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Experimental Climate Monitoring and Prediction

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30 March 2017

Highlights

- *The IMD WRF model predicts up to 125 mm of rainfall in Colombo district on 31st March.*
- *Between 22-28 Mar: highest rainfall of 60 mm was recorded on the 27th in Ratnapura and Galle districts.*
- *From 19-25 Mar: minimum temperature of 15 ^{O}C was recorded from Nuwara Eliya district while Puttalam and Kurunegala recorded a maximum temperature between 30-35 ^{O}C.*
- *From 21-27 Mar: up to 14 km/h, northeasterly winds were experienced by the northern regions, and speeds less than 10 km/h in the southern regions of the island.*
- *0.5 ^{O}C above average sea surface temperature was observed in the northern and eastern seas of Sri Lanka.*

Monitoring

Rainfall

***Weekly Monitoring*:** No significant rainfalls were recorded in any part of the island during the period March 22nd-26th. On March 27th Ratnapura and Galle districts received up to 60 mm of rainfall; Kalutara district up to 50 mm; Matara district up to 30 mm; and Colombo district up to 10 mm. On the 28th Ratnapura district received up to 50 mm of rainfall; Kegalla and Kandy districts up to 30 mm; Puttalam, Kurunegala, Matale, Colombo, Badulla, Monaragala and several regions of Anuradhapura and Gampaha districts received up to 20 mm; and many parts of the island up to 10 mm.

Total Rainfall for the Past Week: The RFE 2.0 tool shows total rainfall up to 75 mm for Kalutara, Galle and Ratnapura districts; up to 50 mm for Kurunegala district; and up to 25 mm for Kandy, Nuwara Eliya, Colombo, Badulla, Monaragala and Matara districts. It shows above average rainfall of 25-50 mm for region surrounding the borders of Kalutara, Galle and Ratnapura districts. Below average rainfall of 25-50 mm is shown for Matale, Kandy Nuwara Eliya, Badulla and Matara districts.

***Monthly Monitoring*:** During February - above average rainfall conditions were experienced in Jaffna, Badulla, Hambantota and several regions of Kilinochchi, Vavuniya, and Anuradhapura districts. These regions received up to 90 mm above average rainfall. Batticaloa district received below average rainfall up to 150 mm; and many parts of the island received up to 120 mm below average rainfall. Monthly average rainfall for Anuradhapura, Vavuniya, Kandy, Nuwara Eliya, Badulla, Monaragala and Hambantota districts amounted to 150 mm/month; and 90 mm/month for many parts of the island. The CPC Unified Precipitation Analysis tool shows ~100 mm of total rainfall in Vavuniya, Anuradhapura, Matale, Kurunegala, Nuwara Eliya, Badulla, Monaragala and Hambantota districts; up to ~75 mm in Kandy, Ratnapura, Ampara, Polonnaruwa, Kalutara and Matara districts; and up to ~50 mm Puttalam, Gampaha, Colombo, Kegalla, Galle and Batticaloa districts.

Ocean State (*Text Courtesy IRI*)

Pacific sea state: March 16, 2017

During mid-March 2017 the tropical Pacific SST anomaly was mainly in the ENSO-neutral range, but warmer than average SST was observed in the eastern one-third of the basin. Although most of the atmospheric variables across the tropical Pacific are now approximately ENSO-neutral, the pattern of cloudiness, rainfall and winds in the central and western tropical Pacific continues to suggest a borderline La Niña condition. The collection of ENSO prediction models indicates SSTs are likely to remain neutral through spring 2017, with an increasing chance for El Niño development during summer or fall.

Indian Ocean State

0.5 ^{O}C above average sea surface temperature was observed in the northern and eastern seas of Sri Lanka.

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Predictions

Rainfall

14-day prediction:

NOAA NCEP models:

From 29th Mar – 4th Apr: Total rainfall between 15-25 mm in Trincomalee district; total rainfall between 25-35 mm in Puttalam, Anuradhapura, Polonnaruwa and Batticaloa districts; total rainfall between 35-45 mm in Gampaha, Colombo, Kurunegala and Ampara districts; total rainfall between 45-55 mm in Ratnapura, Hambantota, Monaragala, Badulla, Nuwara Eliya, Kandy, Kegalla and Matale districts.

From 5th -11th Apr: Total rainfall between 15-25 mm in Trincomalee district; total rainfall between 25-35 mm in Puttalam, Anuradhapura, Polonnaruwa and Batticaloa districts; total rainfall between 35-45 mm in Gampaha, Colombo, Kurunegala, Ratnapura and Ampara districts; total rainfall between 45-55 mm in Hambantota, Monaragala, Badulla, Nuwara Eliya, Kandy, Kegalla and Matale districts.

IMD WRF & IRI Model Forecast:

31st Mar: Up to 3 mm of Rainfall in Mullaitivu, Trincomalee, Batticaloa and Ampara districts; up to 8 mm of rainfall in Anuradhapura, Polonnaruwa and Matale districts. Up to 36 mm of rainfall in Kurunegala, Kandy, Badulla, Monaragala, Galle, Matara and Hambantota districts; up to 65 mm of rainfall in Gampaha, Kegalla, Ratnapura and Kalutara districts; 125 mm of rainfall in Colombo district.

1st Apr: Up to 3 mm of Rainfall in Mannar, Matale, Kandy, Nuwara Eliya, Monaragala and Hambantota districts; up to 8 mm of rainfall in Anuradhapura, Kurunegala, Gampaha, Ratnapura, Galle and Matara districts; up to 36 mm of rainfall in Puttalam, Colombo and Kalutara districts.

Seasonal Prediction: IRI Multi Model Probability Forecast

April to June: the total 3-month precipitation shall be climatological for the whole country. The 3-month temperature has more than 60-70% likelihood in the western coastal regions and 70-80% likelihood in the rest of the island of being in the above-normal tercile.

MJO based OLR predictions

For the next 15 days:

MJO shall enhance the rainfall in Sri Lanka.

[1] 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.

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Weekly Hydro- Meteorological Report for Sri Lanka

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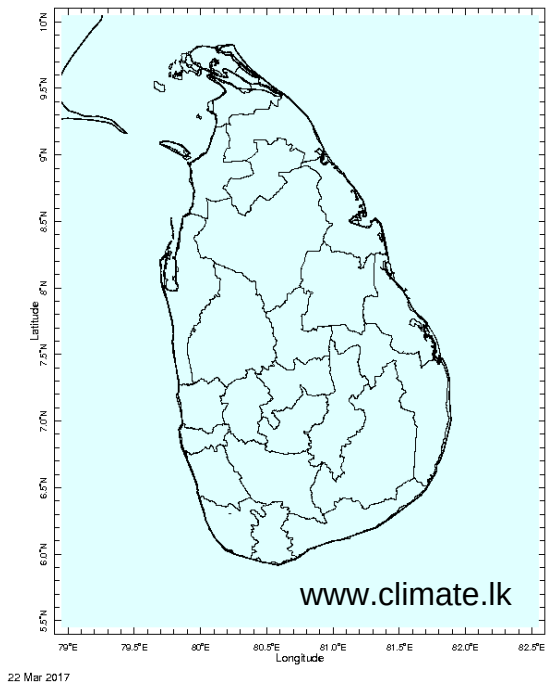
MONITORING

Daily Rainfall Monitoring

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



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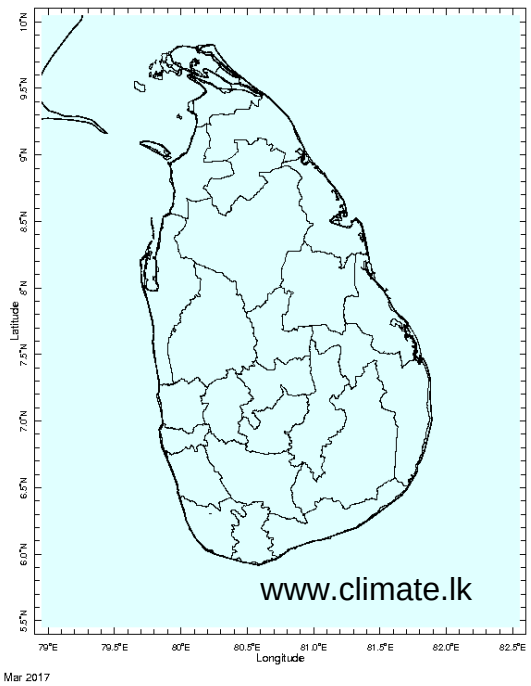

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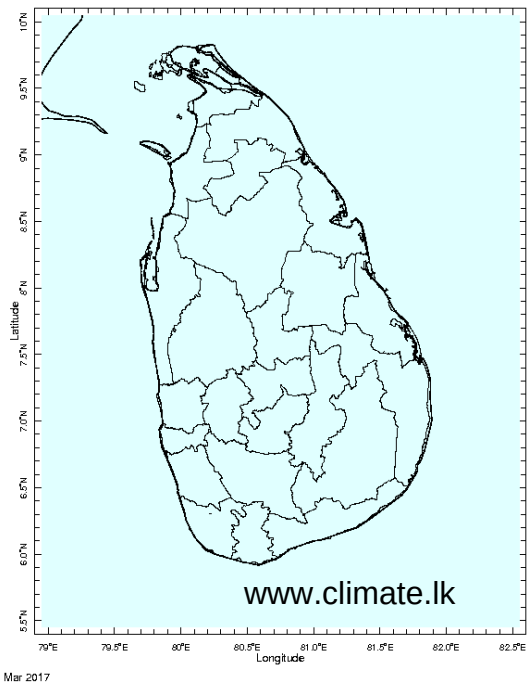

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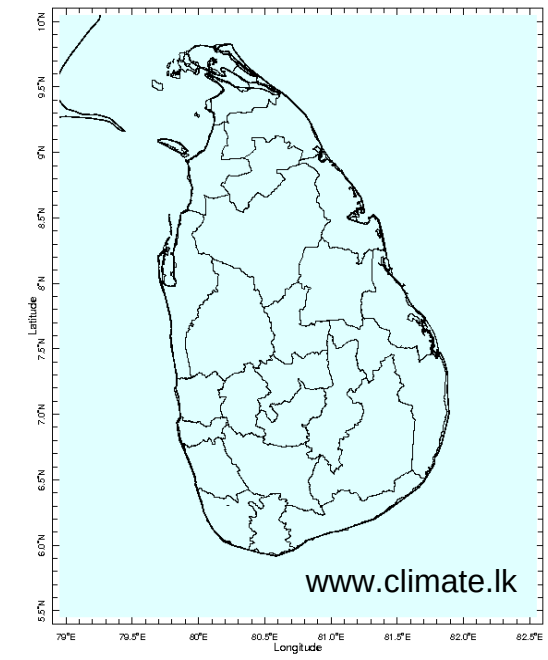

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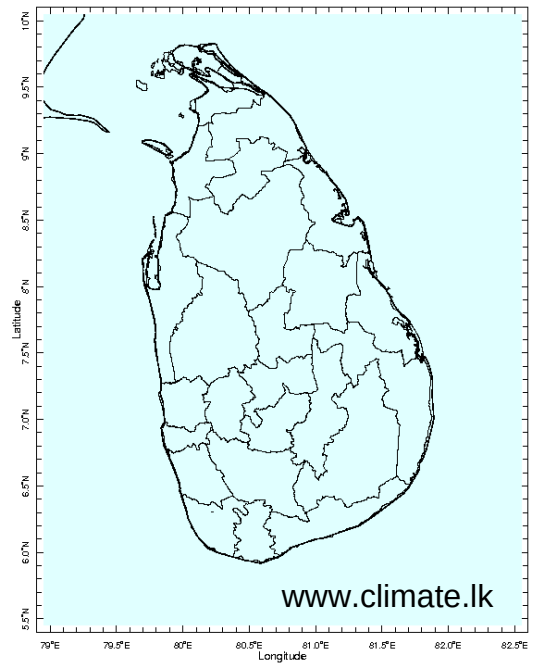

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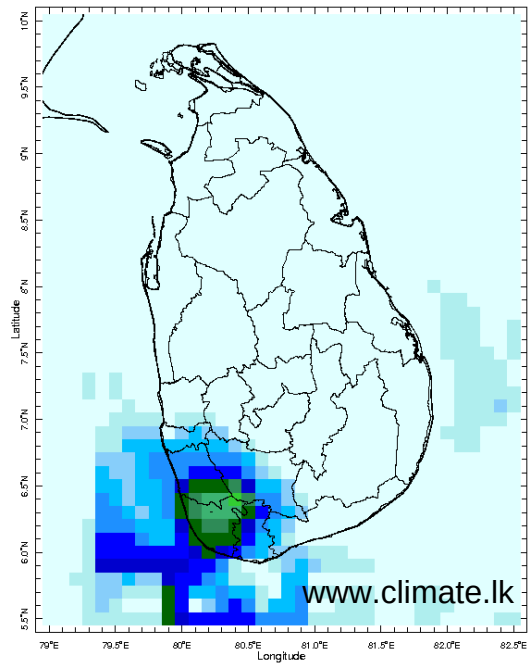

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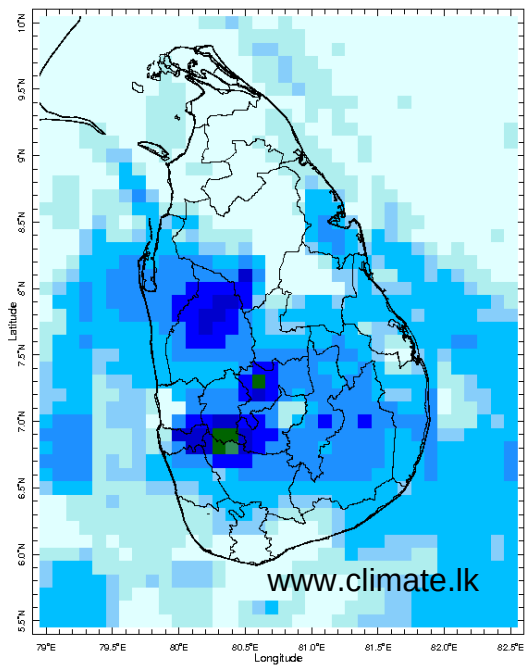

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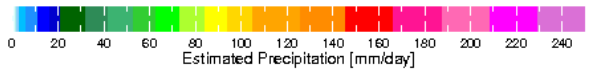
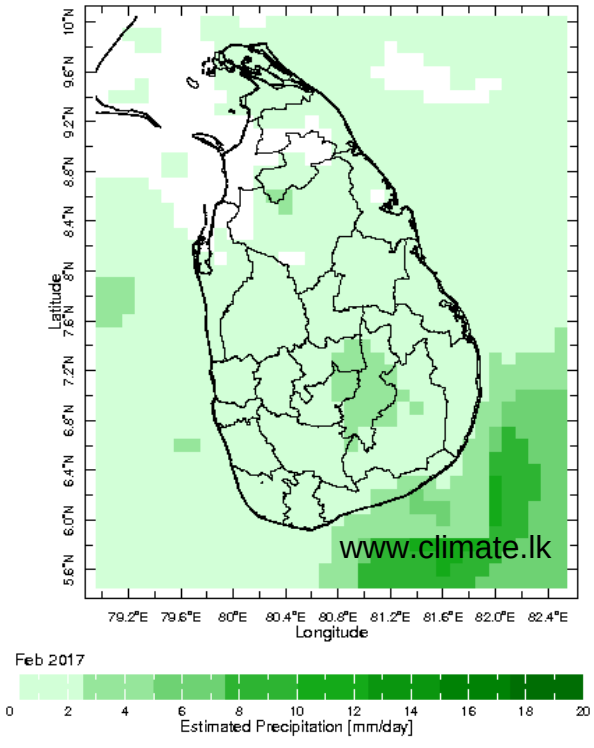
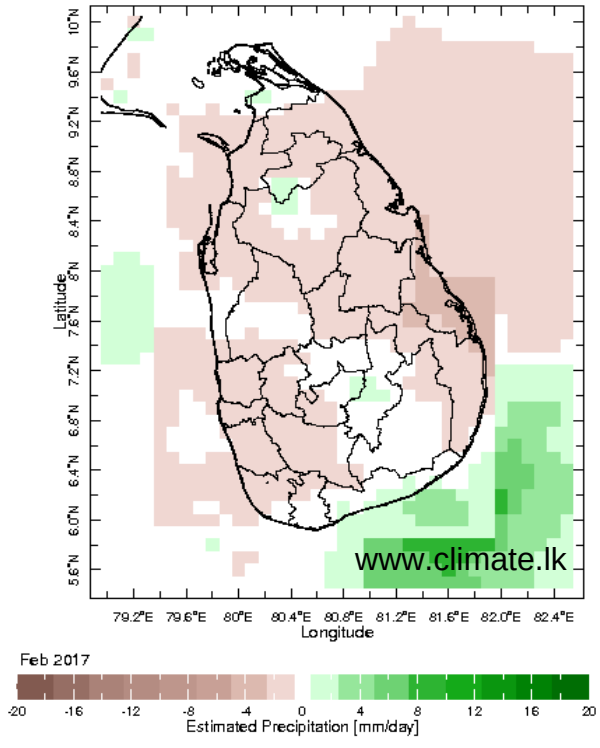


Monthly Rainfall Monitoring

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

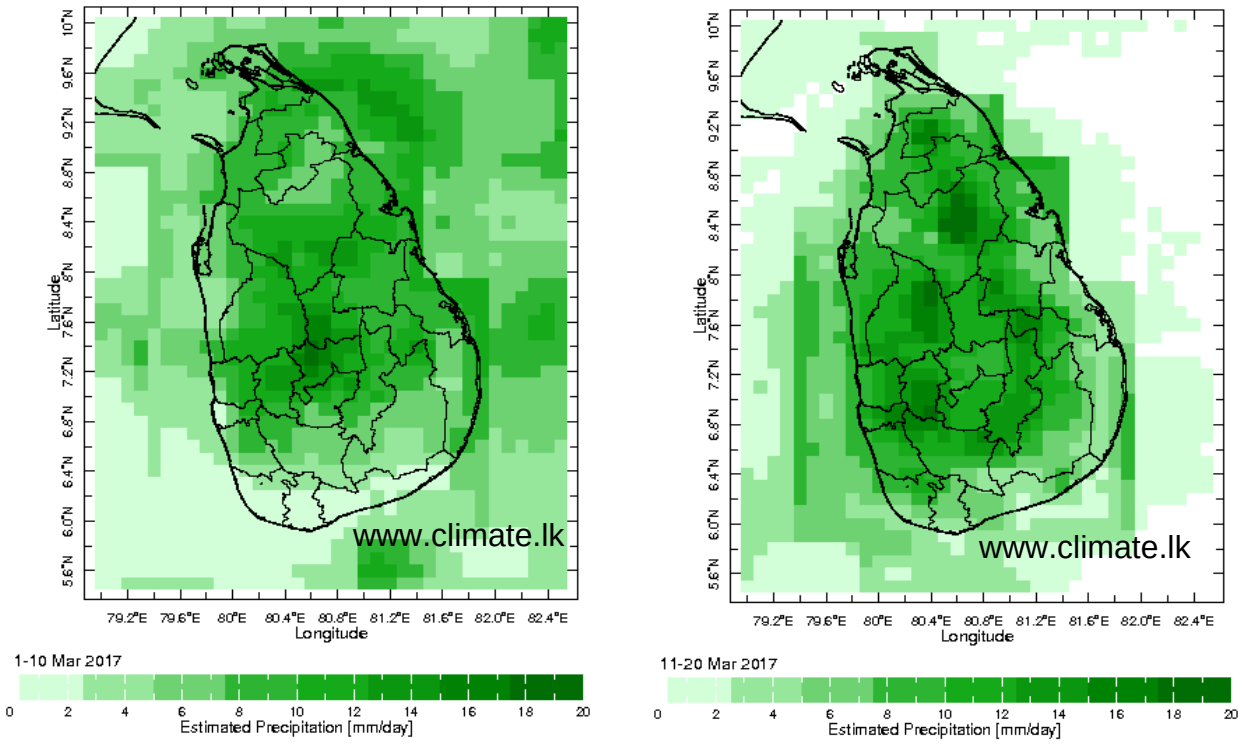


Monthly Average



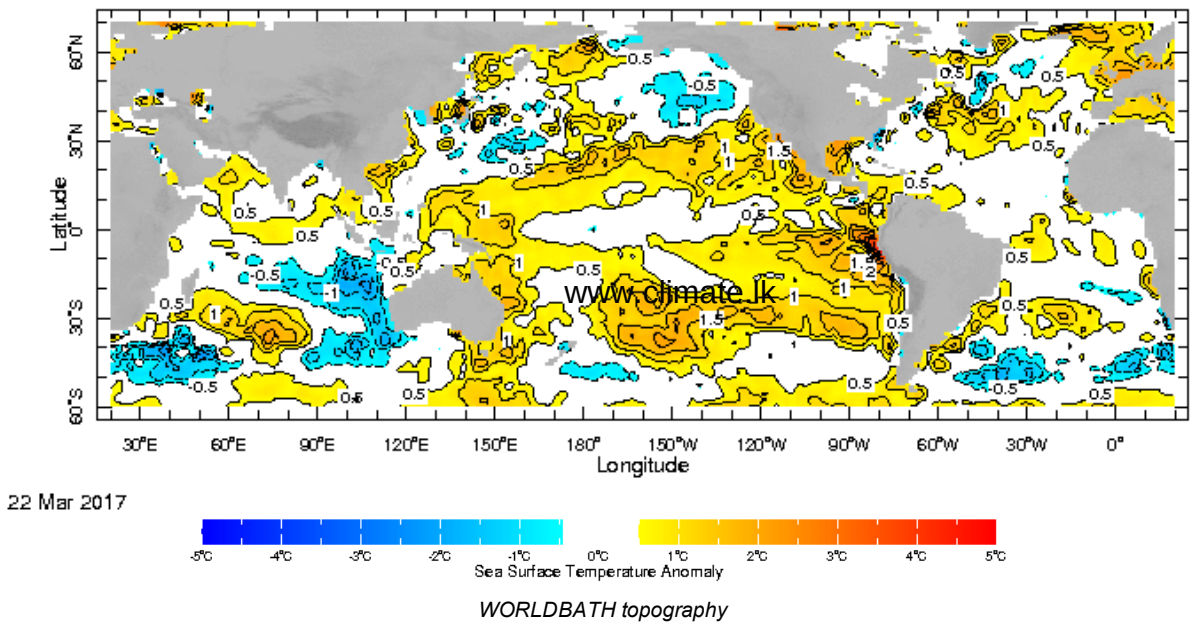
Monthly Anomaly

Dekadal (10 Day) Satellite Derived Rainfall Estimates



Weekly Average SST Anomalies

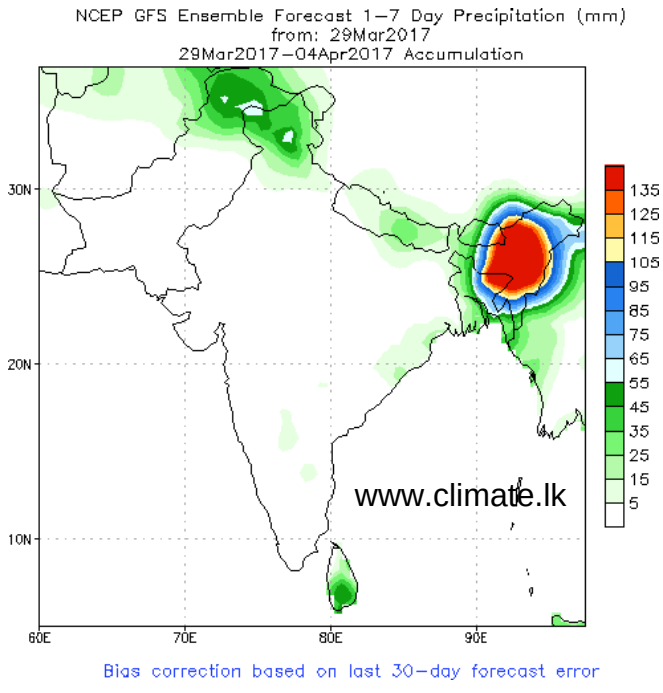
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP

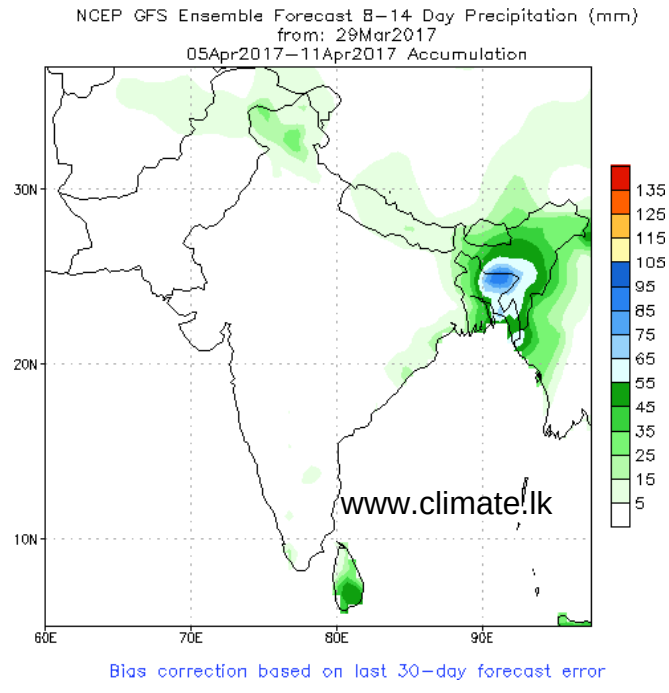


WORLDBATH topography

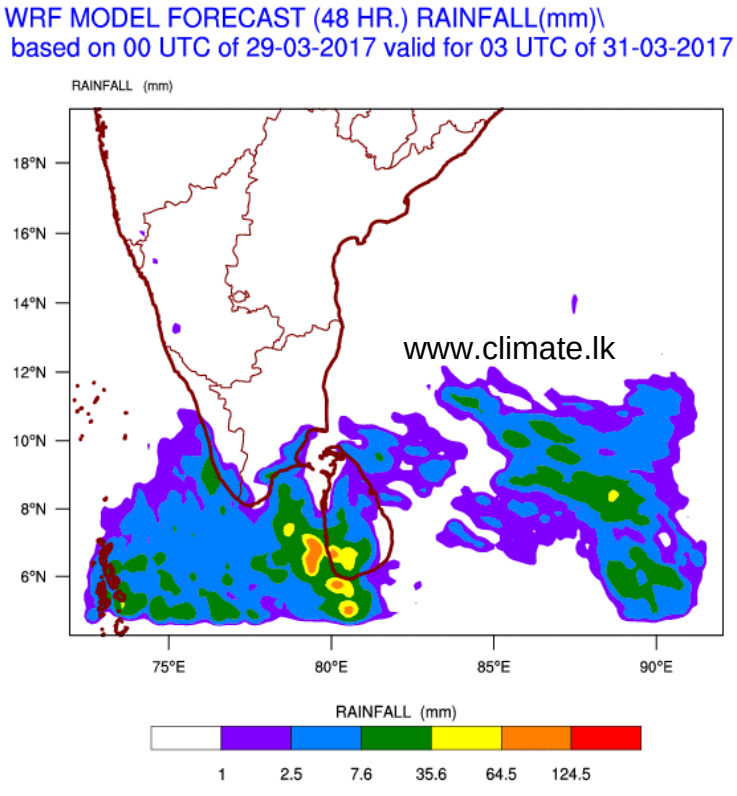
PREDICTIONS

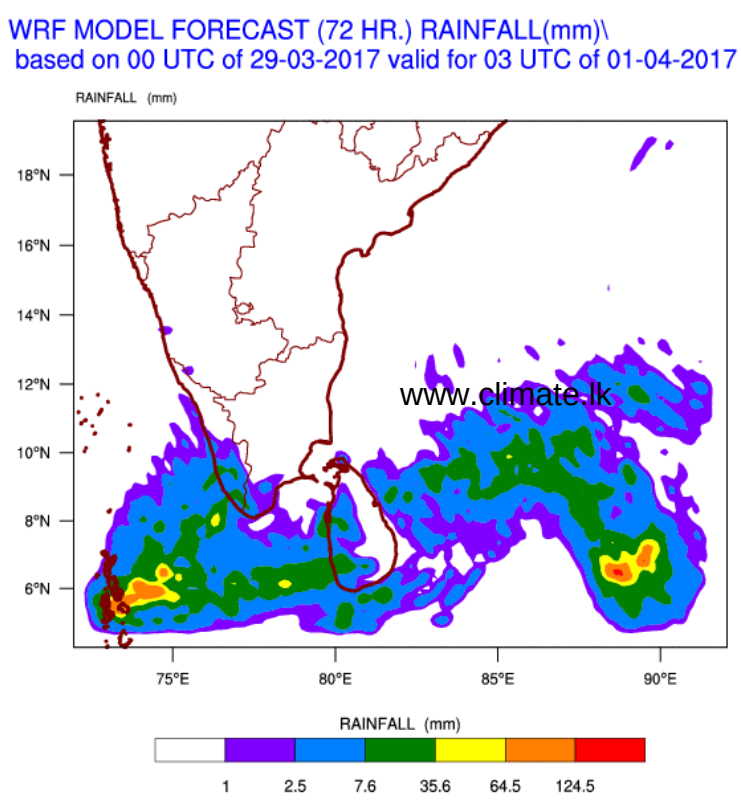
NCEP GFS 1- 14 Day prediction





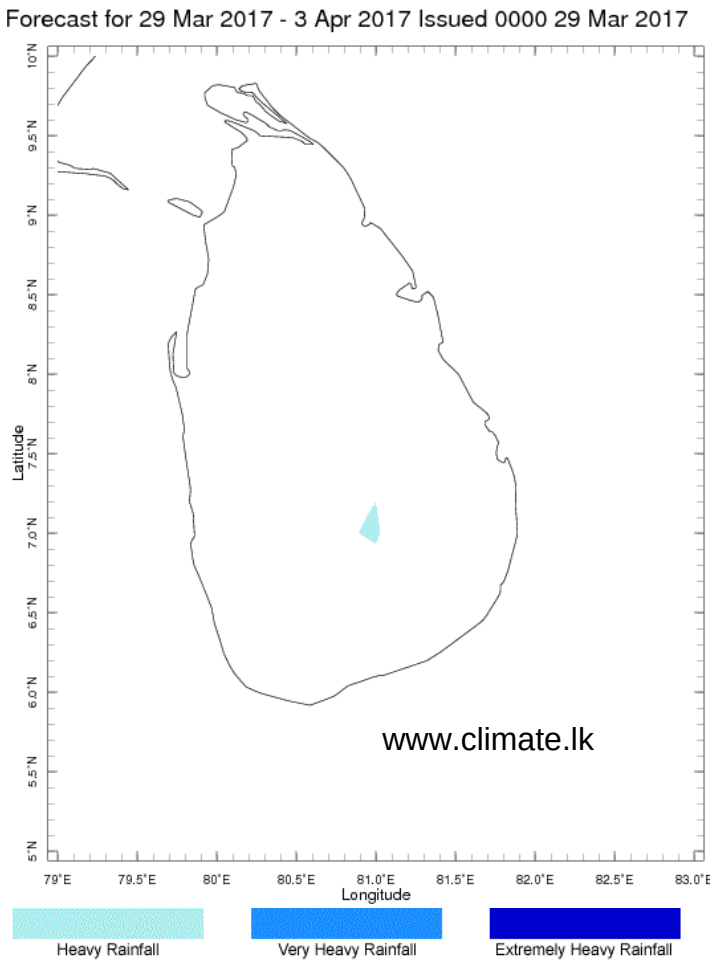
WRF Model Forecast (from IMD Chennai)



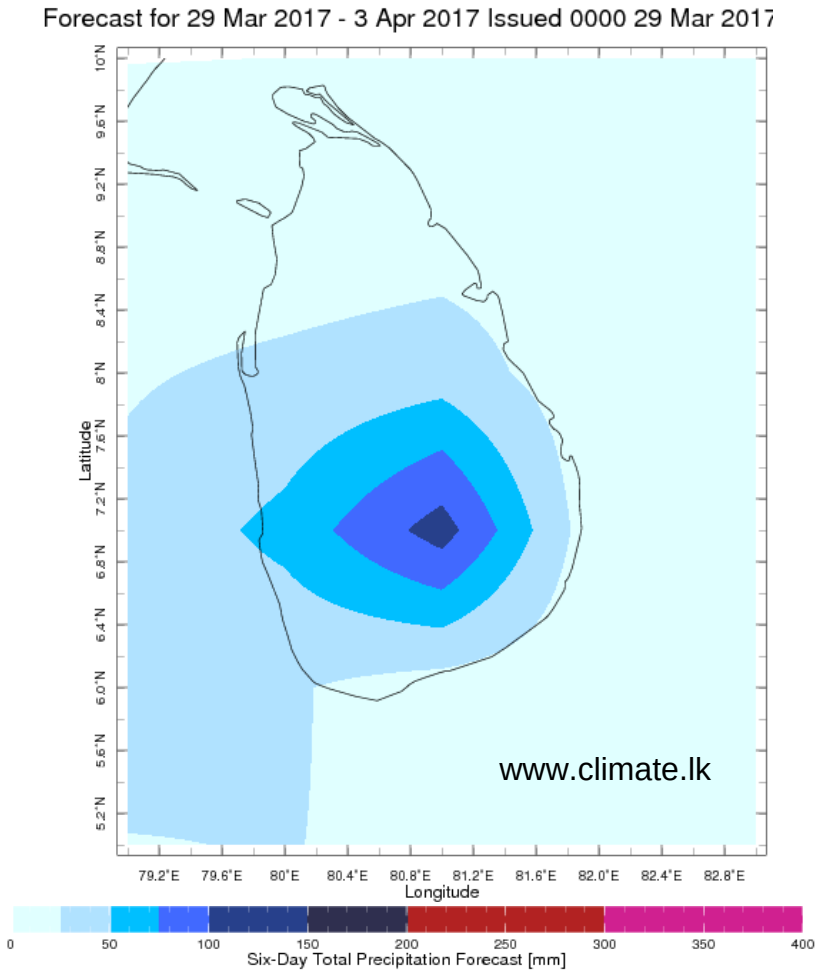


Weekly Rainfall Forecast from IRI

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.



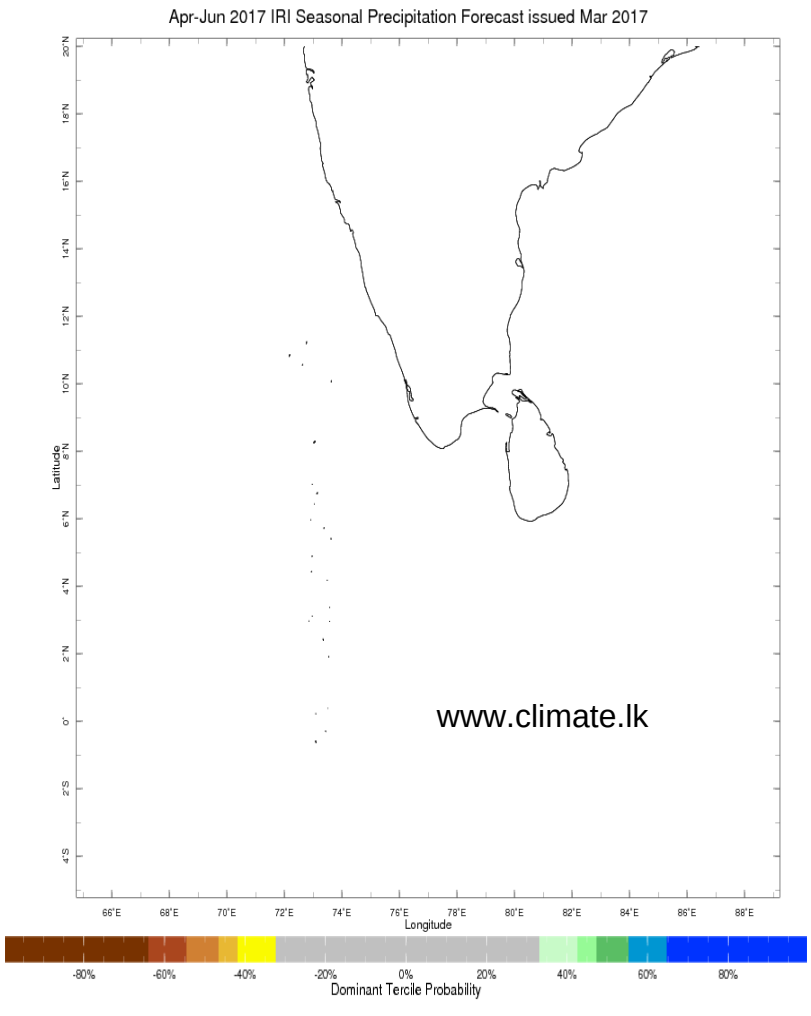
Extreme Rainfall Forecast



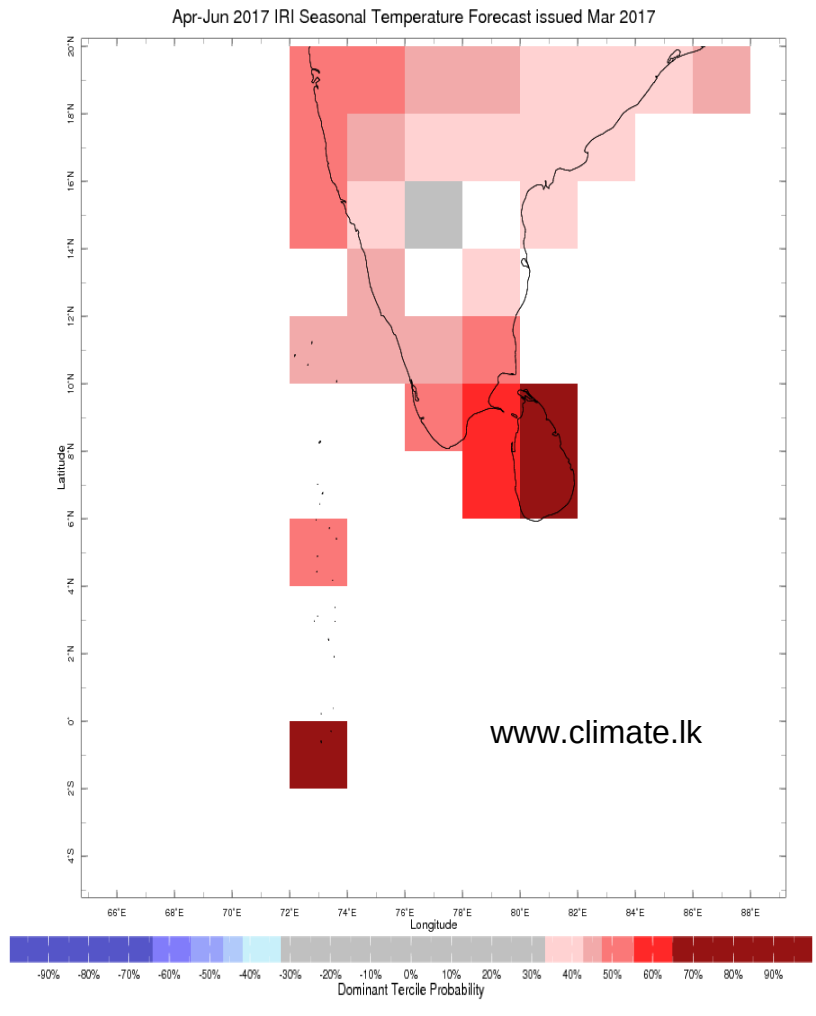
Total Six Day Precipitation Forecast

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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