

## Experimental Climate Monitoring and Prediction

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### Highlights

- The NCEP GFS model predicts no rainfall over Sri Lanka for next week.
- Between 3-9 Jan: highest rainfall of 10 mm was recorded on the 3<sup>rd</sup> in Hambantota town.
- From 1-7 Jan: 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 1-7 Jan: up to 18 km/h north easterly winds were experienced by the entire island.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On January 3<sup>rd</sup> Hambantota town region received up to 10 mm of rainfall; several regions of Monaragala, Ampara and Batticaloa districts up to 5 mm; and adjacent south eastern sea received up to 30 mm of rainfall. On the 4<sup>th</sup> Pelmadulla of Ratnapura district received up to 5 mm of rainfall. No rainfalls were recorded within the island during the period 5<sup>th</sup> - 9<sup>th</sup>.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall up to 2 mm for the entire island. It shows below average rainfall 100-200 mm for Batticaloa district; 50-100 mm for Trincomalee, Polonnaruwa, Ampara, Badulla and Monaragala districts and 25-50 mm for many parts of the island.

**Monthly Monitoring:** During December – below average rainfall conditions were experienced by the entire island. Eastern regions of the island received up to 240 mm below average rainfall; and up to 150 mm in rest of the country. Monthly average rainfall for Colombo, Kalutara, Galle and Ratnapura amounted to 360 mm/month; and 180 mm/month for many parts of the island. The CPC Unified Precipitation Analysis tool shows ~200 mm of total rainfall in the coastal regions of Colombo district; ~100 mm in Kalutara, Galle, Ratnapura, Kegalla, Kandy, Matale, Ampara, Badulla and Monaragala districts; and ~50 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 sub-seasonal 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**

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

## Predictions

### Rainfall

#### 14-day prediction:

##### NOAA NCEP models:

From 11<sup>th</sup> – 17<sup>th</sup> Jan: No rainfall.

From 17<sup>th</sup> – 23<sup>rd</sup> Jan: Total rainfall between 85-95 mm in Ampara district; 75-85 mm in Badulla and Monaragala districts; 65-75 mm in Polonnaruwa district; 55-65 mm Trincomalee, Matale and Kandy districts; 45-55 mm in Jaffna, Mannar, Kurunegala, Kegalla, Ratnapura, Kegalla and Hambantota districts; and 35-45 mm in Gampaha and Colombo districts.

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

12<sup>th</sup> Jan: No rainfall.

13<sup>th</sup> Jan: No rainfall.

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

January to March: 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.

### 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

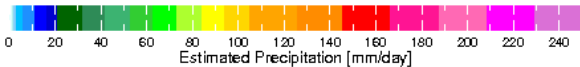
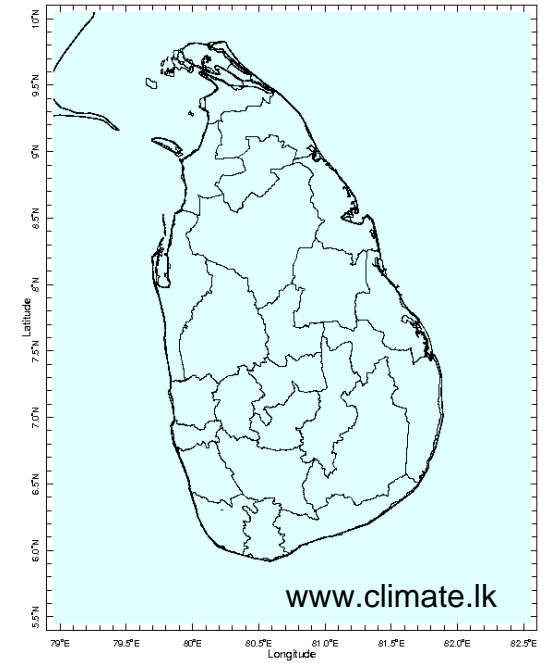
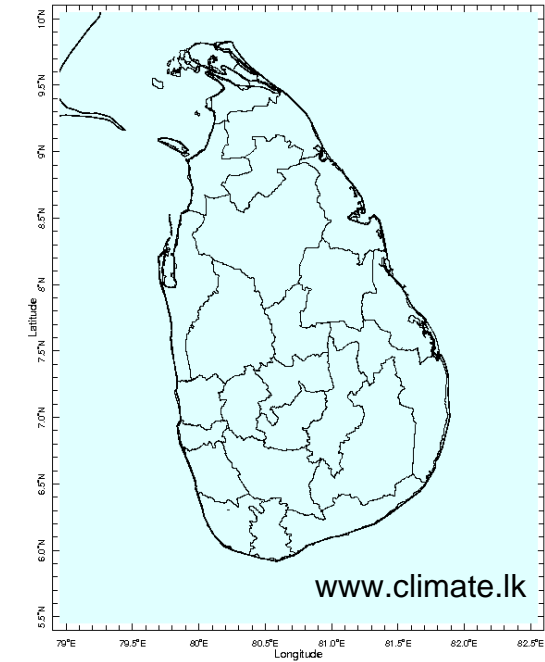
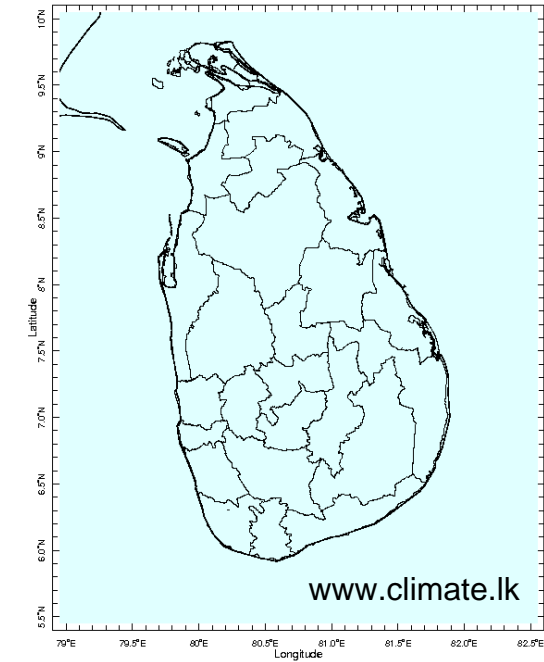
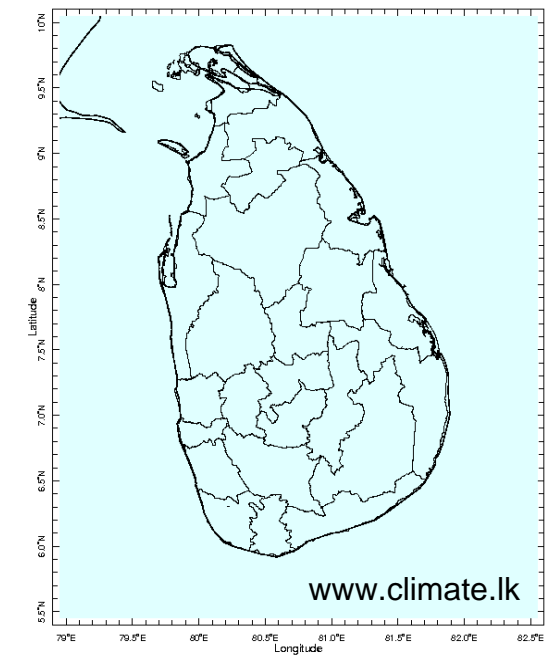
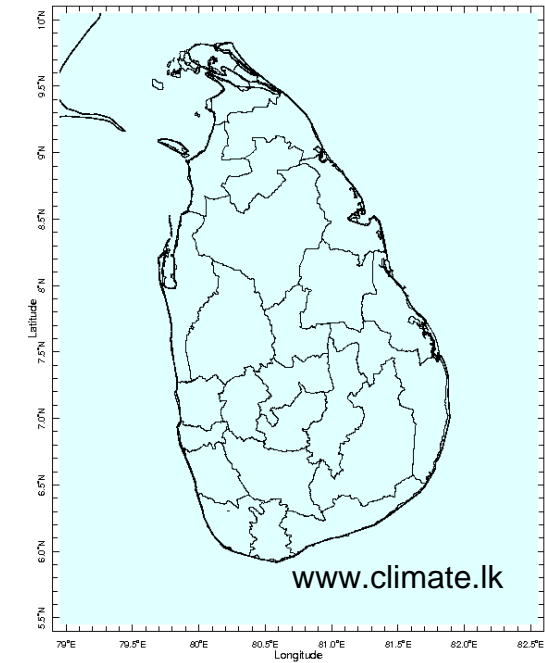
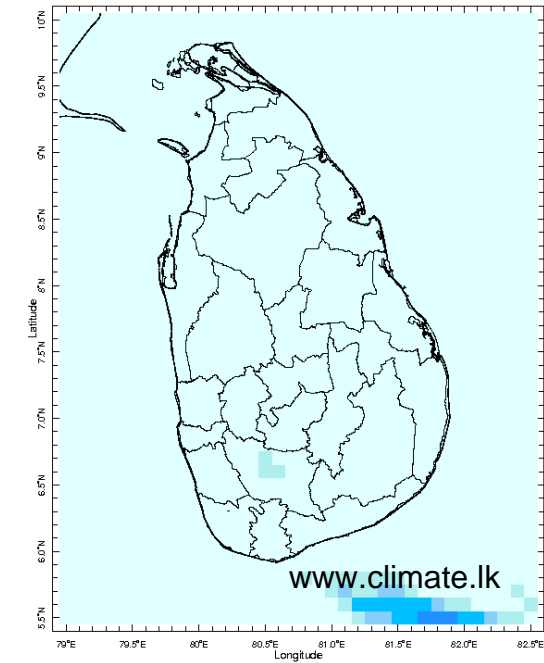
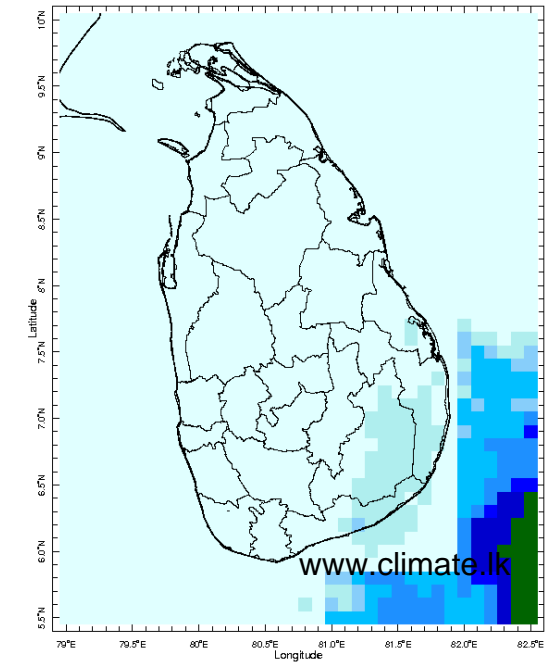
- a. Daily Rainfall Monitoring
- b. Monthly Rainfall Monitoring
- c. Dekadal (10 Day) Satellite Derived Rainfall Estimates
- d. Weekly Average SST Anomalies

#### 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

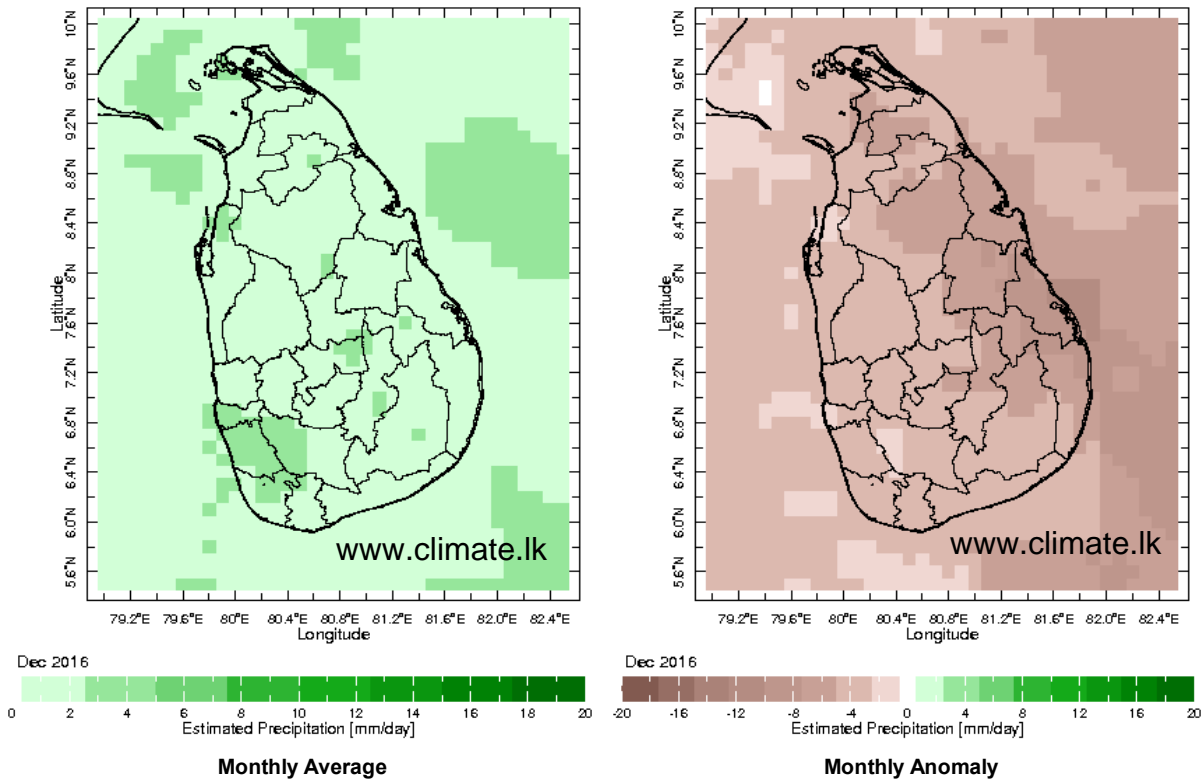
Daily Rainfall Monitoring

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

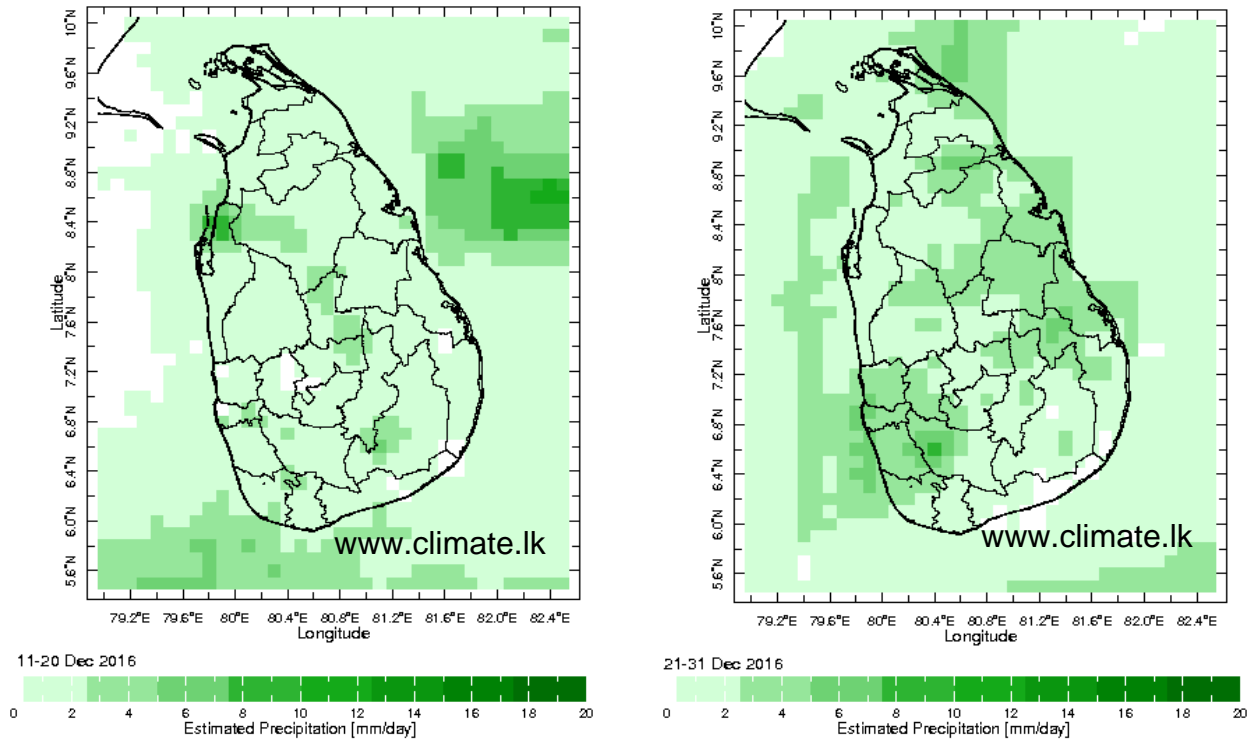


Monthly Rainfall Monitoring

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

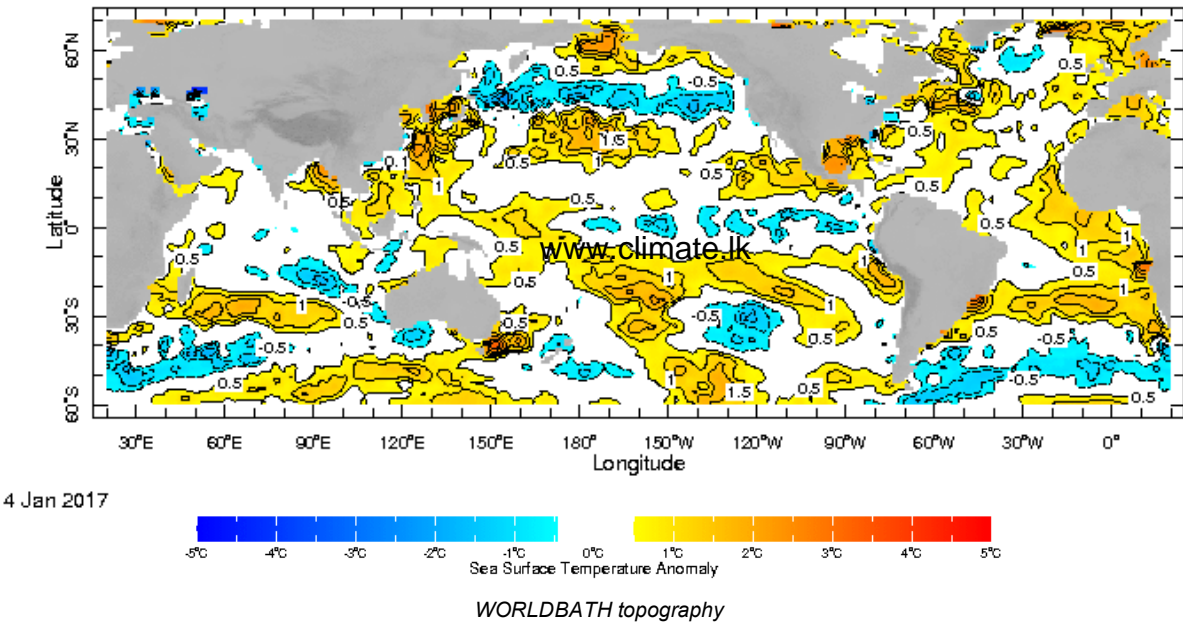


Dekadal (10 Day) Satellite Derived Rainfall Estimates



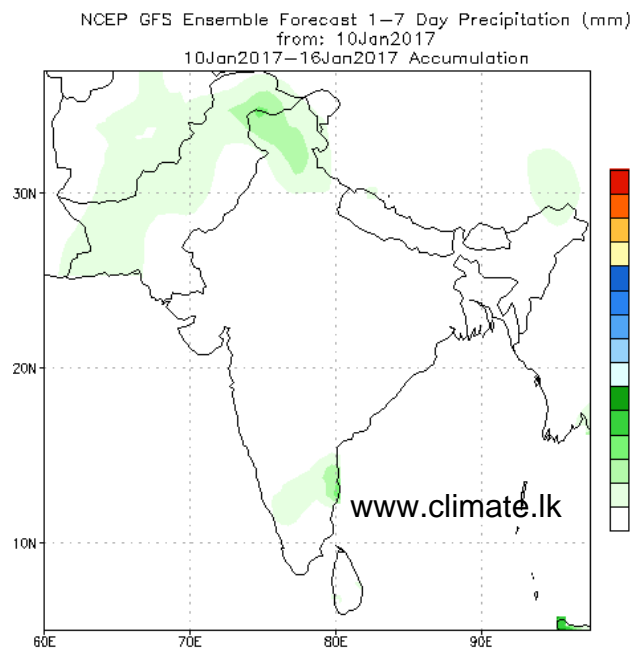
Weekly Average SST Anomalies

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

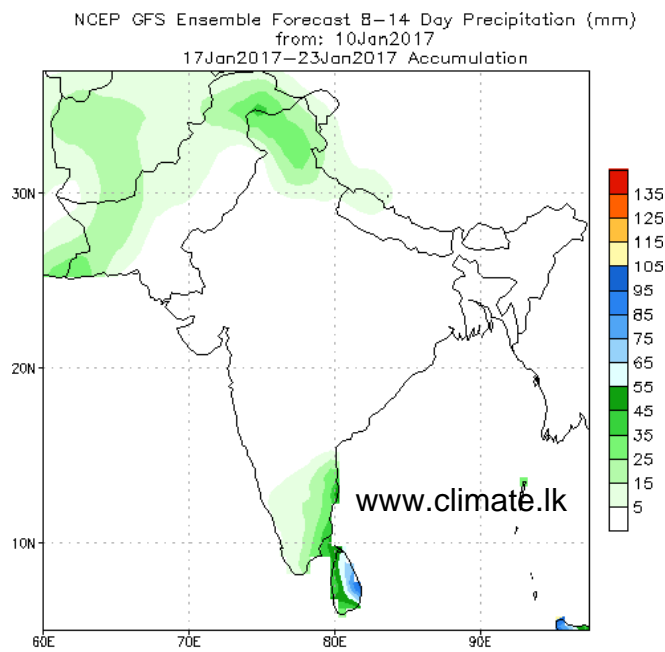


## PREDICTIONS

### NCEP GFS 1- 14 Day prediction



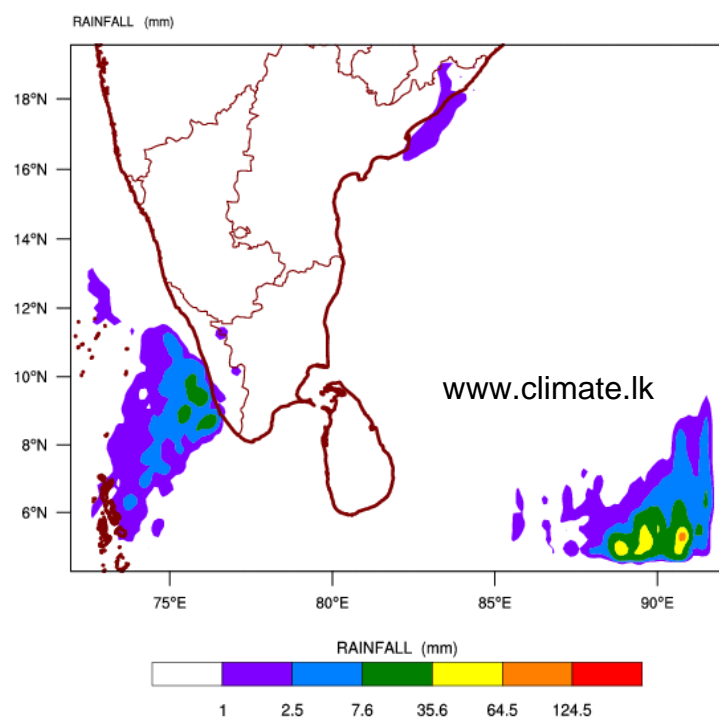
Bias correction based on last 30-day forecast error



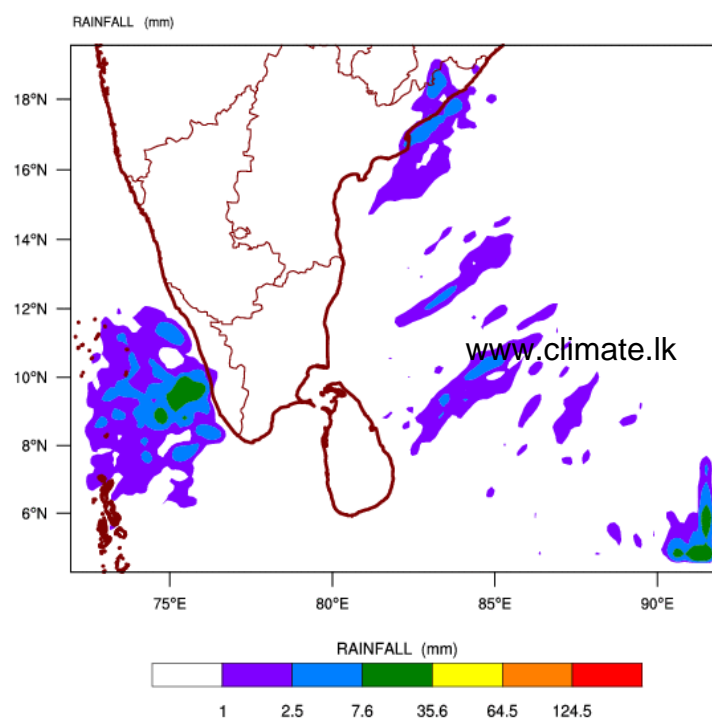
Bias correction based on last 30-day forecast error

### WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)  
based on 00 UTC of 10-01-2017 valid for 03 UTC of 12-01-2017

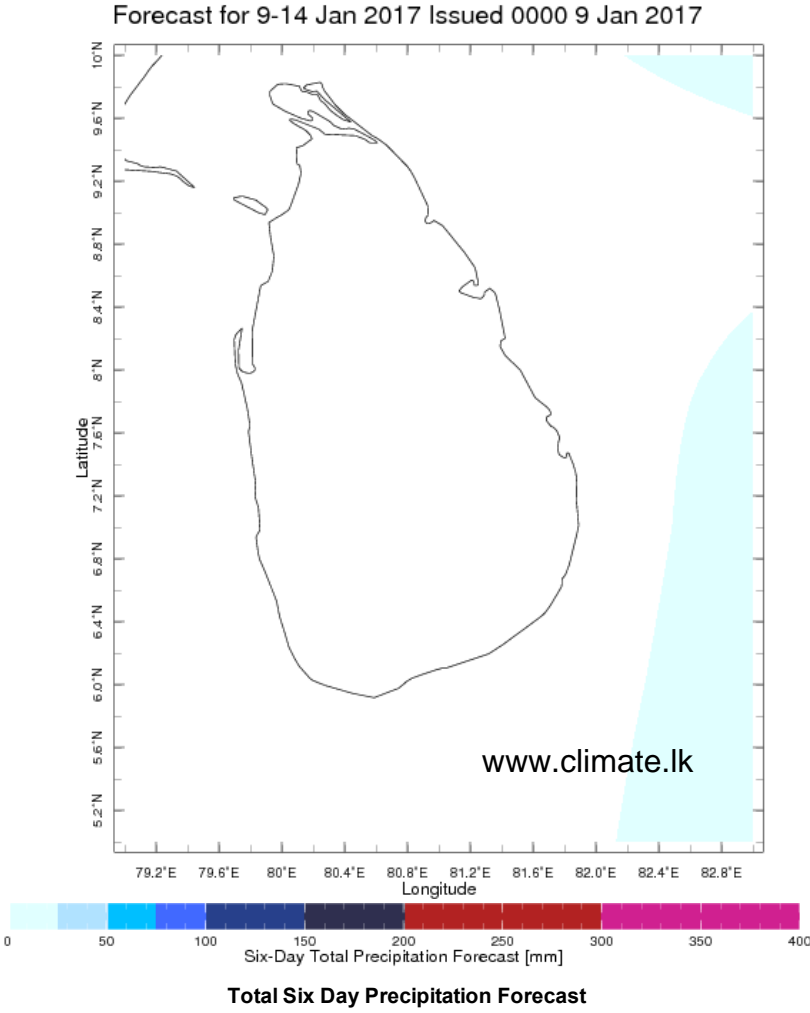
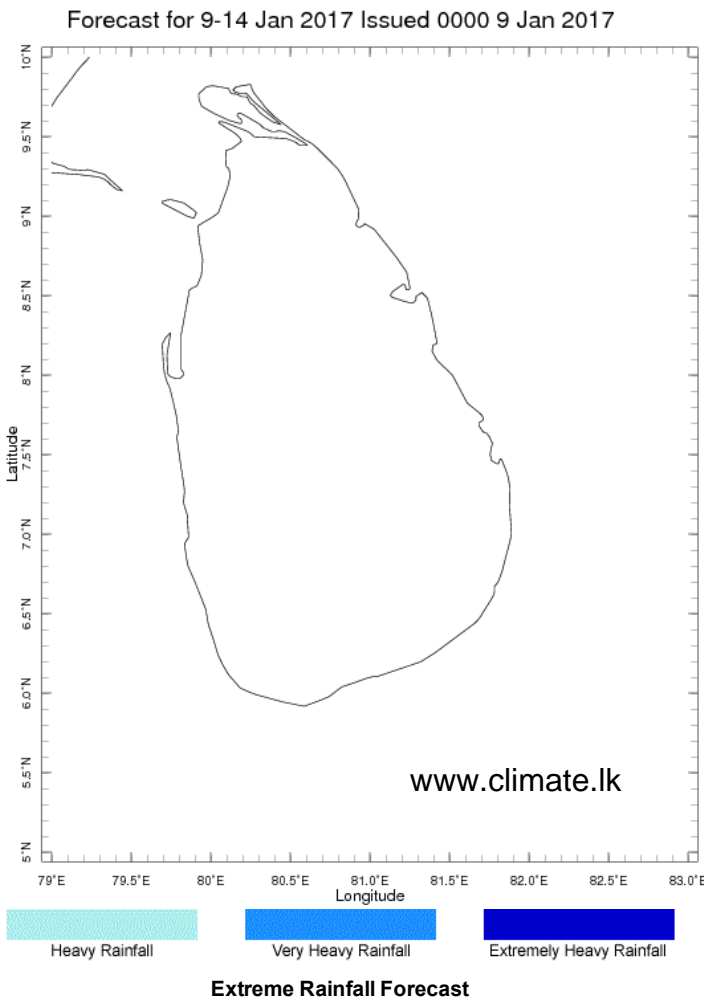


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)  
based on 00 UTC of 10-01-2017 valid for 03 UTC of 13-01-2017



Weekly Rainfall Forecast from IRI

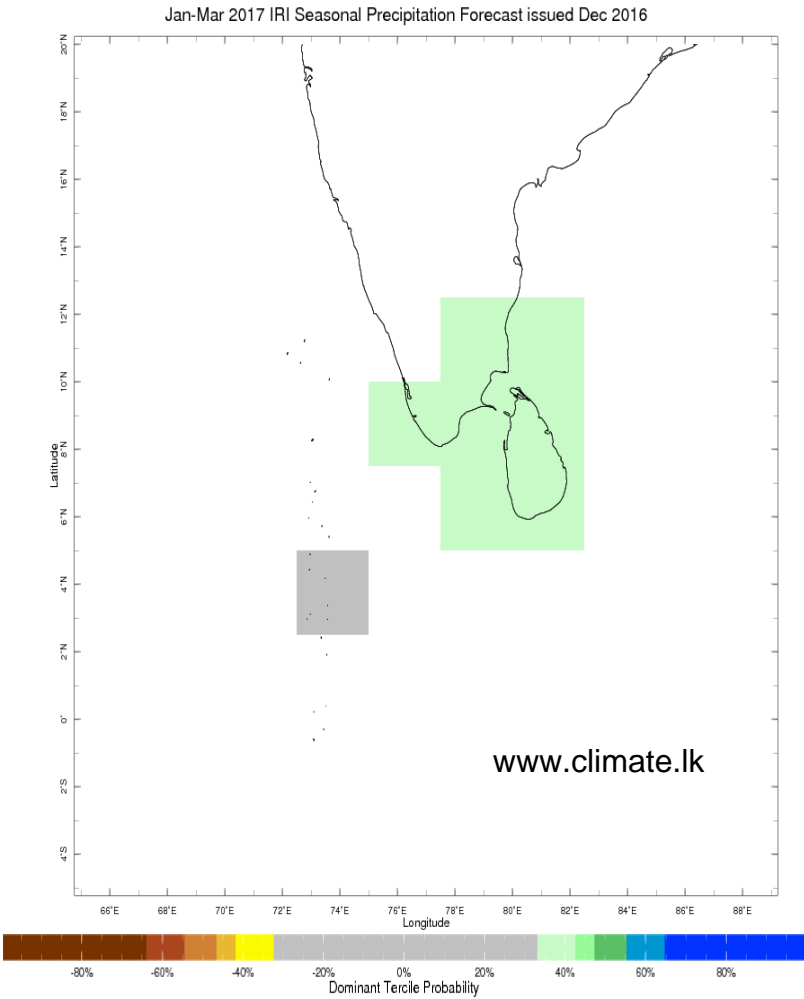
Total rainfall forecast from the IRI for next six days is provided in figures below. The figure to the left shows the expectancy of heavy rainfall events during these six days while the figure to the right is the prediction of total rainfall amount during this period.



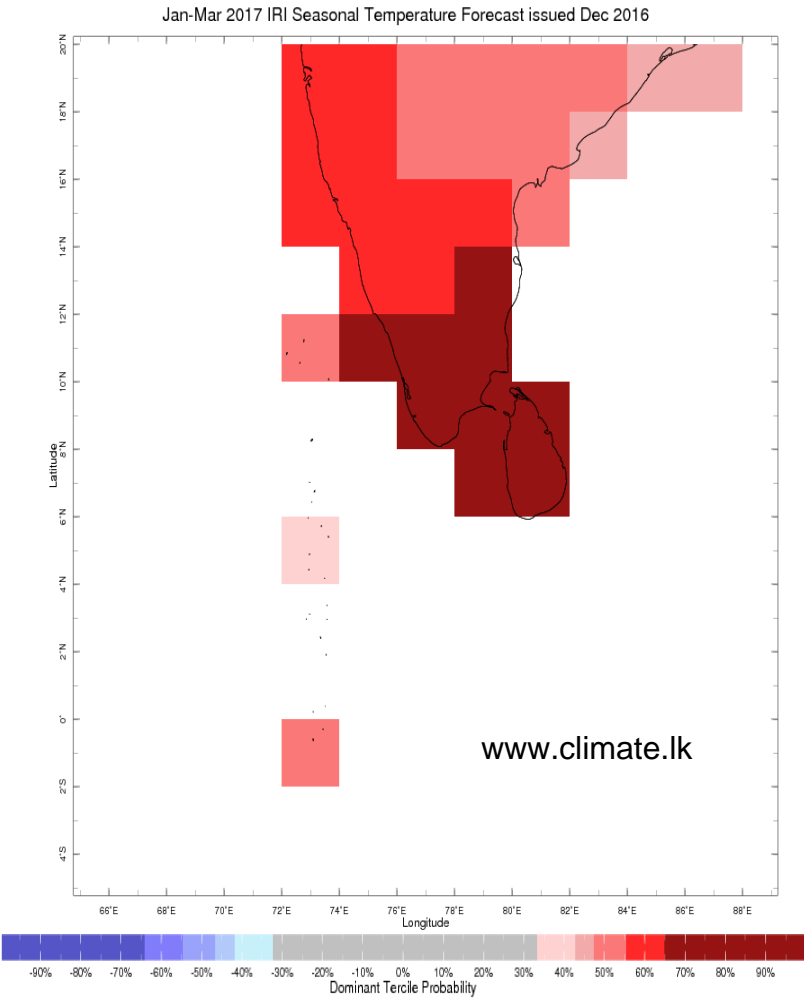


Seasonal Rainfall and Temperature Forecast

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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