

## Experimental Climate Monitoring and Prediction

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### Highlights

- The NCEP weekly rainfall forecast predicts between 75-85 mm of rainfall in Monaragala, Ampara, Badulla and Hambantota districts during 10<sup>th</sup>-16<sup>th</sup> Jan.
- Between 26 Dec- 1 Jan: Rainfall up to 60 mm was recorded in Hambantota, Nuwara Eliya, Ratnapura and Badulla districts on December 26<sup>th</sup>.
- From 24- 30 Dec: minimum temperature of 15 °C was recorded from Nuwara Eliya district while western and southern parts of the island recorded a maximum temperature between 30-35 °C.
- From 26 Dec- 1 Jan: up to 18 km/h, northeasterly winds were experienced by the entire island.
- Average sea surface temperature was observed in the southern seas of Sri Lanka.

### Monitoring

#### Rainfall

**Weekly Monitoring:** On December 26<sup>th</sup>, Ratnapura district received up to 50 mm of rainfall; Badulla, Hambantota, and Ampara districts received up to 30 mm; and Mannar, Puttalam, Anuradhapura, Kurunegala, Batticaloa, Kegalla and Kalutara districts up to 20 mm; Batticaloa, Polonnaruwa, Gampaha, Colombo, Kalutara, Matara, Matale and Kandy districts up to 30 mm; Mannar, Vavuniya, Anuradhapura, Puttalam, Kurunegala, Trincomalee and Galle districts up to 20 mm. On the 27<sup>th</sup> Monaragala and Ampara districts received up to 30 mm of rainfall; and Kegalla, Ratnapura, Kalutara, Galle, Matara, Nuwara Eliya, Badulla and Hambantota districts up to 10 mm. Ratnapura, Kalutara, Galle and Matara districts received up to 10 mm of rainfall on 28<sup>th</sup> and 29<sup>th</sup>. On the 30<sup>th</sup>, Ratnapura, Badulla, Monaragala, Hambantota and Ampara districts received up to 10 mm. No significant rainfalls were recorded in any part of the island during 31<sup>st</sup> Dec- 1<sup>st</sup> Jan.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall of 25-50 mm in Badulla district; and up to 10-25 mm in Monaragala, Ratnapura, Galle and Matara districts. It also shows below average rainfall up to 50-100 mm in Ampara district; up to 25-50 mm in Kilinochchi, Vavuniya, Anuradhapura, Polonnaruwa, Batticaloa, Badulla and Monaragala districts; and up to 10-25 mm in rest 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**

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

## Predictions

### Rainfall

#### 14-day prediction:

#### NOAA NCEP models:

From 03<sup>rd</sup> – 09<sup>th</sup> Jan: Total rainfall between 15-25 mm in Badulla, Monaragala and Ampara districts; between 5-15 mm in Colombo, Kegalle, Kandy, Kalutara, Ratnapura, Galle Matara, Hambantota and Nuwara Eliya districts; Up to 5 mm total rainfall rest of the island.

From 10<sup>th</sup> – 16<sup>th</sup> Jan: Total rainfall between 75-85 mm in Monaragala, Ampara, Badulla and Hambantota districts; between 55-65 mm in Matara, Ratnapura, Nuwara Eliya and Kandy districts; between 45-55 mm in Galle and Batticaloa districts; between 35-45 mm in Colombo, Kegalle, Matale and Polonnaruwa districts; between 25-35 mm in Gampaha and Kurunegala districts; between 15-25 mm in Puttalam, Anuradhapura and Trincomalee districts; Up to 5 mm total rainfall rest of the island.

#### IMD WRF Forecast:

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

06<sup>th</sup> Jan: Up to 7.6 mm of rainfall in Monaragala, Ampara, Kilinochchi, Mullaitivu and Mannar districts; Up to 2.5 mm in Kalutara, Galle, Hambantota, Badulla, Matale, Kurunegala, Puttalam, Anuradhapura, Polonnaruwa, Batticaloa, Trincomalee and Vavuniya districts.

#### IRI Model Forecast:

03<sup>rd</sup> – 08<sup>th</sup> Jan: Total rainfall up to 25 mm over Sri Lanka.

### 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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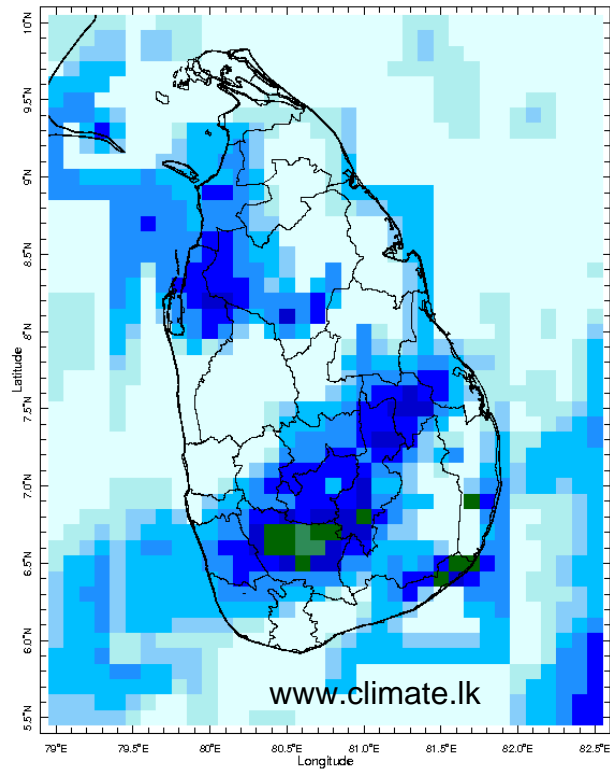
#### 2. Predictions

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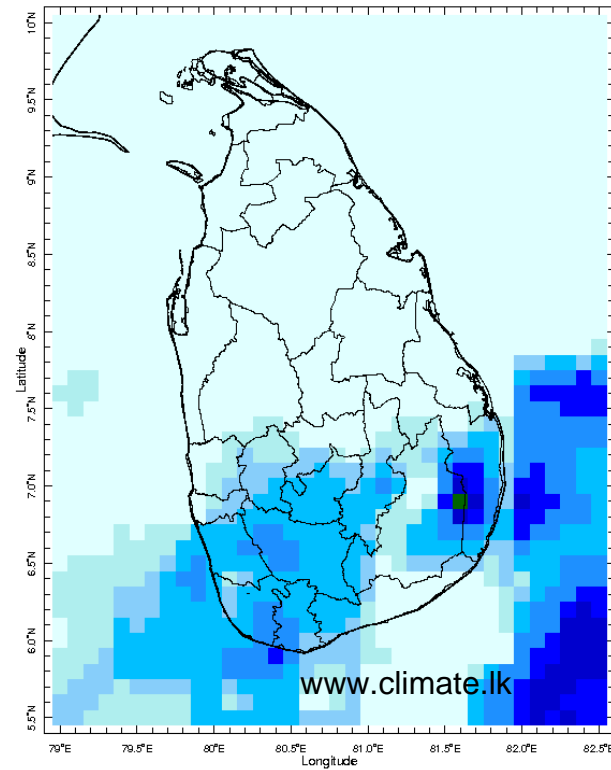
## MONITORING

### Daily Rainfall Monitoring

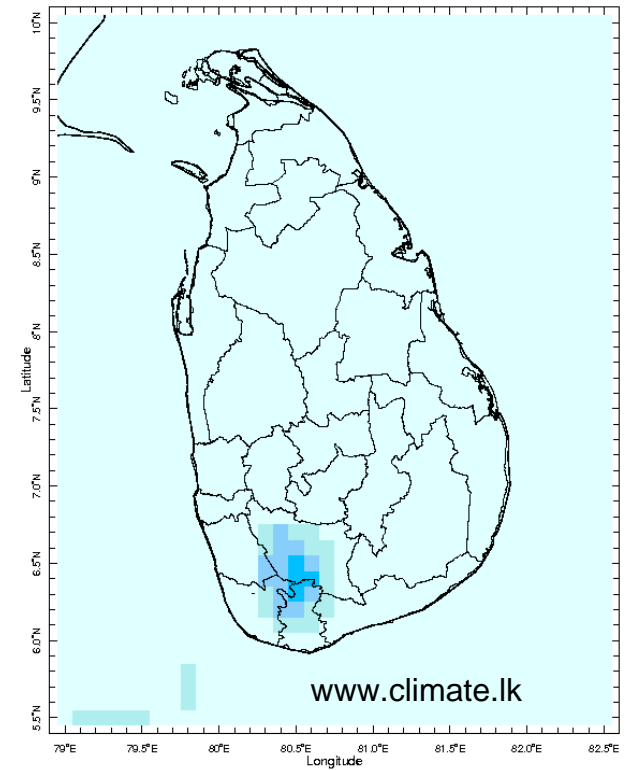
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



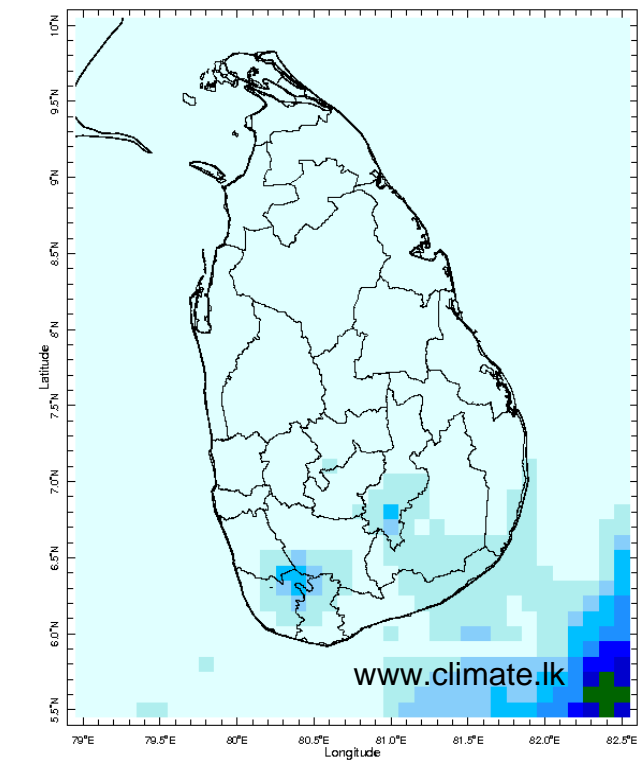
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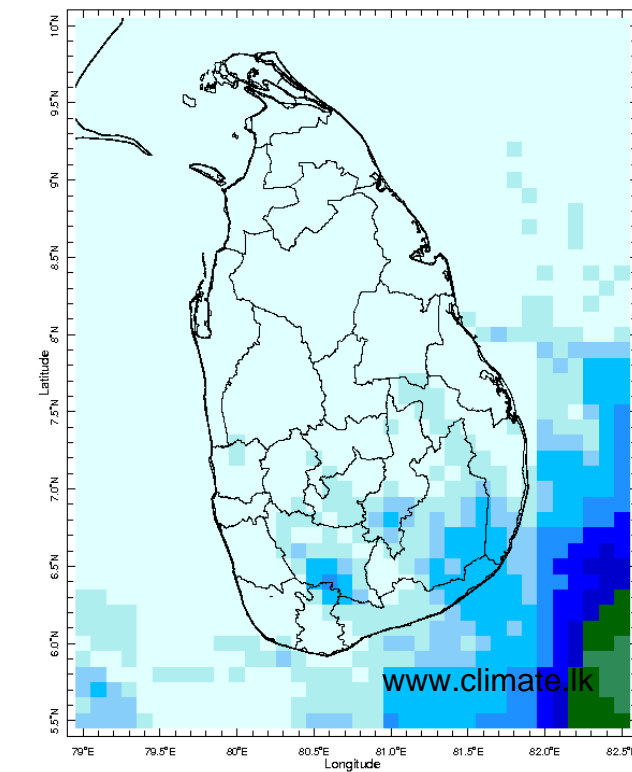
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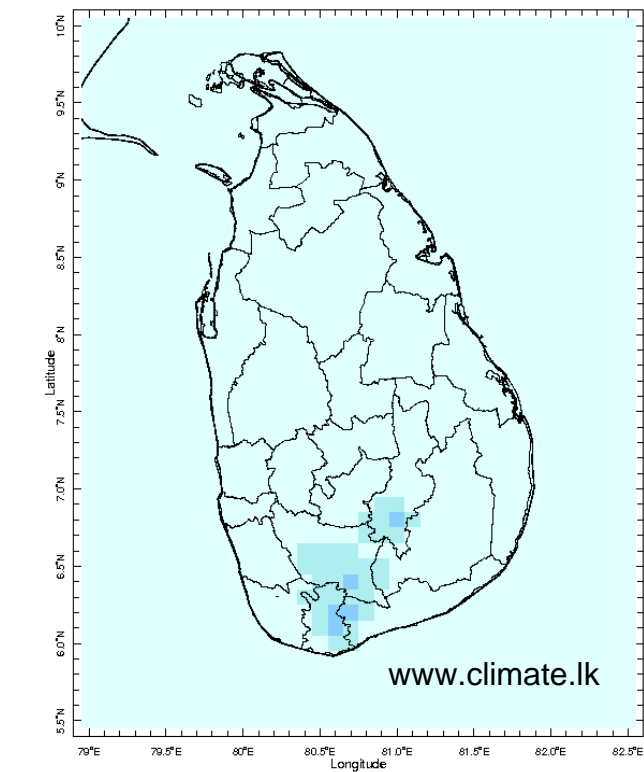
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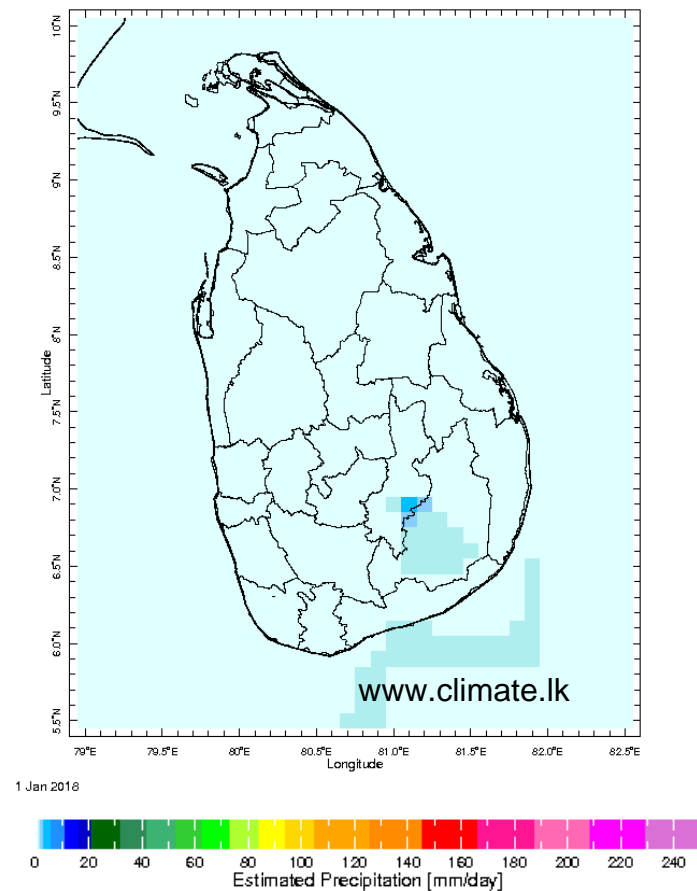
29 Dec 2017



30 Dec 2017

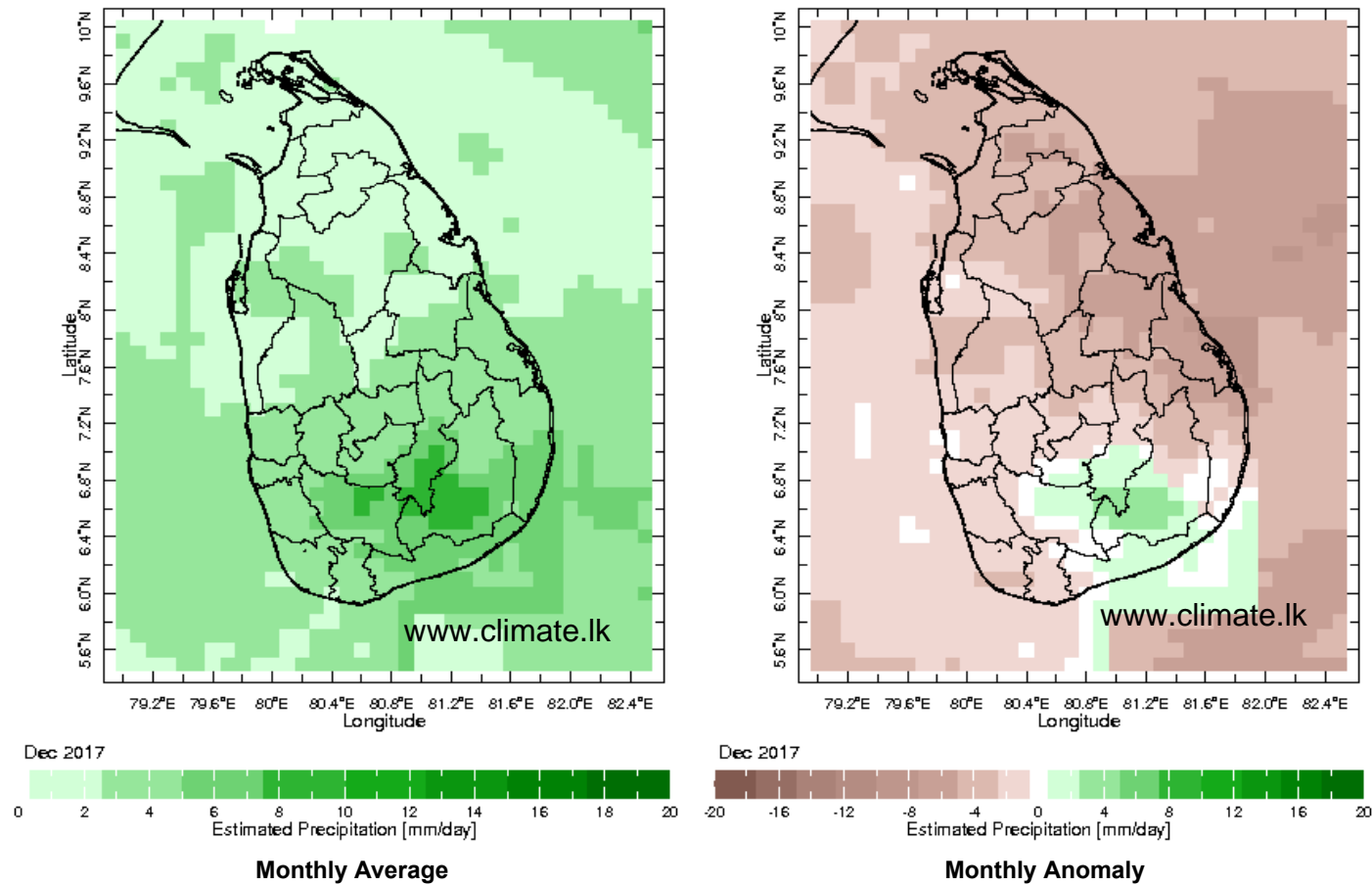


31 Dec 2017

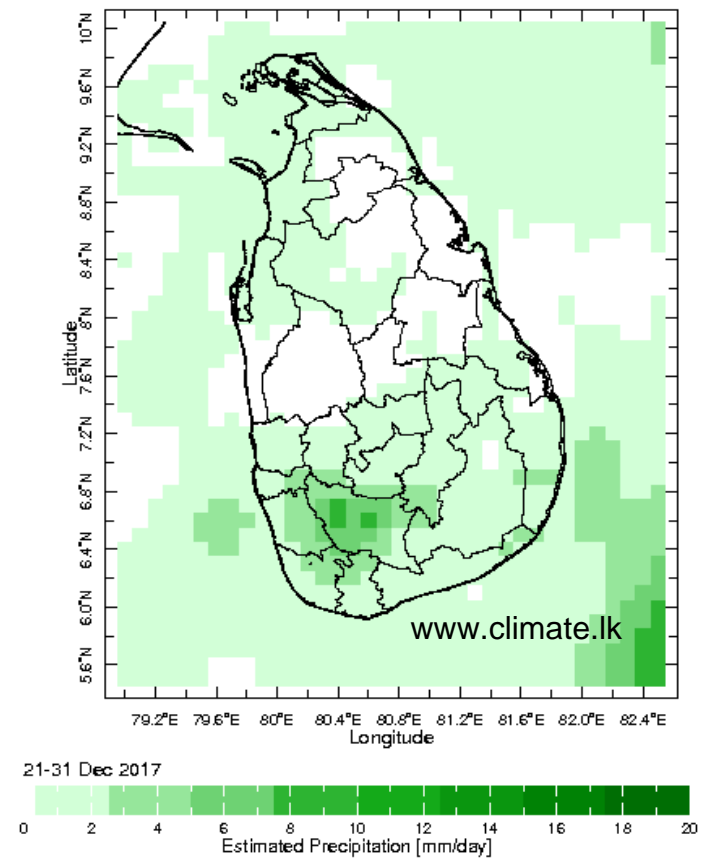
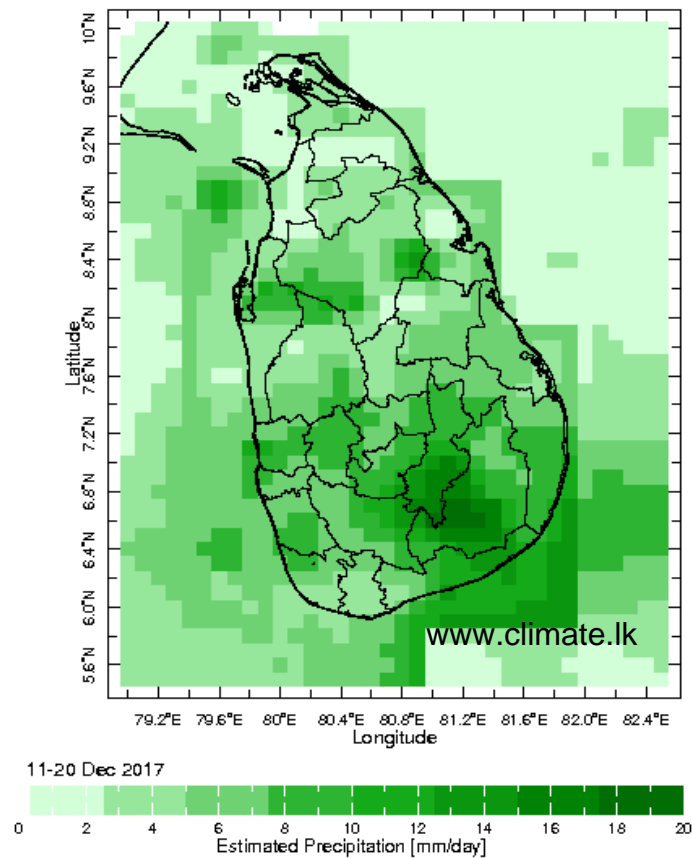


# Monthly Rainfall Monitoring

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



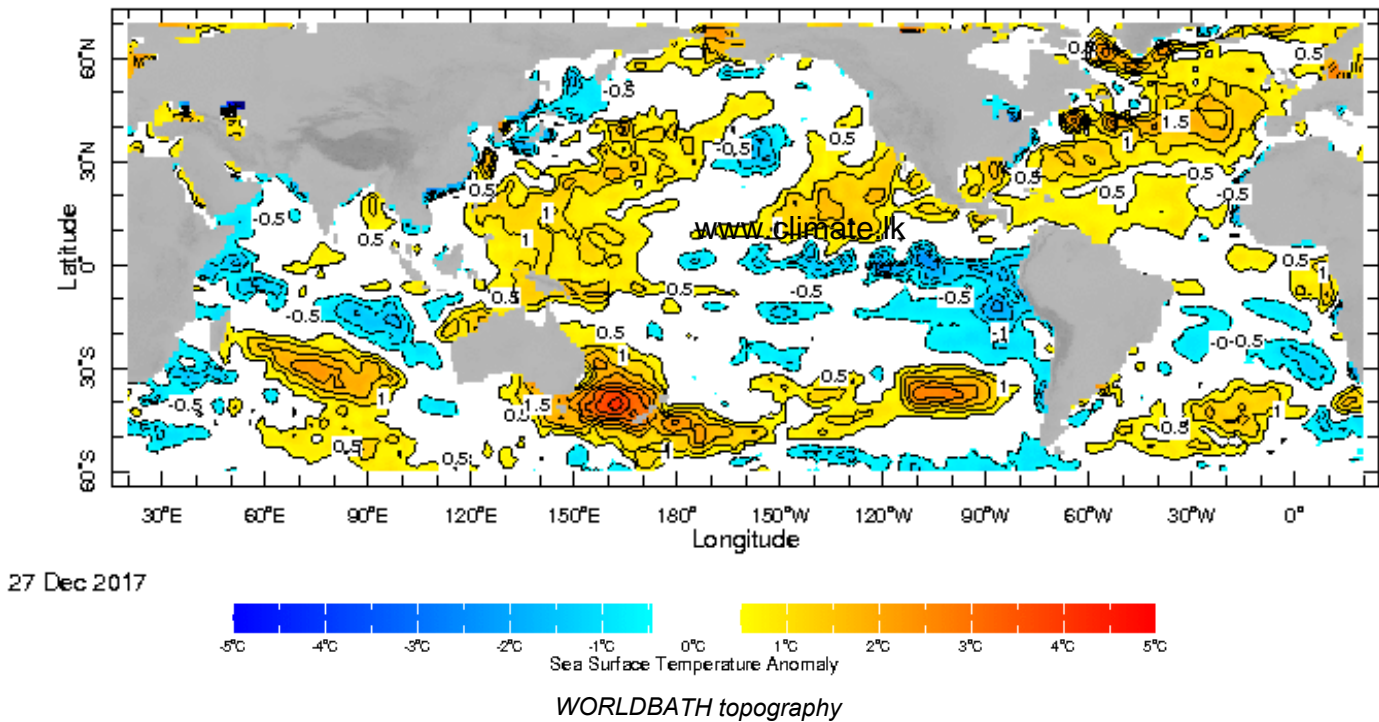
## Dekadal (10 Day) Satellite Derived Rainfall Estimates





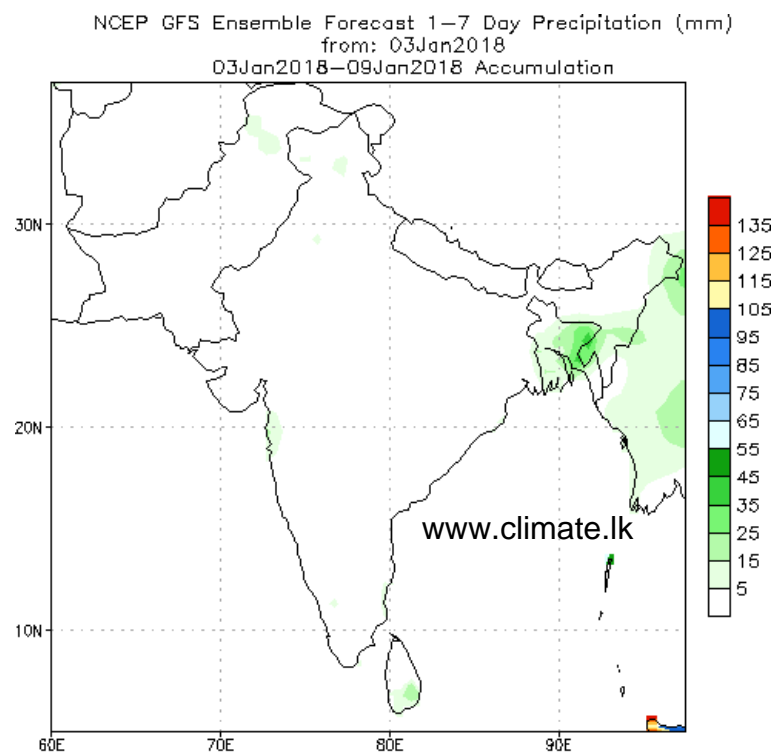
Weekly Average SST Anomalies

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

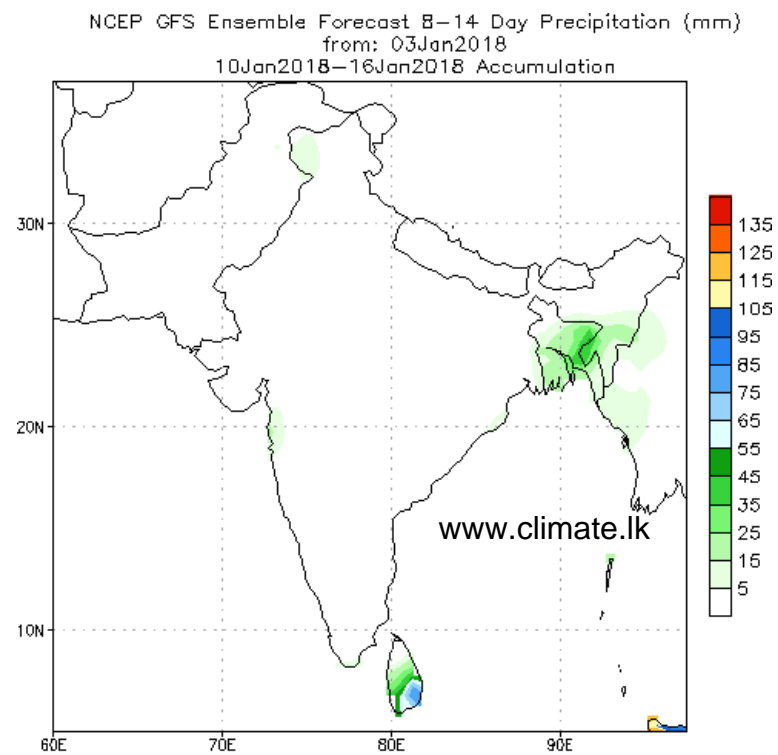


## PREDICTIONS

### NCEP GFS 1- 14 Day prediction



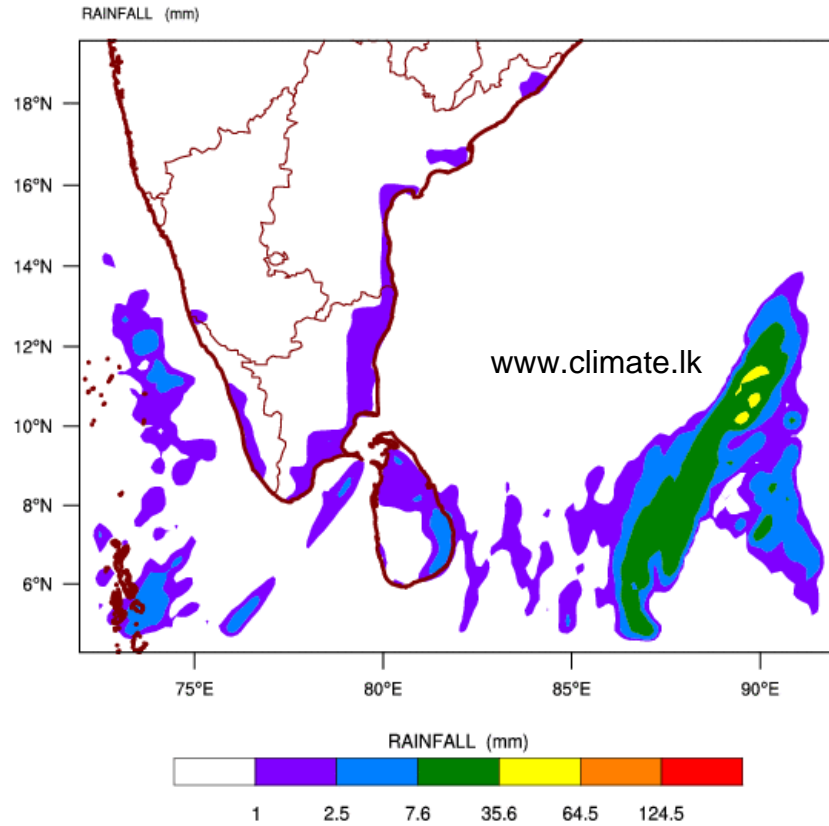
Bias correction based on last 30-day forecast error



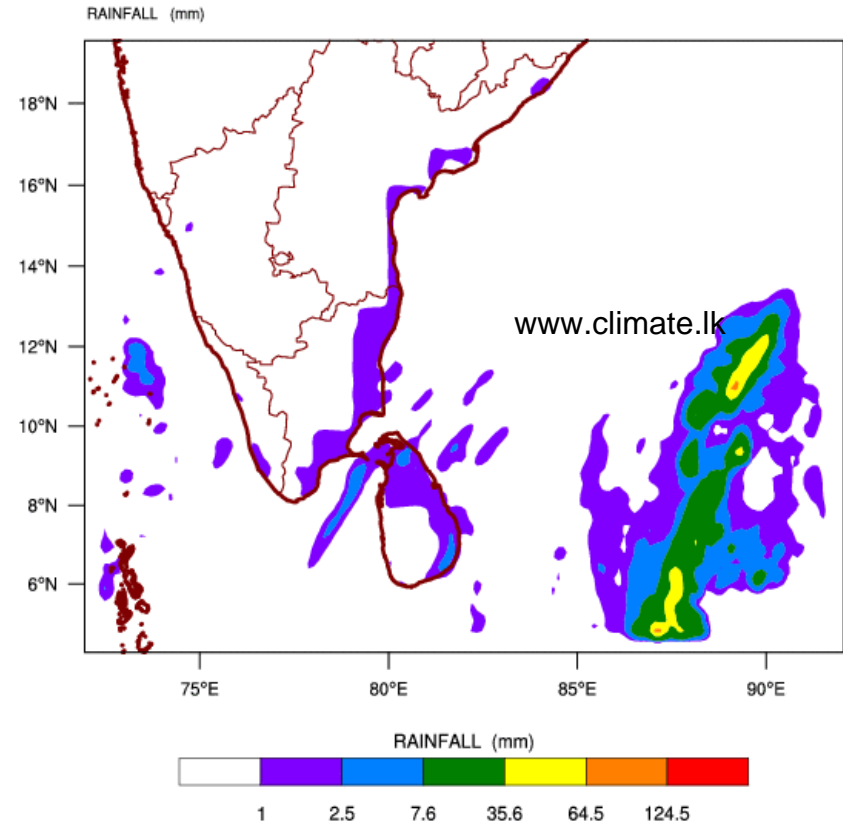
Bias correction based on last 30-day forecast error

## WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 03-01-2018 valid for 03 UTC of 05-01-2018

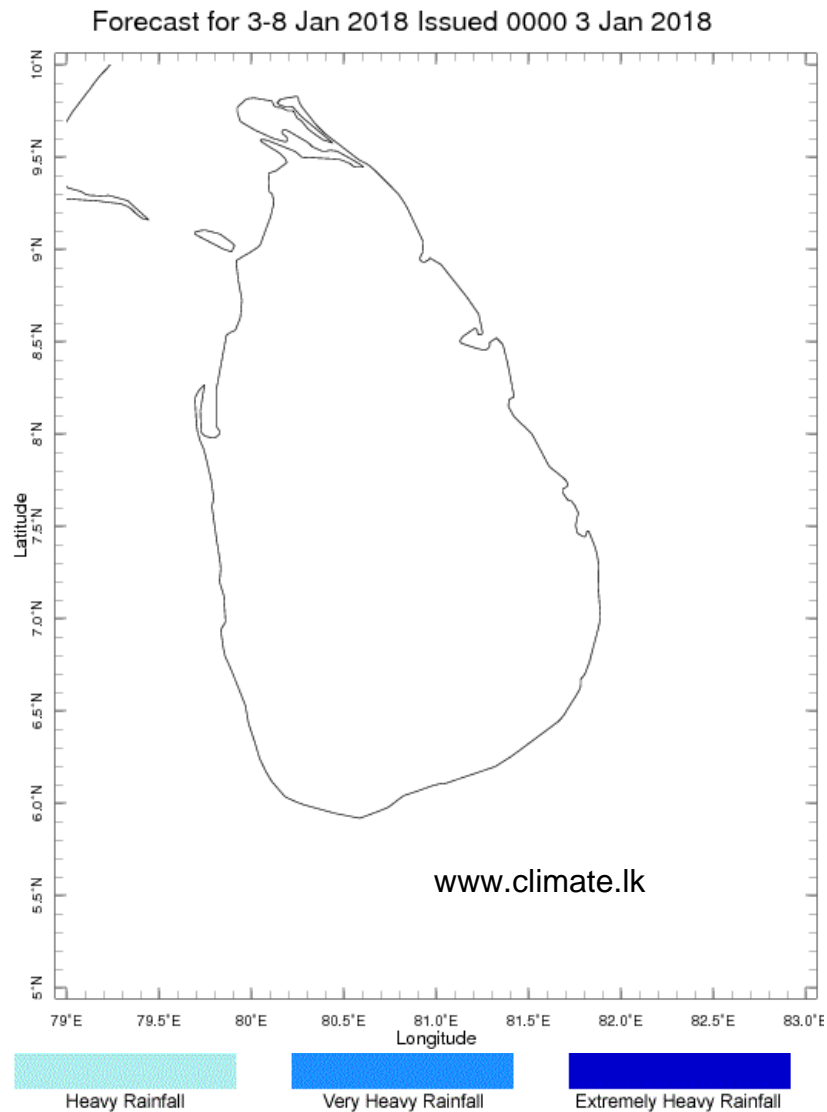


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 03-01-2018 valid for 03 UTC of 06-01-2018

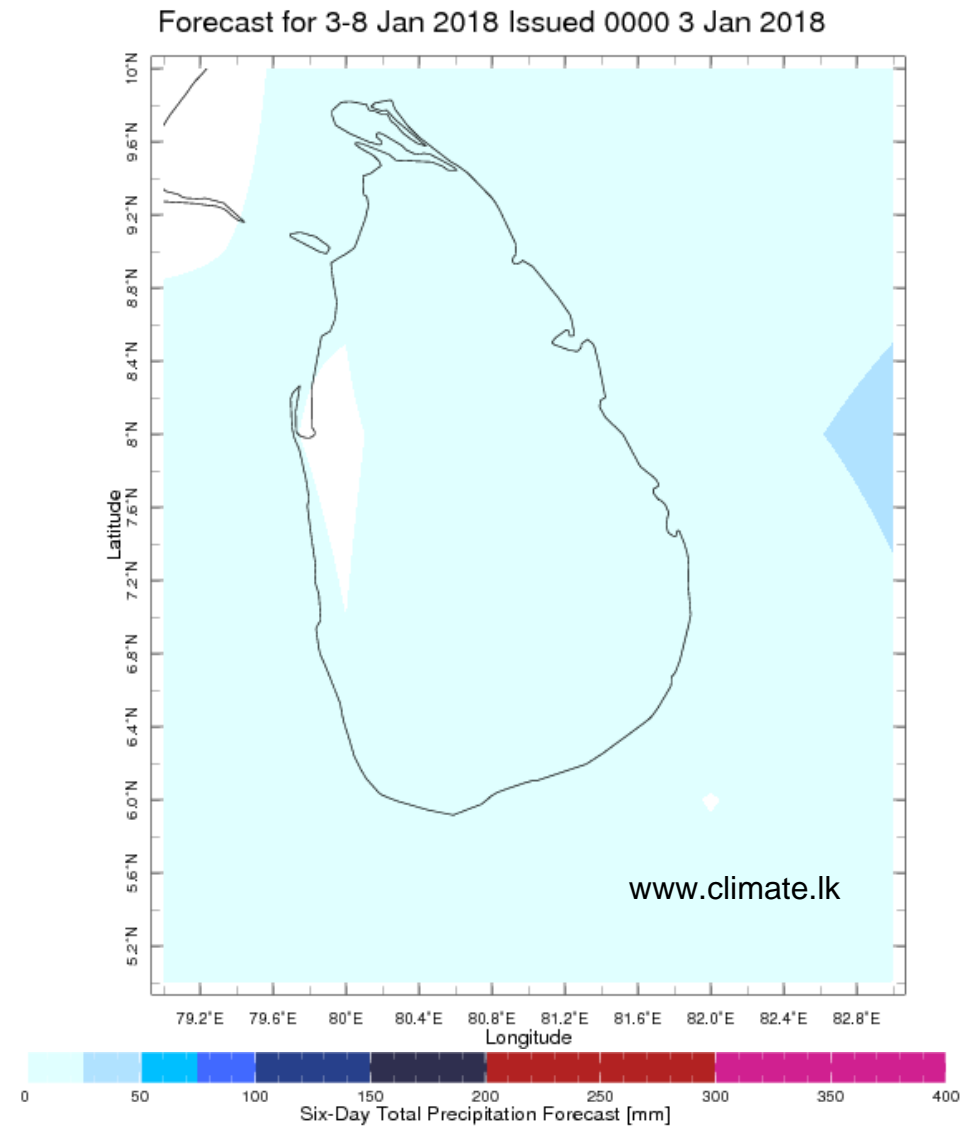


## Weekly Rainfall Forecast from IRI

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**