

## Experimental Climate Monitoring and Prediction

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26 April 2018

### Highlights

- The NCEP weekly rainfall forecast predicts total rainfall between 55-65 mm in Kalutara, Gampaha, Colombo and Galle districts during 25<sup>th</sup> Apr-1<sup>st</sup> May.
- Between 18-24 Apr: up to 50 mm of rainfall was recorded in Galle on the 21<sup>st</sup>, Kurunegala on the 23<sup>rd</sup> and Ratnapura on the 24<sup>th</sup>.
- From 15-21 Apr: minimum temperature of 15 °C was recorded from Nuwara Eliya district while Jaffna, Kilinochchi, Anuradhapura and Kurunegala districts recorded a maximum temperature between 35-40 °C.
- From 17-23 Apr: up to 18 km/h, southeasterly winds were experienced by the entire island.
- 1 °C above average sea surface temperature was observed in the seas around Sri Lanka.

#### Monitoring

##### Rainfall

**Weekly Monitoring:** On April 18<sup>th</sup>, Mannar and Anuradhapura districts received up to 30 mm of rainfall; Vavuniya, Mullaitivu, Puttalam, Colombo and Kegalla districts up to 20 mm; and most of the country up to 10 mm. On the 19<sup>th</sup>, Mullaitivu, Vavuniya, Gampaha, Colombo, Kalutara, Kegalla and Ratnapura districts received up to 20 mm of rainfall; and rest of the northern and western regions of the island up to 10 mm. On the 20<sup>th</sup>, Gampaha, Colombo, Ratnapura and southern regions of Kurunegala districts received up to 10 mm of rainfall; Kilinochchi, Mullaitivu, Vavuniya and Trincomalee districts up to 20 mm; and most parts of the island up to 10 mm. On the 21<sup>st</sup>, Galle district received up to 50 mm of rainfall; Kalutara and Matara districts up to 20 mm; and Ratnapura district up to 10 mm. On the 22<sup>nd</sup>, Kurunegala, Kegalla, Kandy and Colombo districts received up to 20 mm; and Matale, Plonnuaruwa, Batticaloa, Ampara, Badulla, Nuwara Eliya, Ratnapura, Kalutara, Galle and Matara up to 10 mm. On the 23<sup>rd</sup>, Kurunegala district received up to 50 mm of rainfall; Anuradhapura and Matale districts up to 30 mm; and Puttalam and Polonnaruwa districts up to 20 mm; and rest of the western and central regions of the island up to 10 mm. On the 24<sup>th</sup>, Ratnapura district received up to 50 mm of rainfall; Kegalla, Kalutara and Galle districts received up to 30 mm; Mullaitivu, Vavuniya, Kurunegala, Kandy, Nuwara Eliya, Badulla and Monaragala districts up to 10 mm; and most of the country up to 10 mm.

**Total Rainfall for the Past Week:** The RFE 2.0 tool shows total rainfall of 50-75 mm in Ratnapura and Galle districts; and up to 25-50 mm in Mannar, Vavuniya, Puttalam, Anuradhapura, Kurunegala, Kegalla, Kandy, Nuwara Eliya, Colombo, Matara and Badulla districts. Below average rainfall up to 50-100 mm is shown for Gampaha, Colombo and Anuradhapura districts; and up to 25-50 mm in Jaffna, Kilinochchi, Mullaitivu, Vavuniya, Trincomalee, Puttalam, Kurunegala, Matale, Kandy, Nuwara Eliya, Kegalla, Kalutara, Ratnapura, Badulla, Monaragala, Ampara and Polonnaruwa districts.

**Monthly Monitoring:** During March - below average rainfall conditions were mainly experienced by northern and central regions of the island. Vavuniya, Mullaitivu, Mannar, Trincomalee, Anuradhapura, Polonnaruwa, Kurunegala, Puttalam, Kandy, Nuwara Eliya, Ratnapura, Matara and Kegalla and western regions of Matale district received up to 120 mm below average rainfall. Above average rainfall up to 90 mm was received by Jaffna, Kilinochchi, Colombo, Galle, Hambantota, Badulla, Monaragala, Ampara and Trincomalee districts. The CPC Unified Precipitation Analysis tool shows ~300 mm of total rainfall in Kalutara, Galle and Ratnapura districts; up to 200 mm Kurunegala, Matale, Kegalla, Nuwara Eliya, Badulla and Monaragala; up to 100 mm Puttalam, Anuradhapura, Polonnaruwa, Trincomalee, Ampara and Hambantota districts; and up to ~75 mm in Jaffna, Kilinochchi and Vavuniya districts.

##### Ocean State (Text Courtesy IRI)

##### Pacific sea state: April 19, 2018

In mid-April 2018, the east-central tropical Pacific waters were at warm-neutral to borderline La Niña levels, while many key atmospheric variables continued to indicate weak La Niña. Importantly, the east Pacific subsurface water temperature has become moderately above average. The official CPC/IRI outlook calls for a transition from La Niña to neutral conditions during the March-May season, with a further warming tendency later in the year. The latest forecasts of statistical and dynamical models support this scenario.

##### Indian Ocean State

1 °C above average sea surface temperature was observed in the seas around Sri Lanka.

## Predictions

### Rainfall

#### 14-day prediction:

##### NOAA NCEP models:

From 25<sup>th</sup> Apr- 1<sup>st</sup> May: Total rainfall between 55-65 mm in Kalutara, Gampaha, Colombo and Galle districts; between 45-55 mm in Ratnapura, Matara and Hambantota districts; between 35-45 mm in Kegalle and Nuwara Eliya districts; between 25-35 mm in Kandy, Monaragala and Badulla districts; between 15-25 mm in Ampara district.

From 02<sup>nd</sup> – 8<sup>th</sup> May: Total rainfall between 115-125 mm in Galle district; between 105-115 mm in Kalutara and Matara districts; between 95-105 mm in Ratnapura and Hambantota districts; between 85-95 mm in Kegalle, Kandy, Nuwara Eliya, Badulla and Monaragala districts; between 75-85 mm in Ampara district; between 65-75 mm in Gampaha, Puttalam and Kurunegala districts.

##### IMD WRF Forecast:

Not Available

##### IRI Model Forecast:

From 25<sup>th</sup> – 30<sup>th</sup> Apr: Total rainfall between 50-75 mm in Matale, Kandy, Nuwara Eliya and Badulla districts; and up to 25-50 mm in Ampara, Polonnaruwa, Kegalla and Ratapura districts.

### MJO based OLR predictions

#### For the next 15 days:

MJO not have an impact on the rainfall in Sri Lanka in the next 10 days and shall suppress in 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

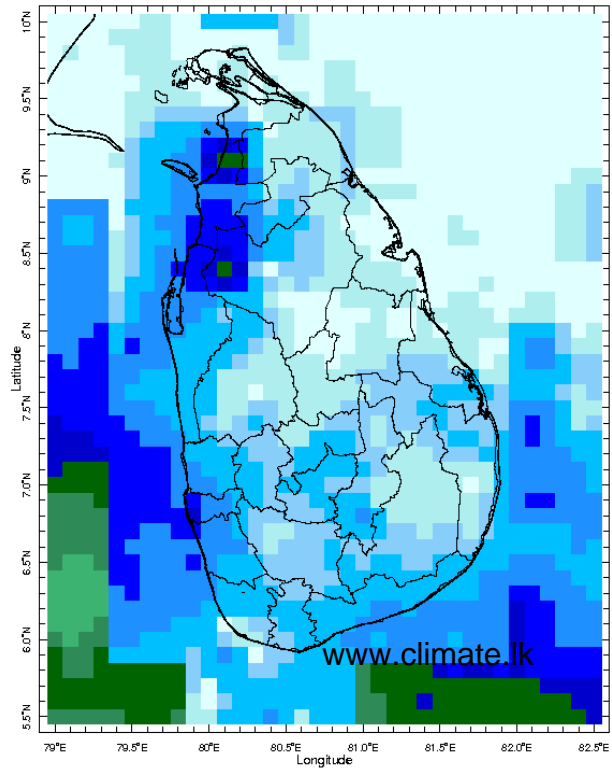
- a. Daily Rainfall Monitoring
- b. Monthly Rainfall Monitoring
- c. Dekadal (10 Day) Satellite Derived Rainfall Estimates
- d. Weekly Average SST Anomalies

#### 2. Predictions

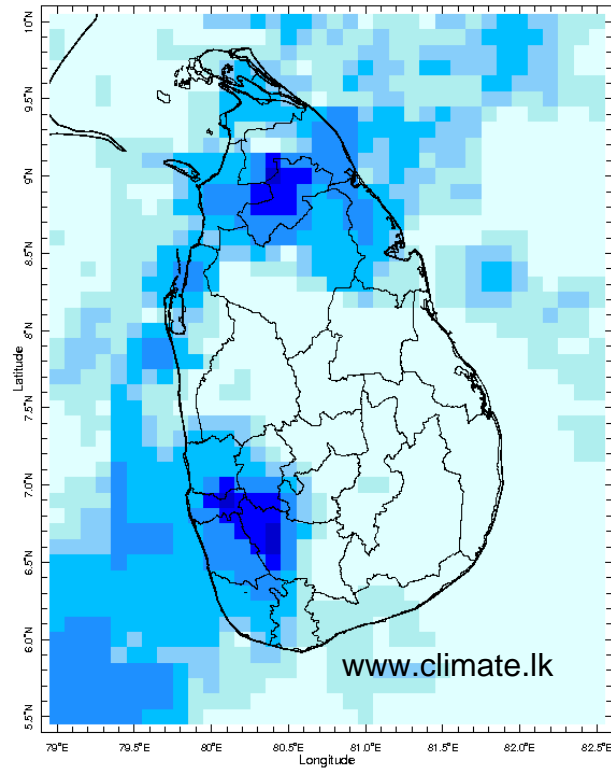
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. WRF Model Rainfall Forecast from IMD Chennai
- c. Weekly Precipitation Forecast from IRI
- d. Seasonal Predictions from IRI

## Daily Rainfall Monitoring

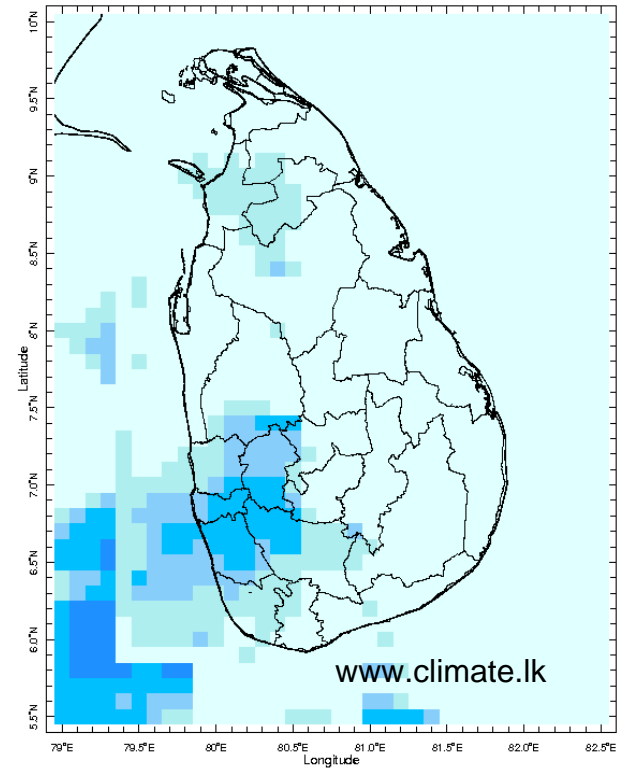
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



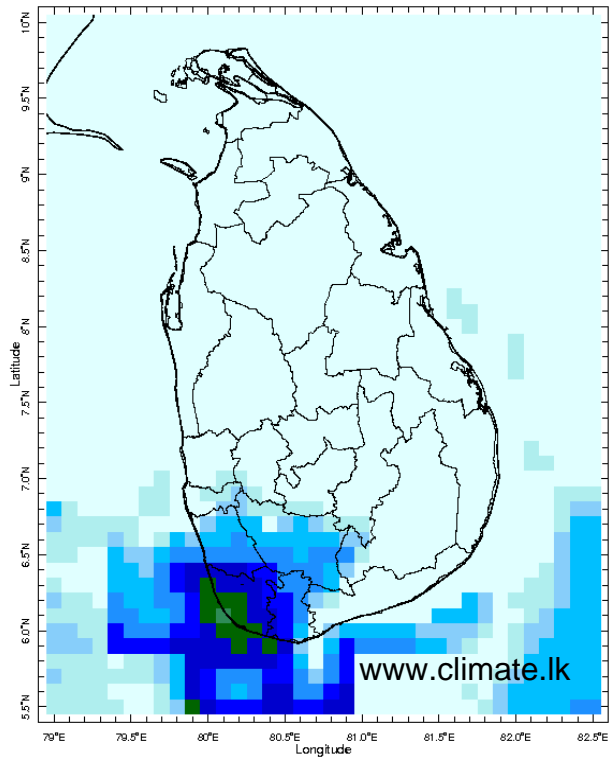
18 Apr 2018



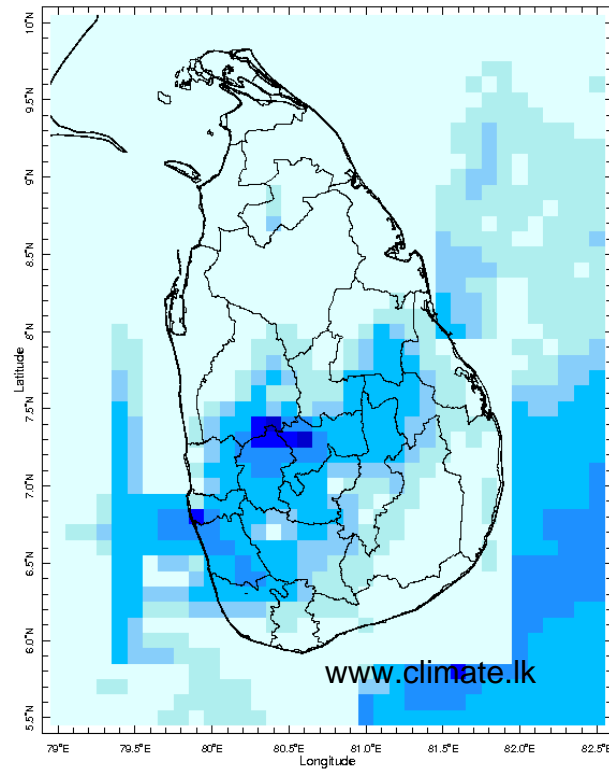
19 Apr 2018



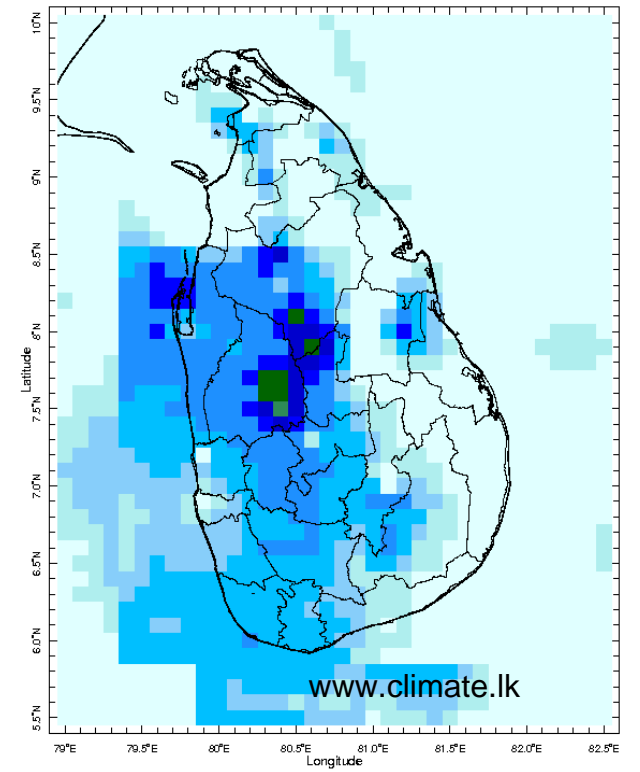
20 Apr 2018



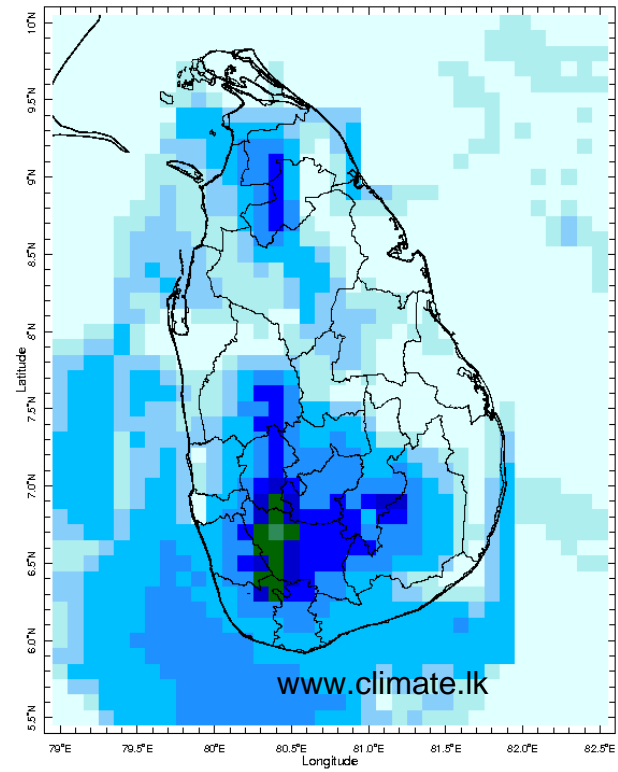
21 Apr 2018



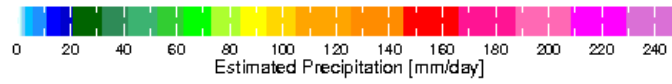
22 Apr 2018



23 Apr 2018

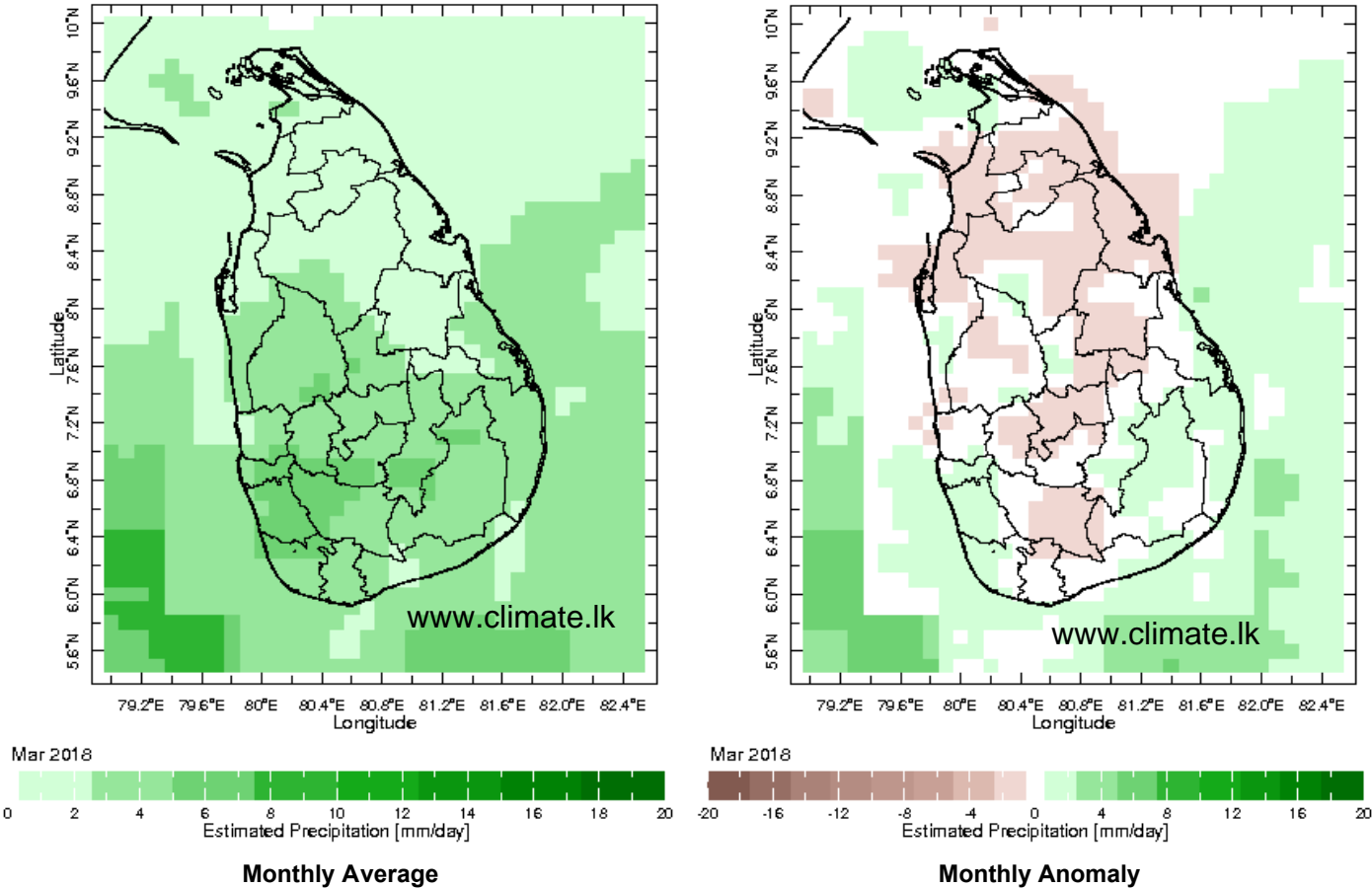


24 Apr 2018

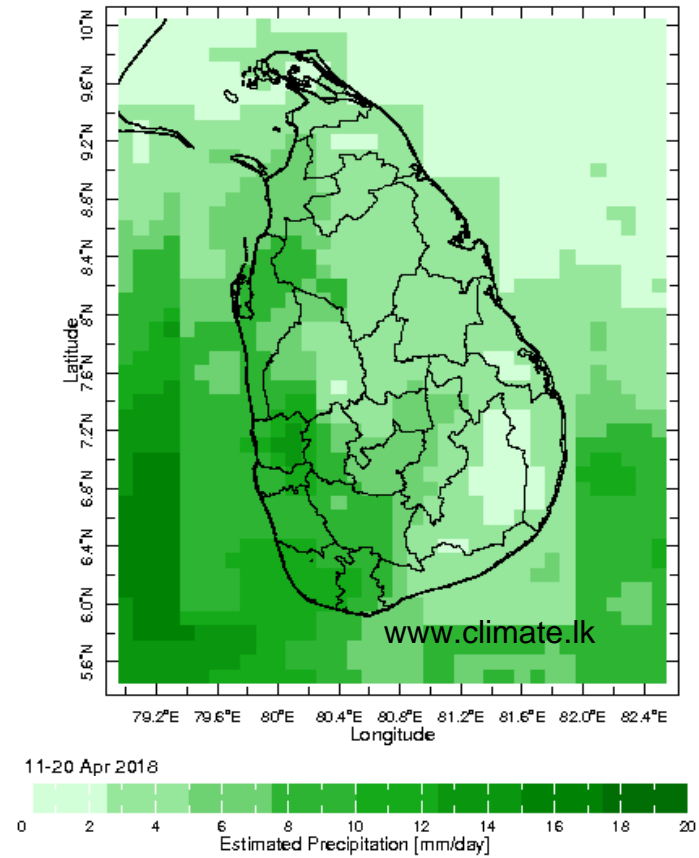
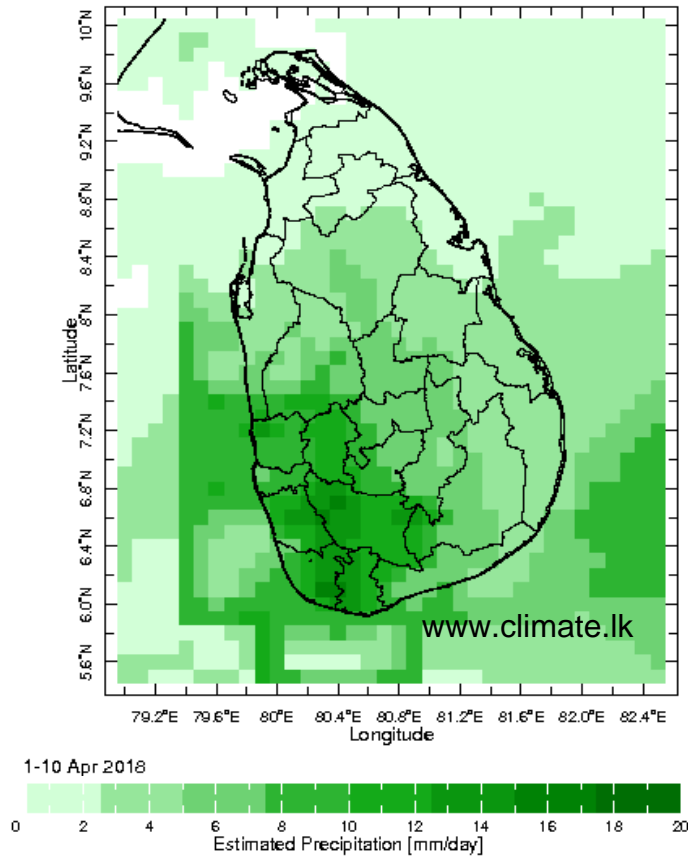


# Monthly Rainfall Monitoring

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



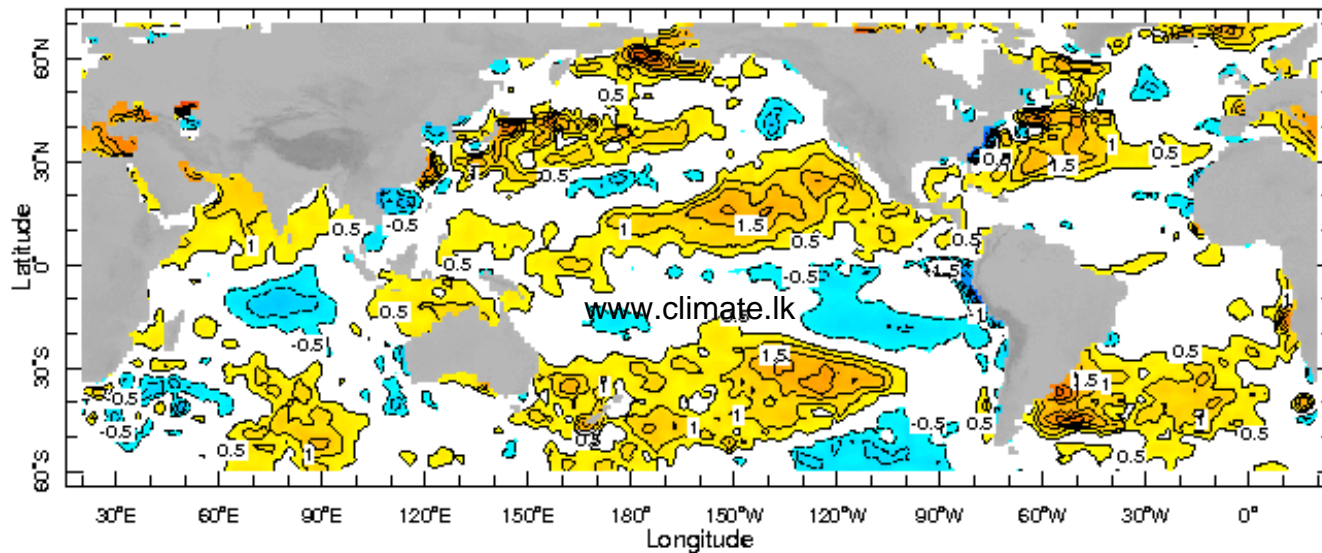
## Dekadal (10 Day) Satellite Derived Rainfall Estimates



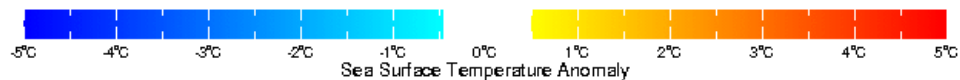


## Weekly Average SST Anomalies

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

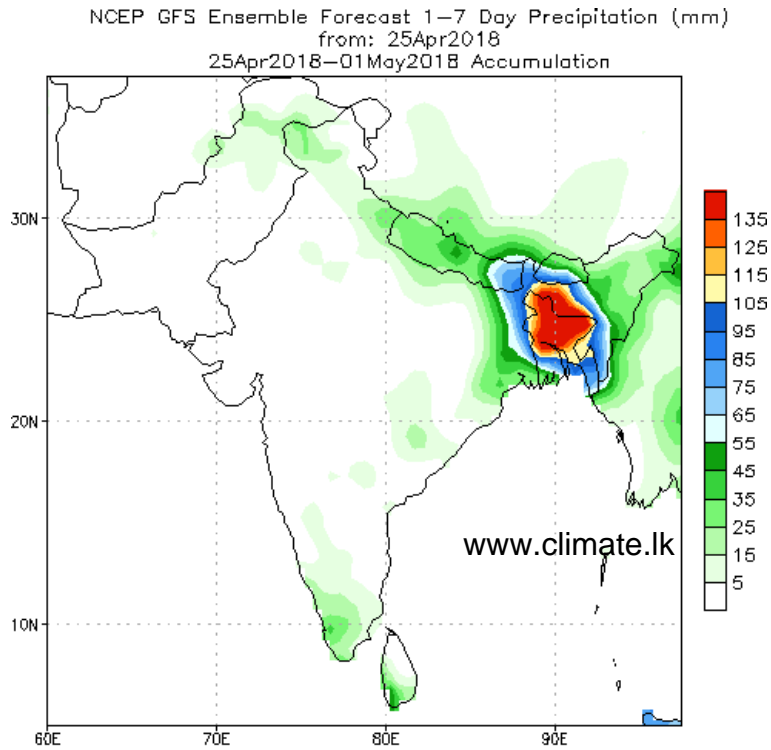


18 Apr 2018

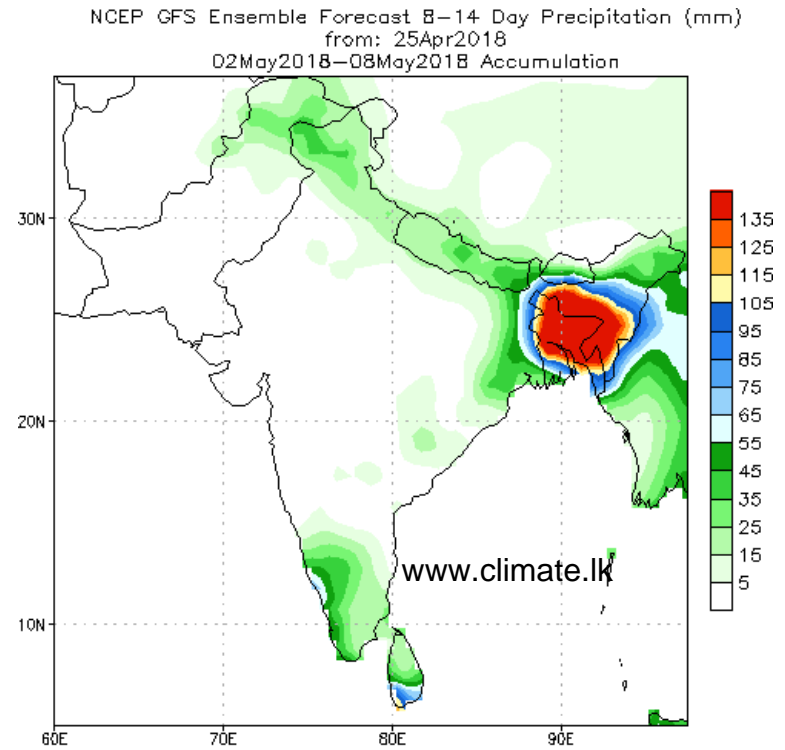


*WORLDBATH topography*

**NCEP GFS 1- 14 Day prediction**



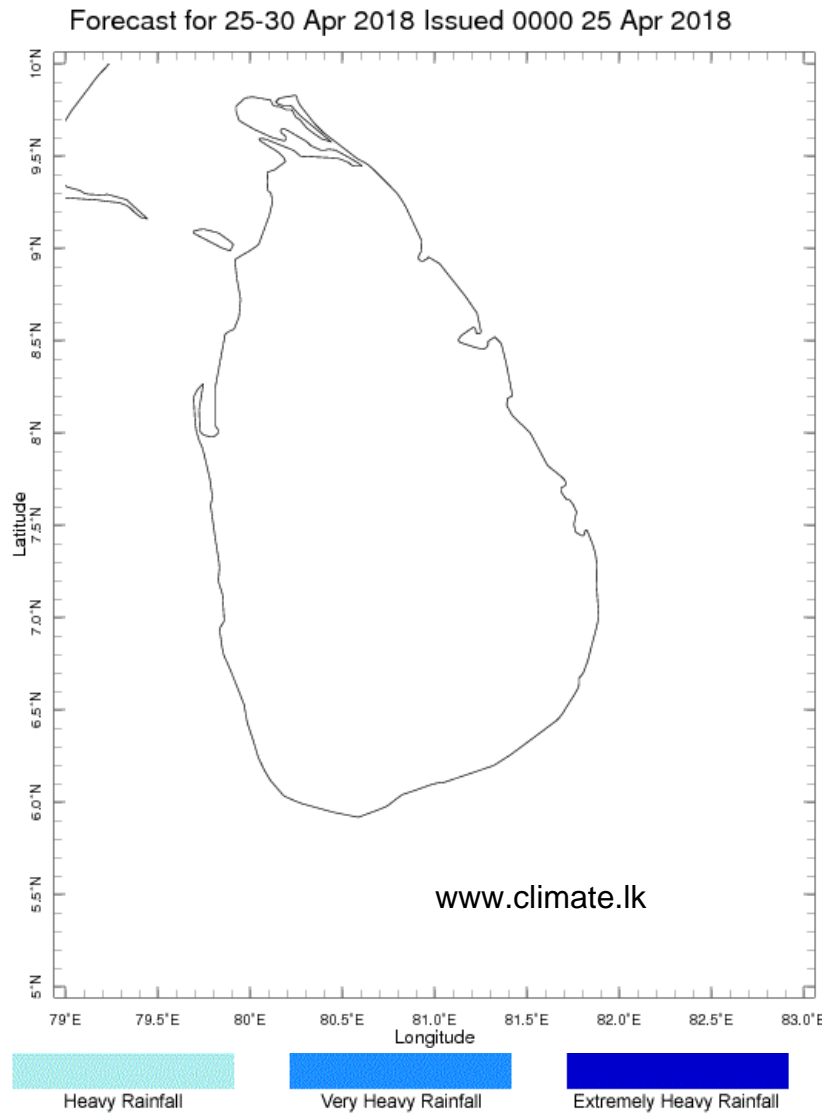
Bias correction based on last 30-day forecast error



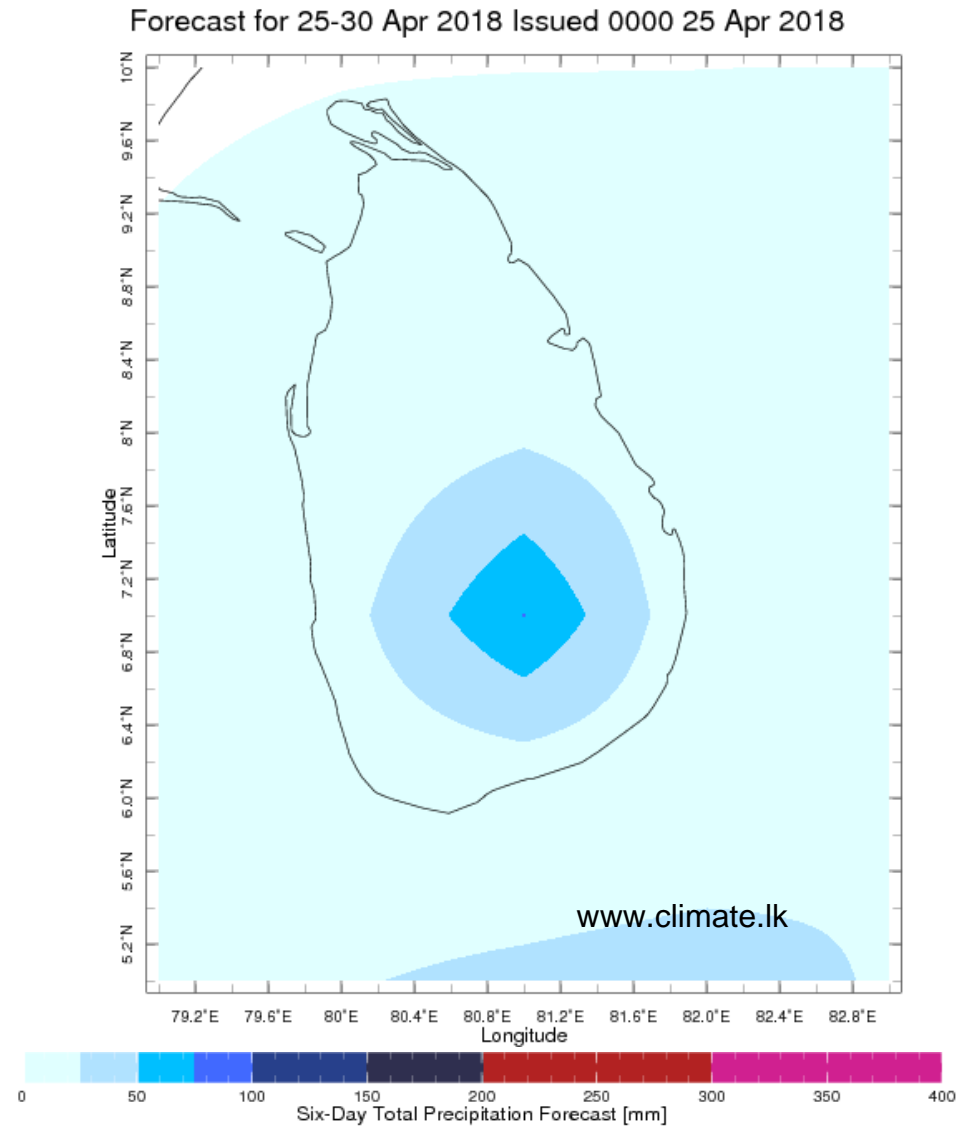
Bias correction based on last 30-day forecast error

# 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