

## Experimental Climate Monitoring and Prediction

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### Highlights

- The WRF Model predicts up to 65 mm of rainfall in Matale, Kandy, Badulla and Ampara districts on January 13<sup>th</sup>.
- Between 2-8 Jan: Rainfall up to 30 mm was recorded in Monaragala district on January 2<sup>nd</sup> and 3<sup>rd</sup>.
- From 31 Dec- 6 Jan: minimum temperature of 15 °C was recorded from Nuwara Eliya district while northern, western and southern parts of the island recorded a maximum temperature between 30-35 °C.
- From 2- 8 Jan: up to 36 km/h, northerly winds were experienced by the northern and central parts of the island and up to 18 km/h in the southern regions.
- 0.5 °C above average sea surface temperature was observed in the southern seas of Sri Lanka.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On January 2<sup>nd</sup>, Buttala region in Monaragala district received up to 30 mm of rainfall; and southern regions of Badulla district received up to 20 mm. On the 3<sup>rd</sup> Hambegamuwa in Monaragala district received up to 30 mm of rainfall; and Palledbedda in Ratnapura district up to 20 mm. No significant rainfalls were recorded in any part of the island during 4<sup>th</sup>- 7<sup>th</sup> Jan. On the 8<sup>th</sup> Jaffna and Kilinochchi districts received up to 10 mm of rainfall.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall of 25-50 mm in Anuradhapura and Mannar districts; and up to 10-25 mm in Jaffna, Vavuniya, Trincomalee, Ratnapura and Monaragala districts. It also shows below average rainfall up to 100-200 mm in Ampara district; up to 50-100 mm in Batticaloa, Polonnaruwa, Trincomalee, Matale, Badulla and Monaragala districts; and up to 10-25 mm in most parts of the island.

**Monthly Monitoring:** During December - below average rainfall conditions were experienced by the entire island except for several regions of Ratnapura, Badulla, Monaragala and Hambantota districts. Mullaitivu, Vavuniya, Anuradhapura, Trincomalee, Polonnaruwa, Batticaloa and Ampara districts received up to 180 mm below average rainfall; and Gampaha, Jaffna, Kilinochchi, Mannar, Puttalam, Kurunegala, Kandy and Galle districts received up to 150 mm. The CPC Unified Precipitation Analysis tool shows ~300 mm of total rainfall in Badulla, Monaragala and Ratnapura districts; up to ~200 mm in Nuwara Eliya and Ratnapura districts; and Anuradhapura, Puttalam, Kurunegala, Gampaha, Kegalla, Matale, Galle, Matara, Polonnaruwa, Trincomalee and Ampara districts up to 100 mm.

#### Ocean State (Text Courtesy IRI)

##### **Pacific sea state: December 19, 2017**

In mid-December 2017, the tropical Pacific reflected La Niña conditions, with SSTs in the east-central tropical Pacific in the range of weak to moderate La Niña and all atmosphere variables showing patterns suggestive of La Niña conditions. The collection of latest ENSO prediction models indicates weak, but not far from threshold of moderate, La Niña as the most likely scenario for the Northern Hemisphere winter, lasting into spring. The official CPC/IRI outlook favors continuation of La Niña through middle or late spring.

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

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

## Predictions

### Rainfall

#### 14-day prediction:

##### NOAA NCEP models:

From 10<sup>th</sup> – 16<sup>th</sup> Jan: Total rainfall between 35-54 mm in Monaragala district; between 25-35 mm in Ratnapura, Nuwara Eliya, Badulla and Ampara districts; between 15-25 mm in Puttalam, Kurunegala, Gampaha, Colombo, Kegalle, Matale, Kalutara, Galle, Matara and Hambantota districts; between 5-15 mm in Jaffna, Kilinochchi, Anuradhapura, Polonnaruwa, Trincomalee and Batticaloa districts; Up to 5 mm total rainfall rest of the island.

From 17<sup>th</sup> – 23<sup>rd</sup> Jan: Total rainfall between 35-45 mm in Monaragala, Ampara, Badulla, Nuwara Eliya and Ratnapura districts; between 25-35 mm in Puttalam, Kurunegala, Gampaha, Colombo, Kegalle, Matale, Kandy, Galle, Matara and Hambantota districts; between 15-25 mm in Anuradhapura, Polonnaruwa, Batticaloa, Trincomalee districts; between 5-15 mm in Mannar and Vavuniya districts; Up to 5 mm total rainfall rest of the island.

##### IMD WRF Forecast:

12<sup>th</sup> Jan: Up to 35.6 mm of rainfall in Jaffna, Kilinochchi, Mullaitivu, Vavuniya, Trincomalee and Ampara districts; Up to 7.6 mm in Mannar, Anuradhapura, Polonnaruwa, Matale, Batticaloa, Monaragala, Hambantota, Puttalam, Kurunegala, Gampaha and Kegalle districts; Up to 2.5 mm in Kandy, Badulla, Matara, Galle, Kalutara, Ratnapura and Colombo districts.

13<sup>th</sup> Jan: Up to 64.5 mm of rainfall in Matale, Kandy, Badulla and Ampara districts; Up to 35.6 mm in Vavuniya, Mullaitivu, Trincomalee, Batticaloa, Monaragala, Polonnaruwa, Anuradhapura, Kurunegala, Gampaha and Kegalle districts; Up to 7.6 mm in Jaffna, Kilinochchi, Mullaitivu, Mannar, Puttalam and Hambantota districts. Up to 2.5 mm of rainfall rest of the island.

##### IRI Model Forecast:

10<sup>th</sup> – 15<sup>th</sup> Jan: Total rainfall between 50-75 mm in Nuwara Eliya, Badulla, Kandy and Kegalle districts; between 25-50 mm total rainfall rest of the island.

### MJO based OLR predictions

#### For the next 15 days:

MJO shall enhance 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/>



[www.fb.com/fectsl](http://www.fb.com/fectsl)



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## Weekly Hydro- Meteorological Report for Sri Lanka

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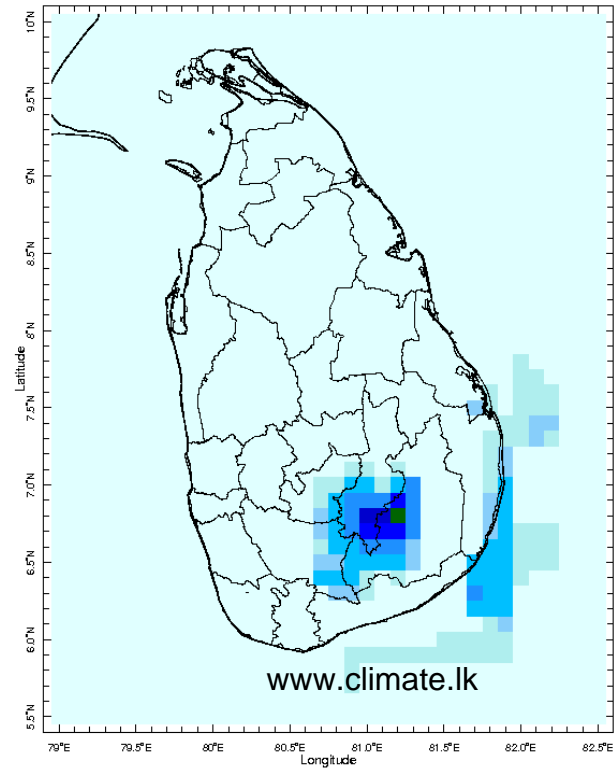
#### 2. Predictions

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- b. WRF Model Rainfall Forecast from IMD Chennai
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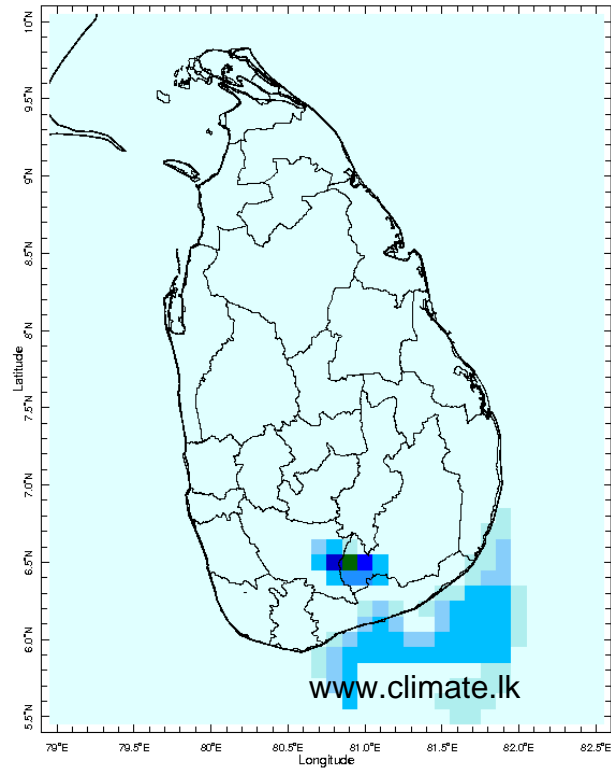
## MONITORING

### Daily Rainfall Monitoring

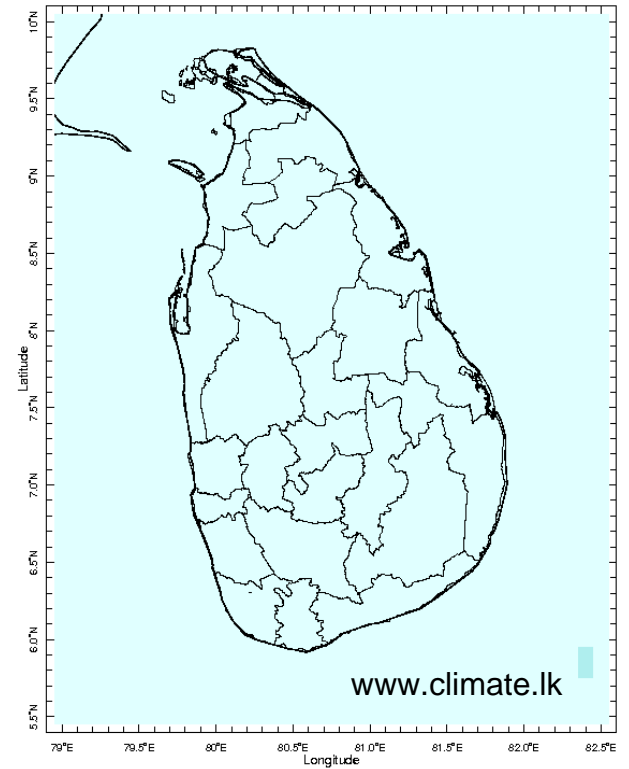
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



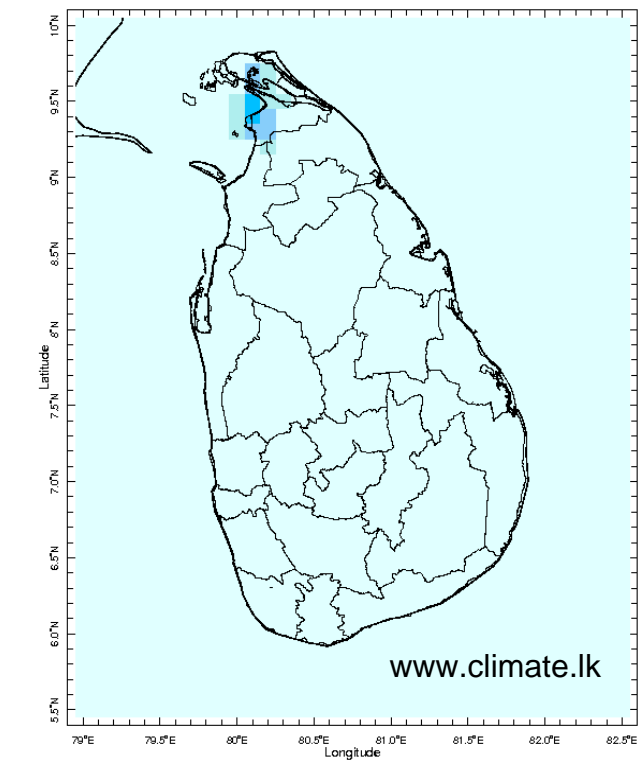
2 Jan 2018



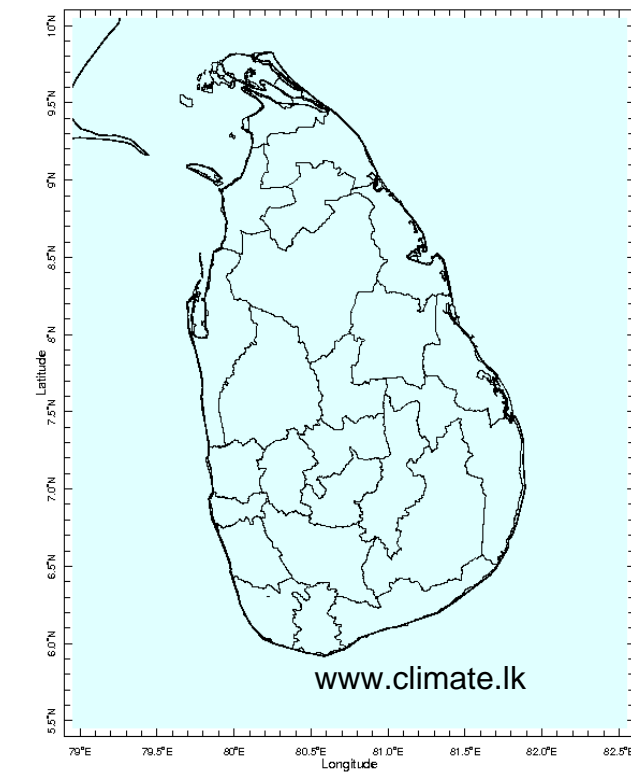
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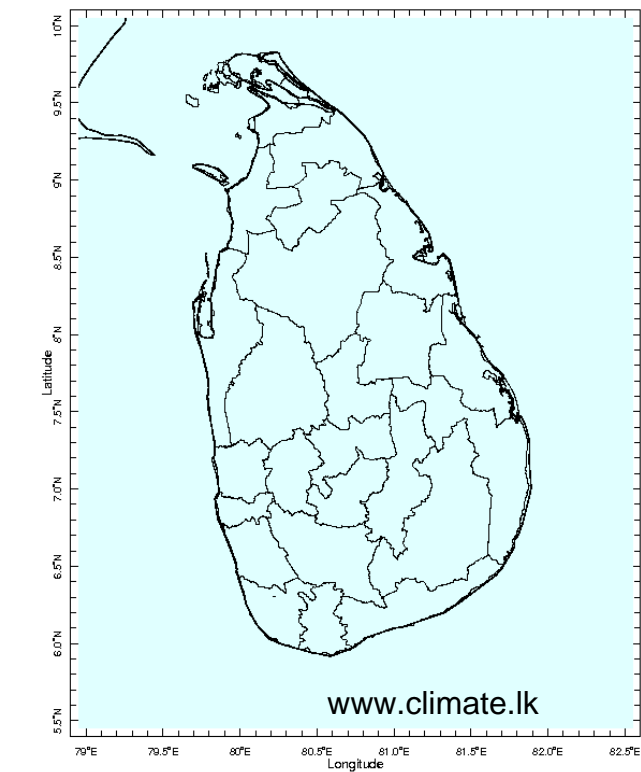
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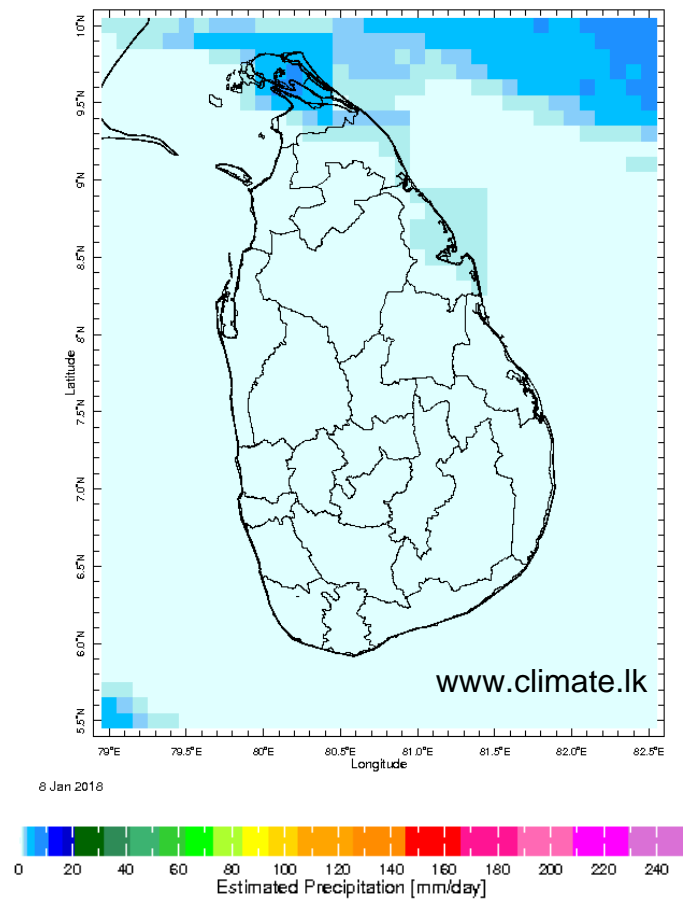
5 Jan 2018



6 Jan 2018

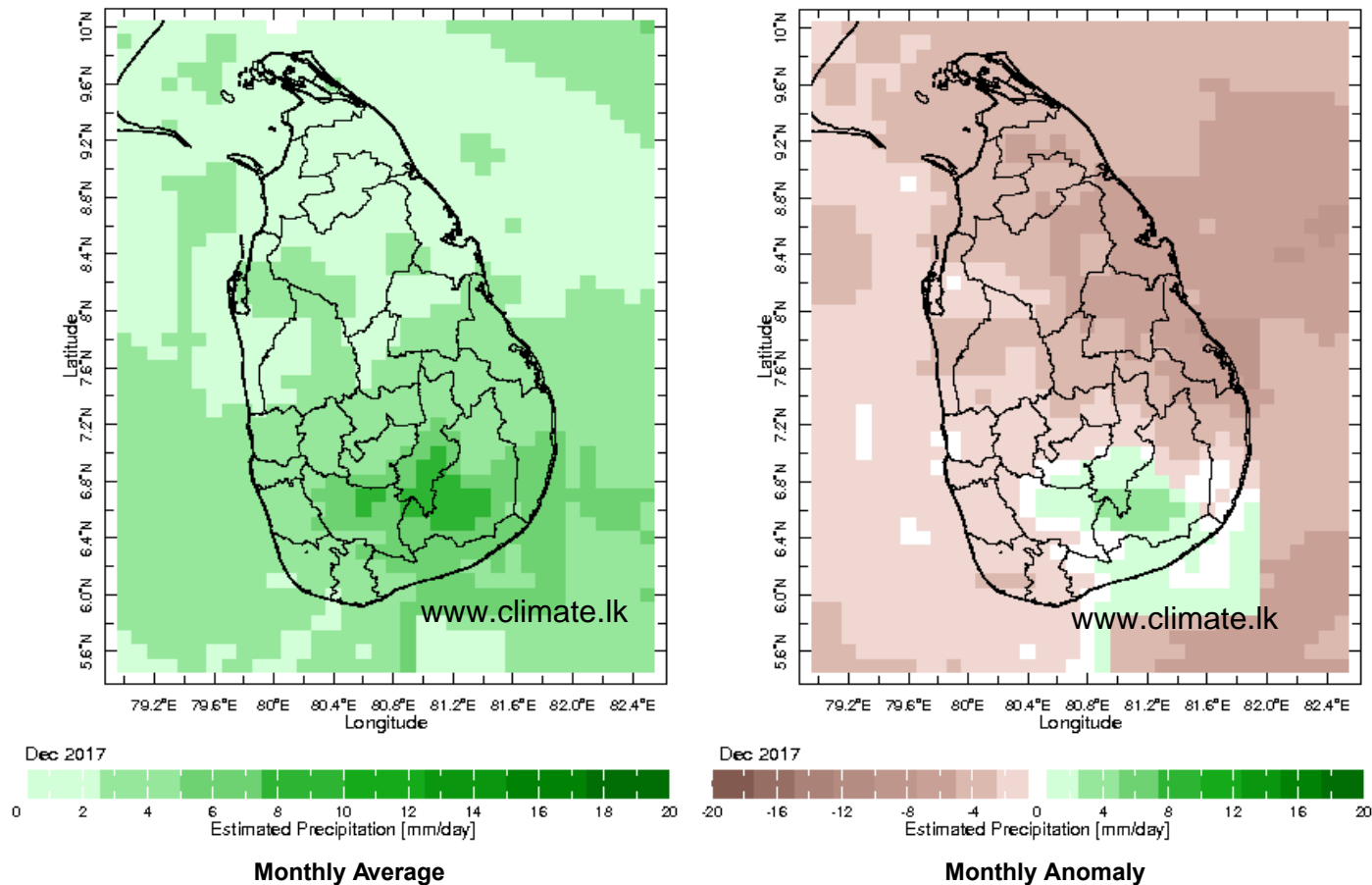


7 Jan 2018

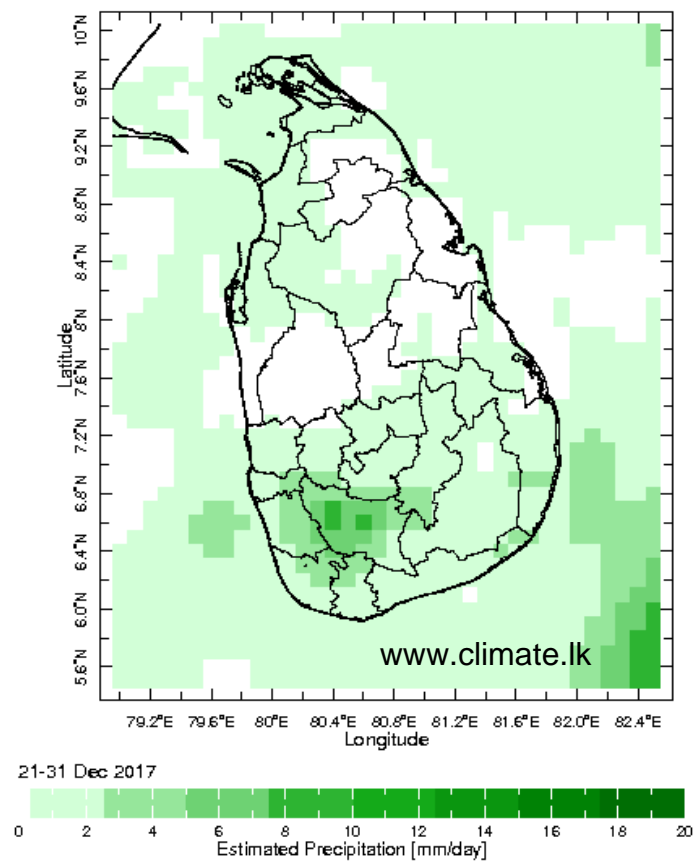
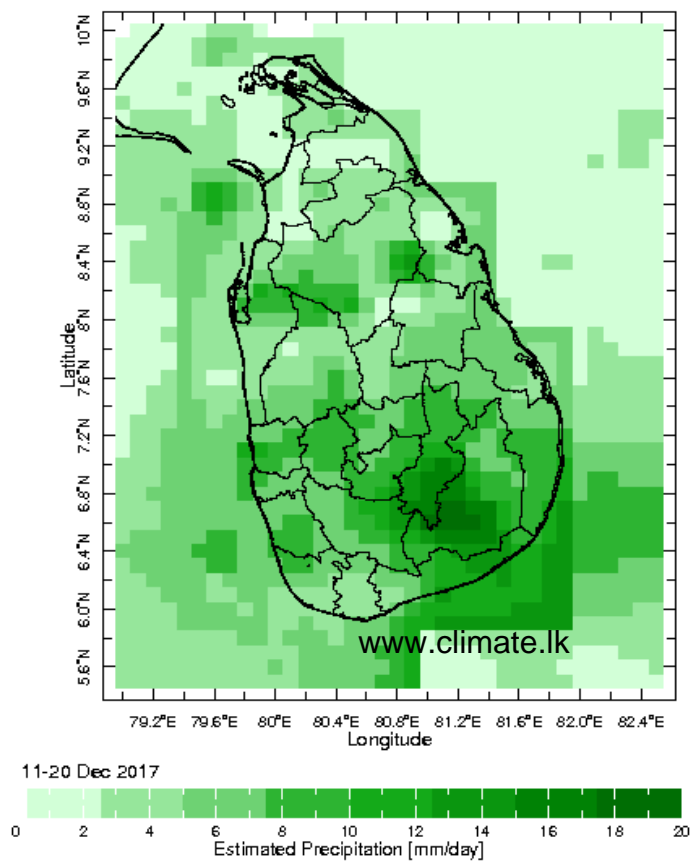


## Monthly Rainfall Monitoring

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



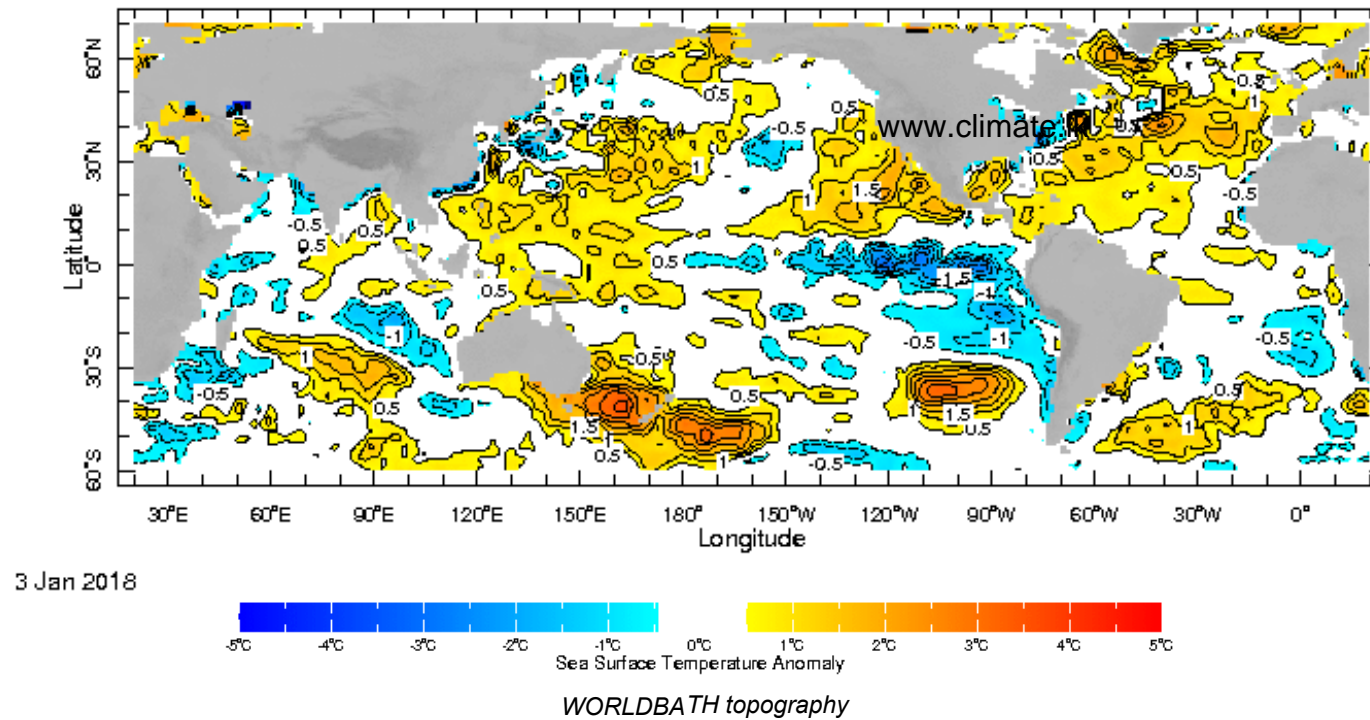
Dekadal (10 Day) Satellite Derived Rainfall Estimates





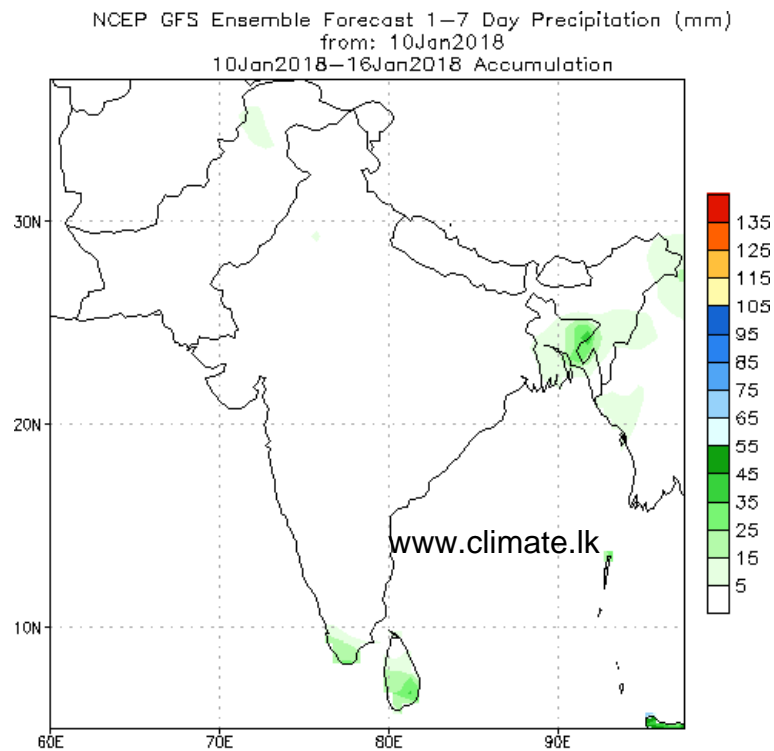
## Weekly Average SST Anomalies

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

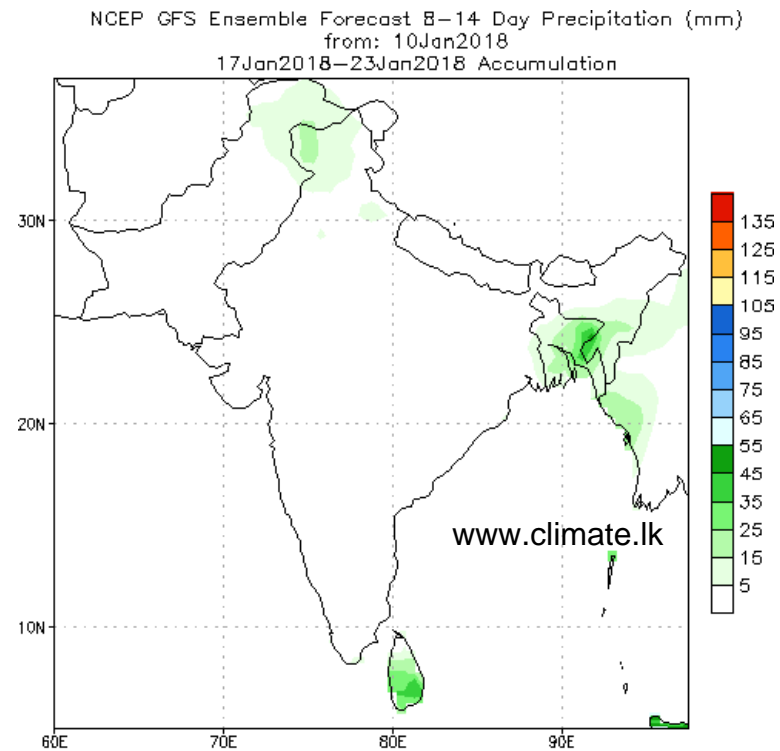


## PREDICTIONS

### NCEP GFS 1- 14 Day prediction



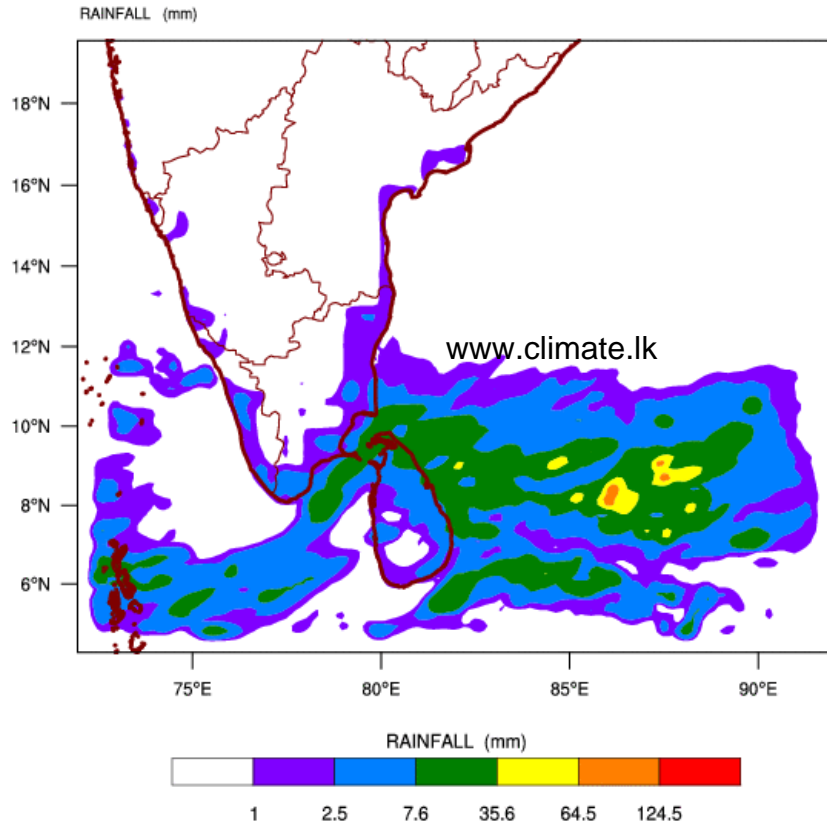
Bias correction based on last 30-day forecast error



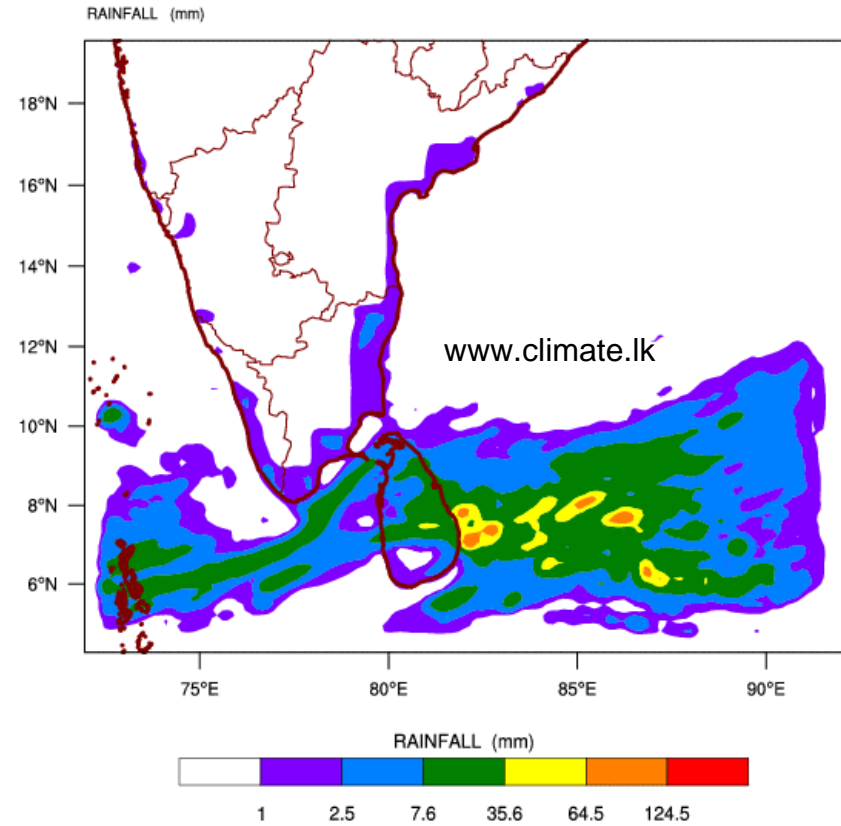
Bias correction based on last 30-day forecast error

## WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 10-01-2018 valid for 03 UTC of 12-01-2018

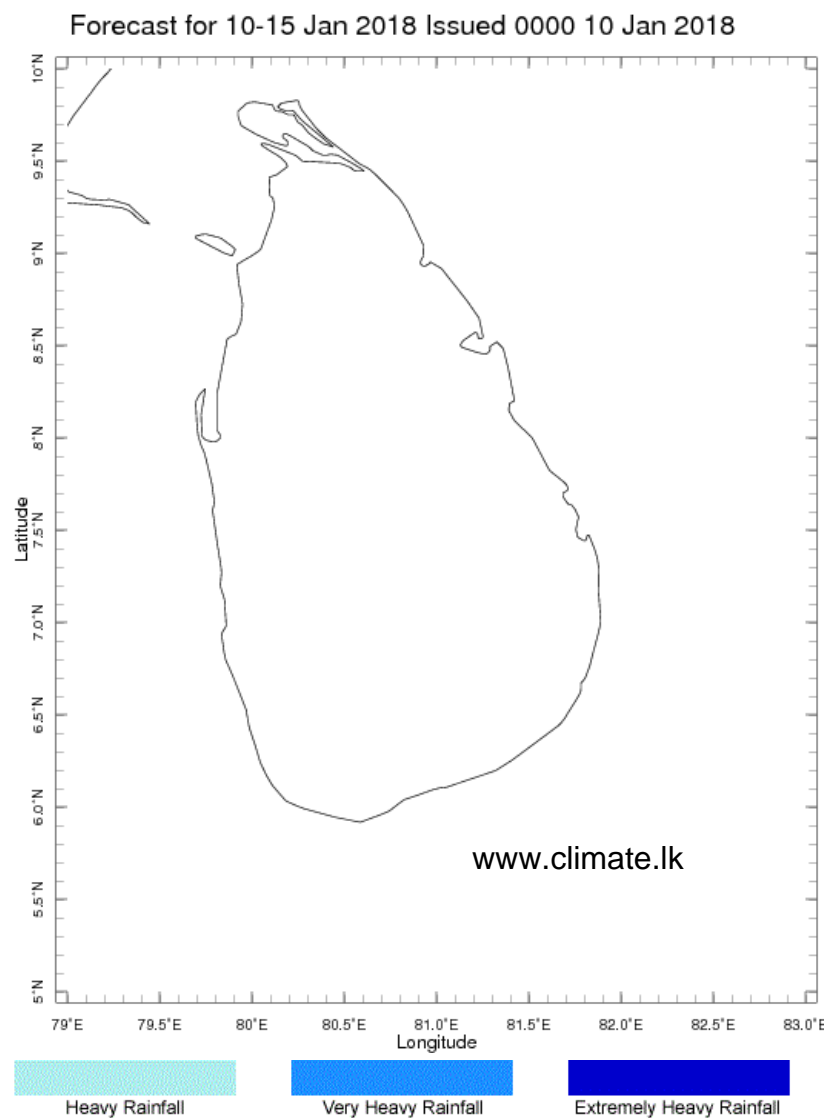


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 10-01-2018 valid for 03 UTC of 13-01-2018

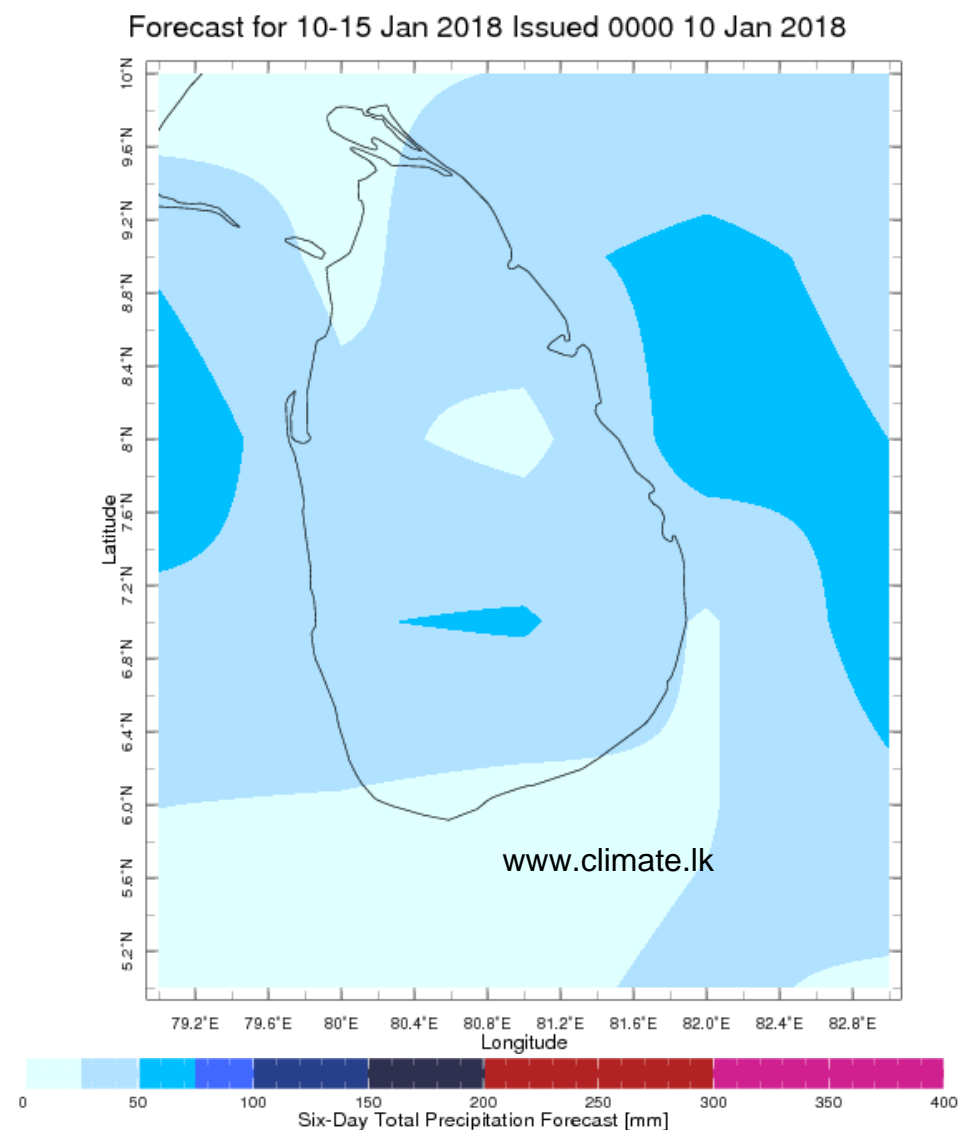


## Weekly Rainfall Forecast from IRI

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.



Extreme Rainfall Forecast



Total Six Day Precipitation Forecast