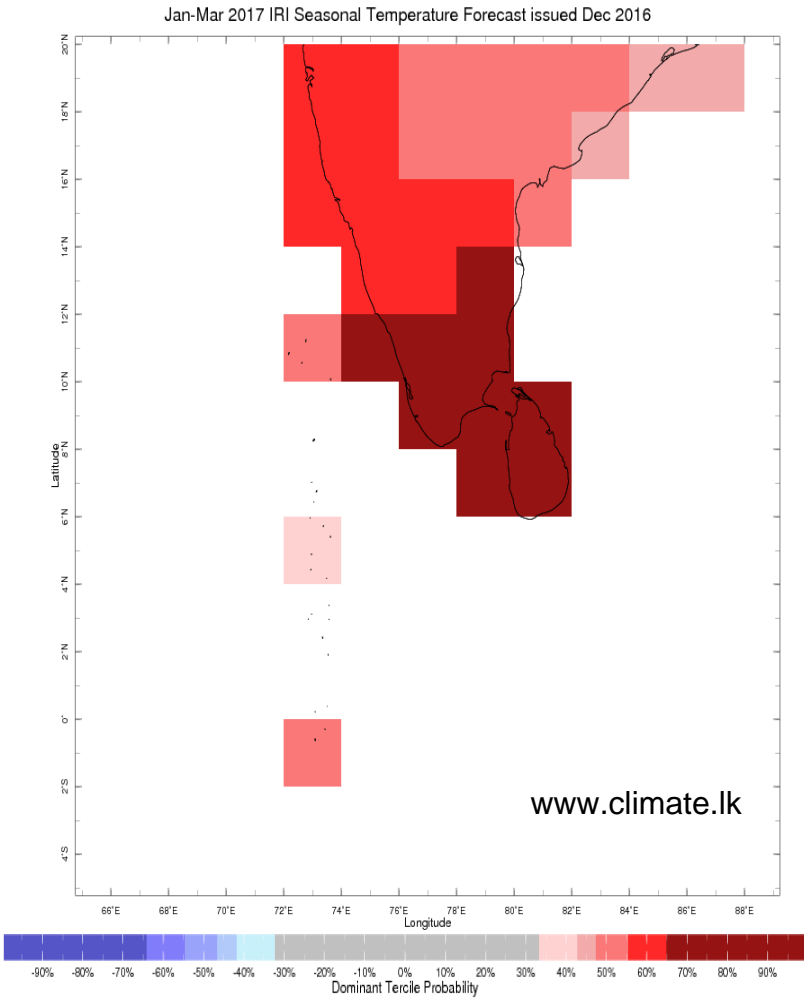


Seasonal Rainfall and Temperature Forecast

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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