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Experimental Climate Monitoring and Prediction

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26 January 2017

Highlights

- ***The WRF model predicts up to 124 mm of rainfall in eastern coastal regions of Sri Lanka on the 27th and 28th.***
- ***Between 17-23 Jan: highest rainfalls of 50 mm were recorded in Polonnaruwa district on the 20th and in Vakarai region on the 22nd.***
- ***From 15-21 Jan: minimum temperature of 15 ºC was recorded from Nuwara Eliya district while many parts of the island recorded a maximum temperature between 30-35 ºC.***
- ***From 17-23 Jan: up to 36 km/h north easterly winds were experienced by the northern and central regions of the island while southern regions received up to 24 km/h wind in same direction.***

Monitoring

Rainfall

***Weekly Monitoring*:** No rainfalls were recorded within the island during the period January 17th - 19th. On 20th Polonnaruwa district received up to 50 mm of rainfall; Ratnapura, Matale and Ampara districts received up to 40 mm; several regions of Anurahapura, Kurunegala, Kegalla, Trincomalee, Batticaloa and Badulla districts up to 30 mm; Kandy and Nuwara Eliya districts received up to 20 mm; and adjacent north western sea received up to 70 mm of rainfall. On the 21st Jaffna, Kilinochchi, Anuradhapura, Trincomalee and Polonnaruwa districts received up to 40 mm of rainfall; Mannar and Mullaitivu districts received up to 30 mm; Batticaloa, Ampara, Colombo, Badulla and Monaragala received up to 20 mm; and adjacent north western sea received up to 120 mm of rainfall. On 22nd Vakarai region of Batticaloa district received up to 50 mm of rainfall; and several regions of Jaffna, Mannar, Puttalam, and Polonnaruwa districts received up to 20 mm of rainfall. On 23rd Anuradhapura, Kuranegala, Matale, Kandy, Badulla, and Polonnaruwa districts received up to 30 mm of rainfall; rest of the districts except for Jaffna, Kilinochchi and Mullaitivu received up to 20 mm; and adjacent eastern sea received up to 90 mm of rainfall.

Total Rainfall for the Past Week: The RFE 2.0 tool shows total rainfall up to 75 mm for Anuradhapura, Trincomalee, Polonnaruwa, Ampara and Badulla districts; up to 50 mm of rainfall Jaffna, Mullaitivu, Mannar, Kurunegala, Kegalla, Ratnapura, Hambantota, Monaragala, Nuwara Eliya, Kandy and Matale districts; and up to 25 mm in rest of the island. It shows above average rainfall 50-100 mm for Anuradhapura, Ampara and Polonnaruwa districts; and 25-50 mm for Trincomalee, Batticaloa, Badulla, Monaragala, Matale, Kurunegala and Ratnapura districts.

***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: January 19, 2016

During mid-January 2016 the tropical Pacific SST anomaly was near -0.5C, the threshold for weak La Niña. Many of the atmospheric variables across the tropical Pacific also remain consistent with weak La Niña conditions, although some have become only weakly so. The upper and lower atmospheric winds have continued to be weakly suggestive of a strengthened Walker circulation, and the cloudiness and rainfall remain suggestive of La Niña conditions. The collection of ENSO prediction models indicates SSTs, now near the threshold of La Niña, is in the process of dissipating to neutral levels by February.

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Predictions

Rainfall

14-day prediction:

NOAA NCEP models:
From 25th – 31st Jan: Total rainfall between 85-95 mm in Gampaha, Kegalle Colombo, Puttalam, and Kurunegala districts; 75-85 mm in Anuradhapura, Polonnaruwa, Ampara, Batticaloa, Ratnapura, Matale, Kandy, Nuwara Eliya and Badulla districts; 65-75 mm in Mannar, Vavuniya, Trincomalee, Monaragala, and Galle districts; and up to 45-55 mm in Hambantota district.

From 31st Jan – 6th Feb: No rainfall.

IMD WRF & IRI Model Forecast:
27th Jan: Rainfall more than 124 mm in Hambantota district; up to 124 mm in Ampara district; up to 64 mm in Trincomalee, Batticaloa, Polonnaruwa, Ratnapura, Badulla and Monaragala districts; and up to 35 mm of rainfall in many parts of the island.

28th Jan: Rainfall more than 124 mm in Batticaloa and Polonnaruwa districts; up to 124 mm in Anuradhapura, Ampara and Trincomalee districts; up to 64 mm in Matale, Ratnapura and Monaragala districts; and up to 35 mm of rainfall in many parts of the island.

Seasonal Prediction: IRI Multi Model Probability Forecast
February to April: the total 3-month precipitation shall be climatological 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 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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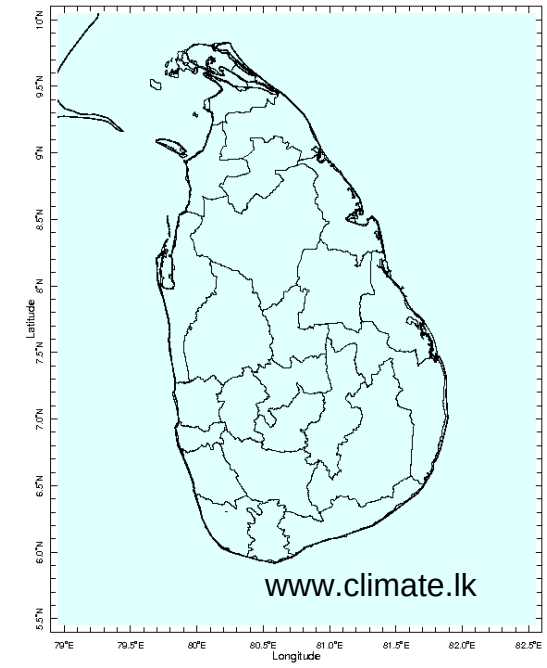
Weekly Hydro- Meteorological Report for Sri Lanka

Inside This Issue

Daily Rainfall Monitoring

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



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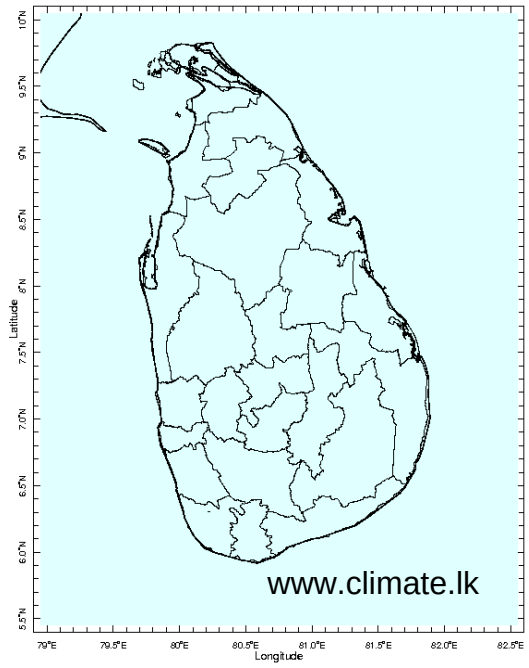

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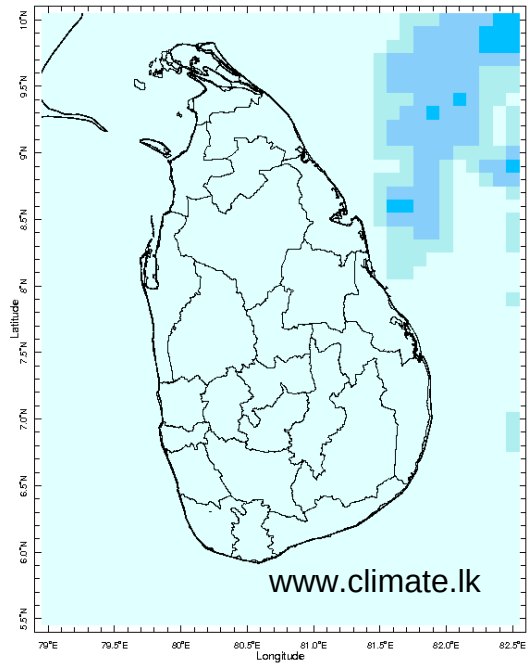

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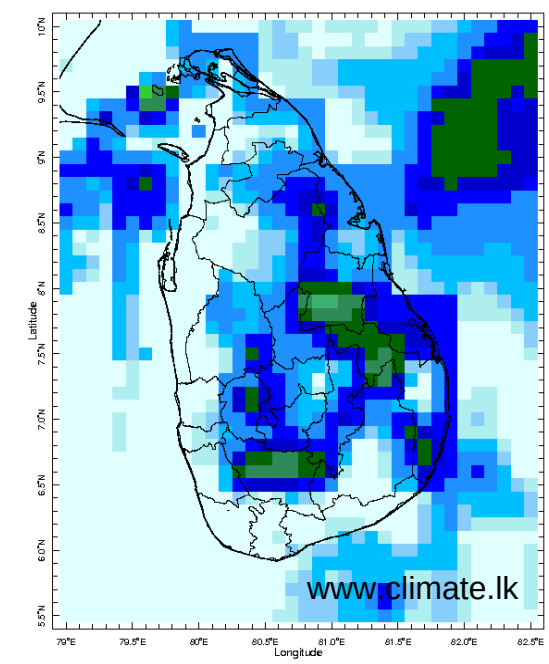

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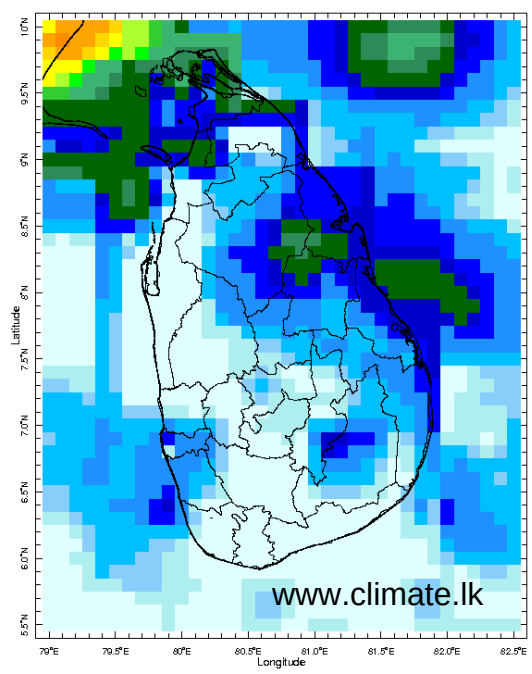

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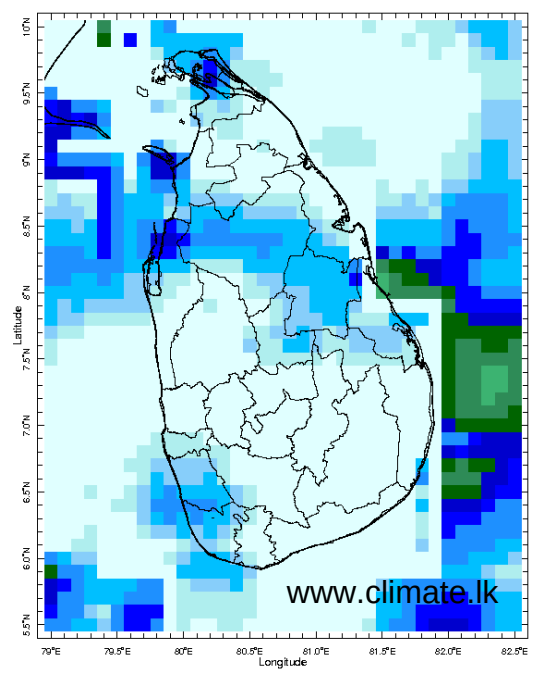

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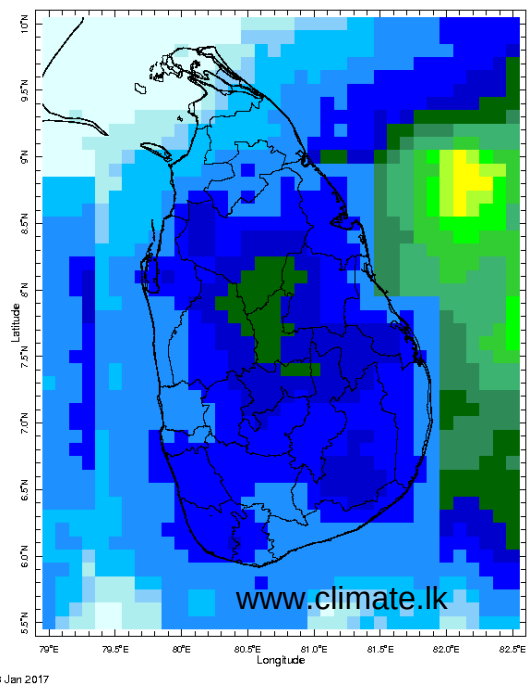

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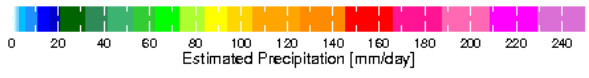
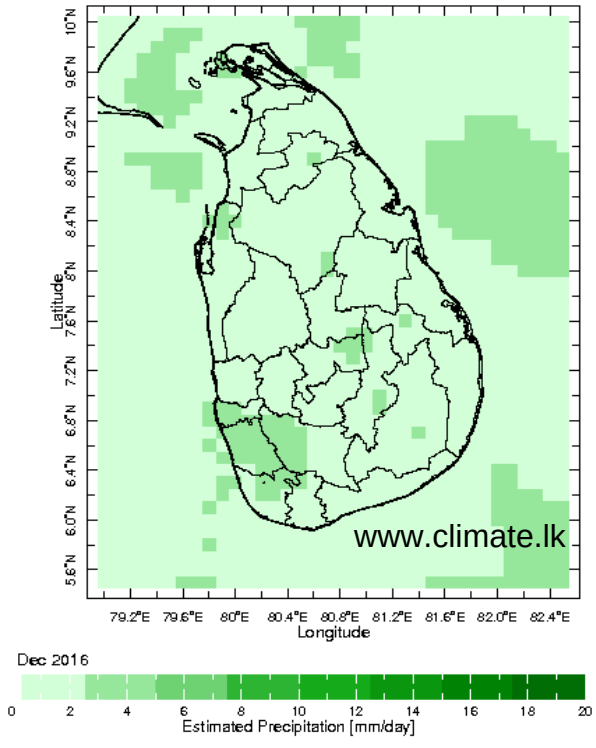
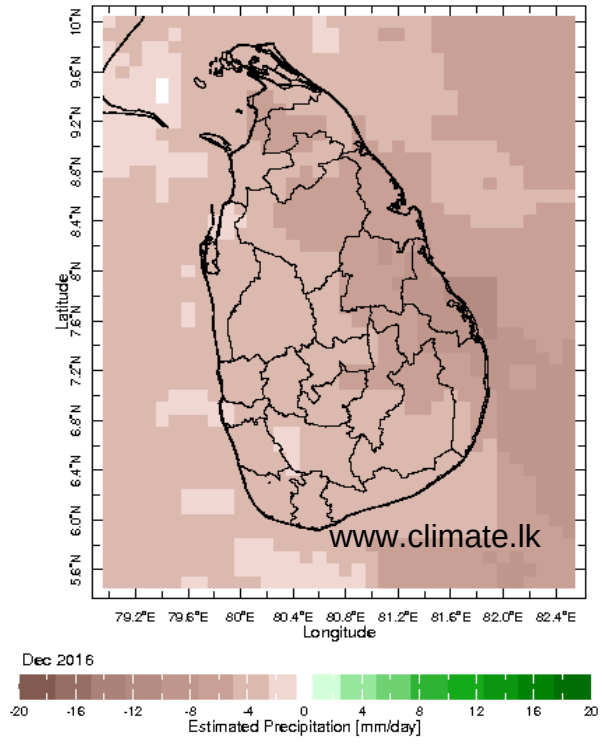


Monthly Rainfall Monitoring

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

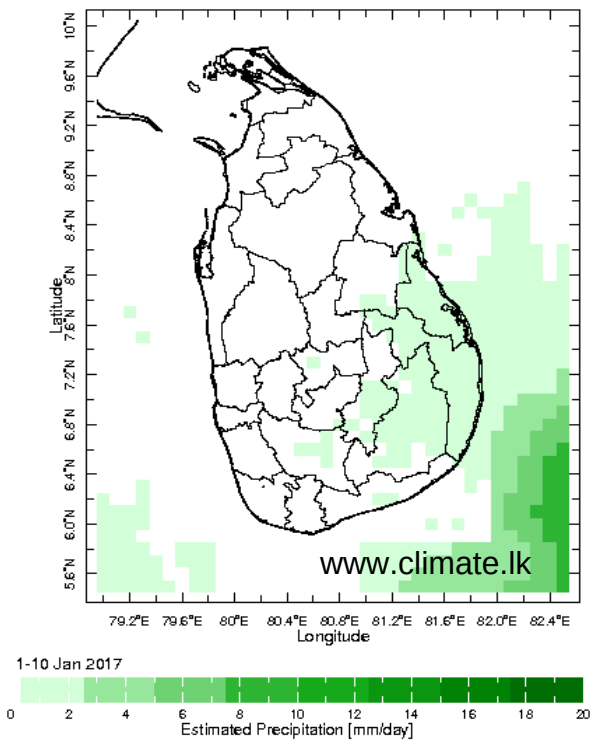


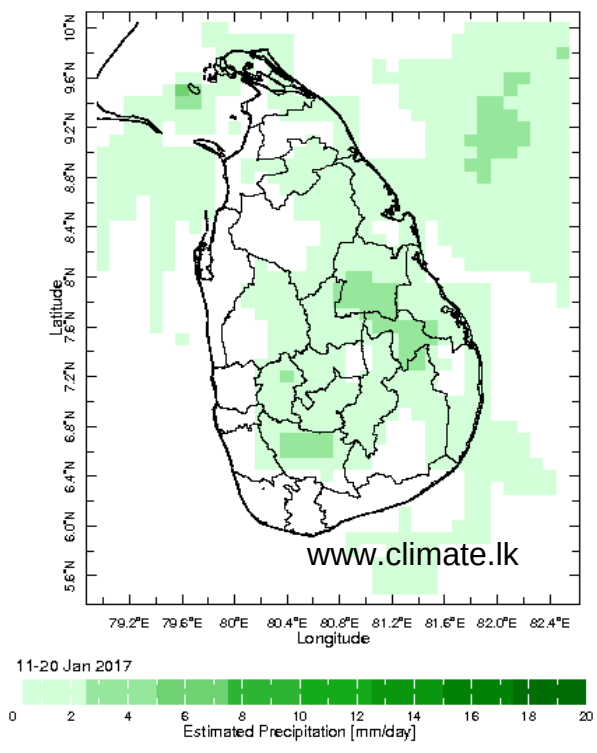
Monthly Average



Monthly Anomaly

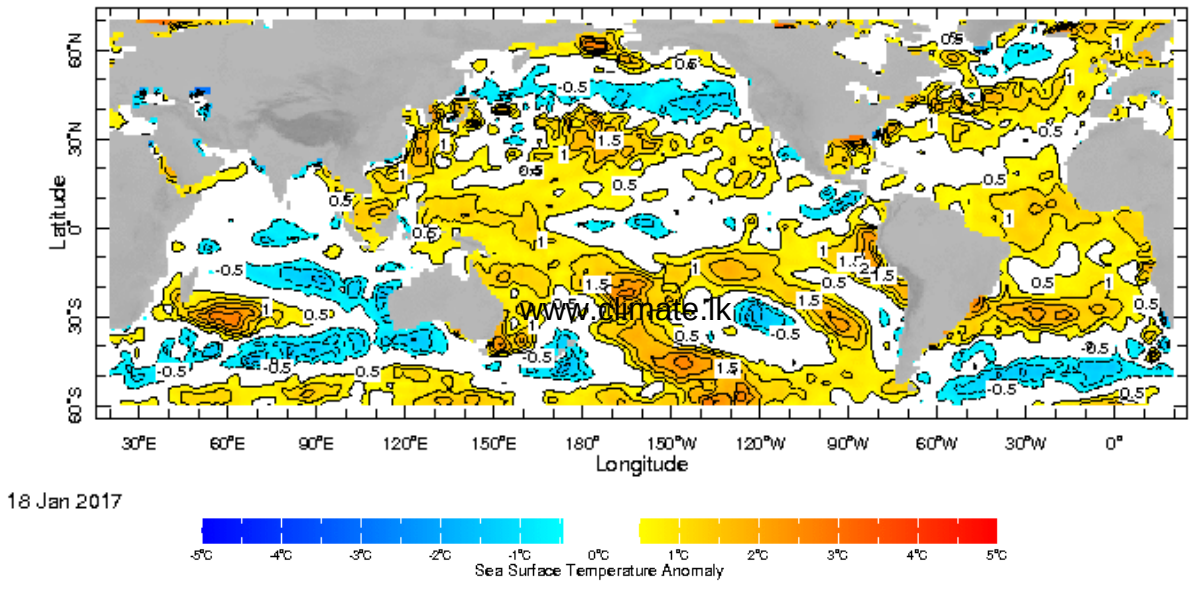
Dekadal (10 Day) Satellite Derived Rainfall Estimates





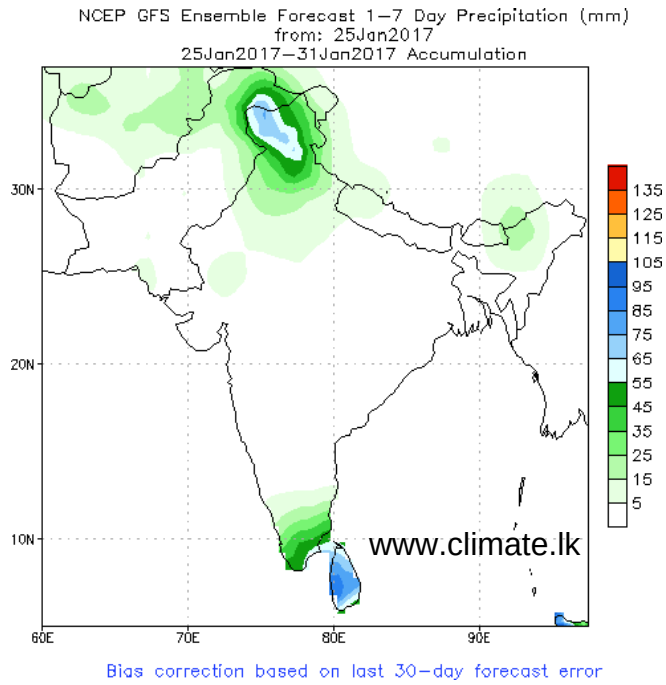
Weekly Average SST Anomalies

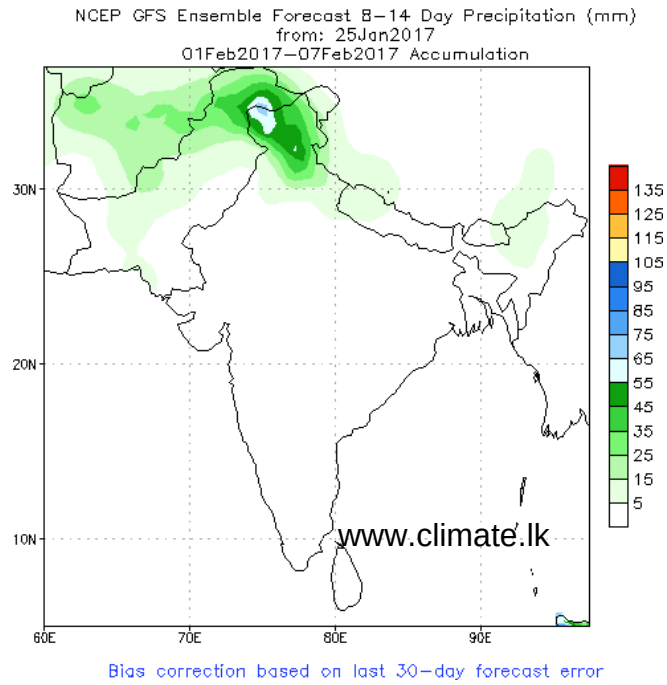
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



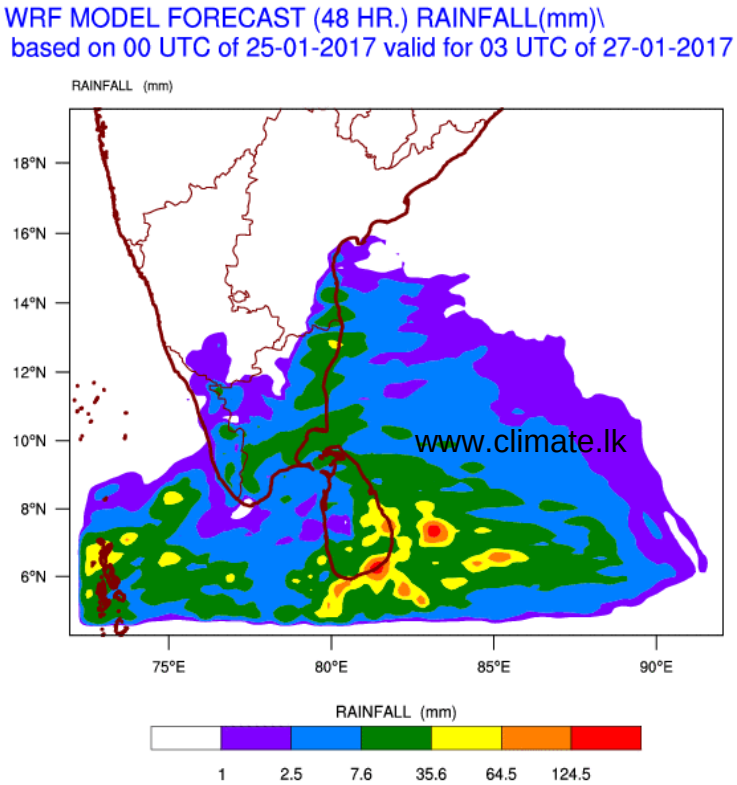
PREDICTIONS

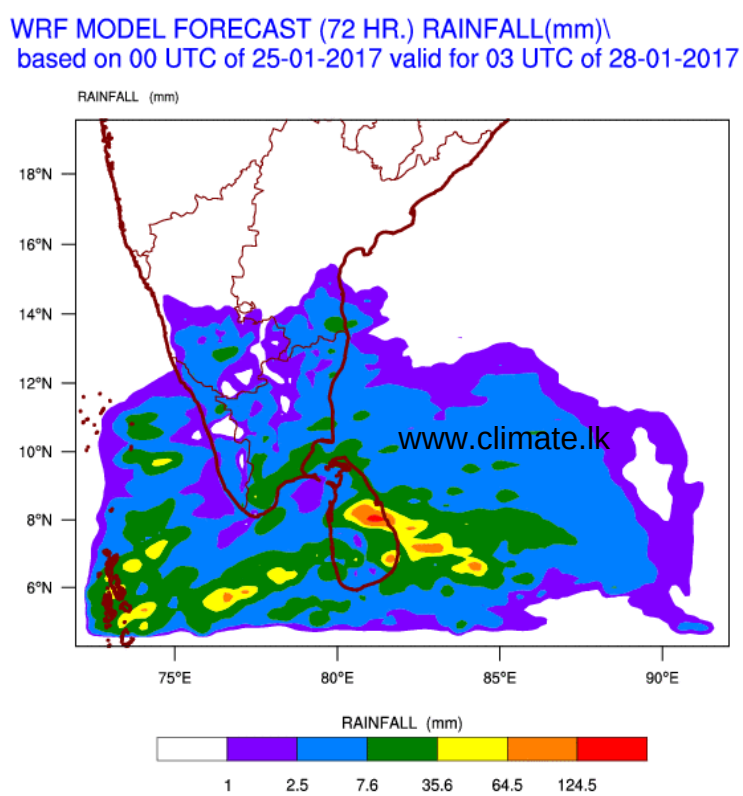
NCEP GFS 1- 14 Day prediction





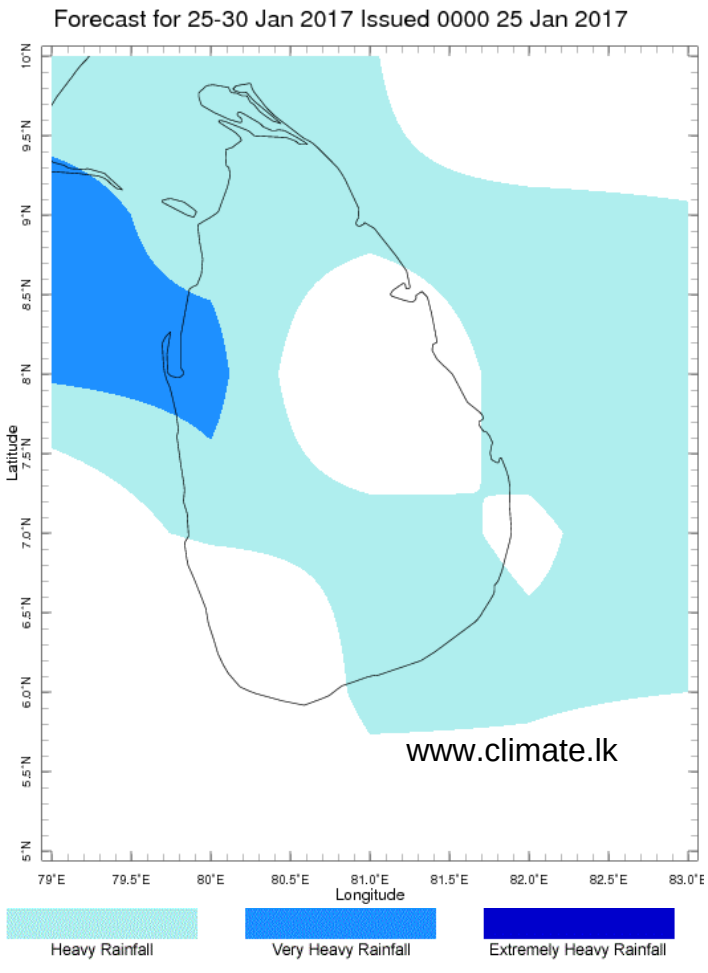
WRF Model Forecast (from IMD Chennai)



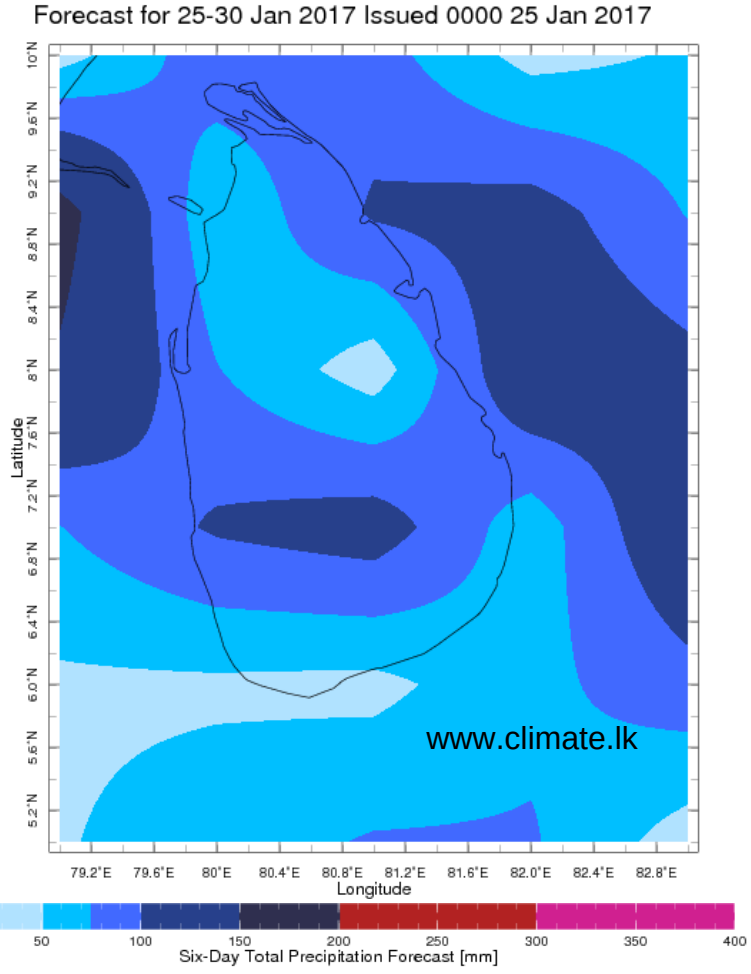


Weekly Rainfall Forecast from IRI

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.



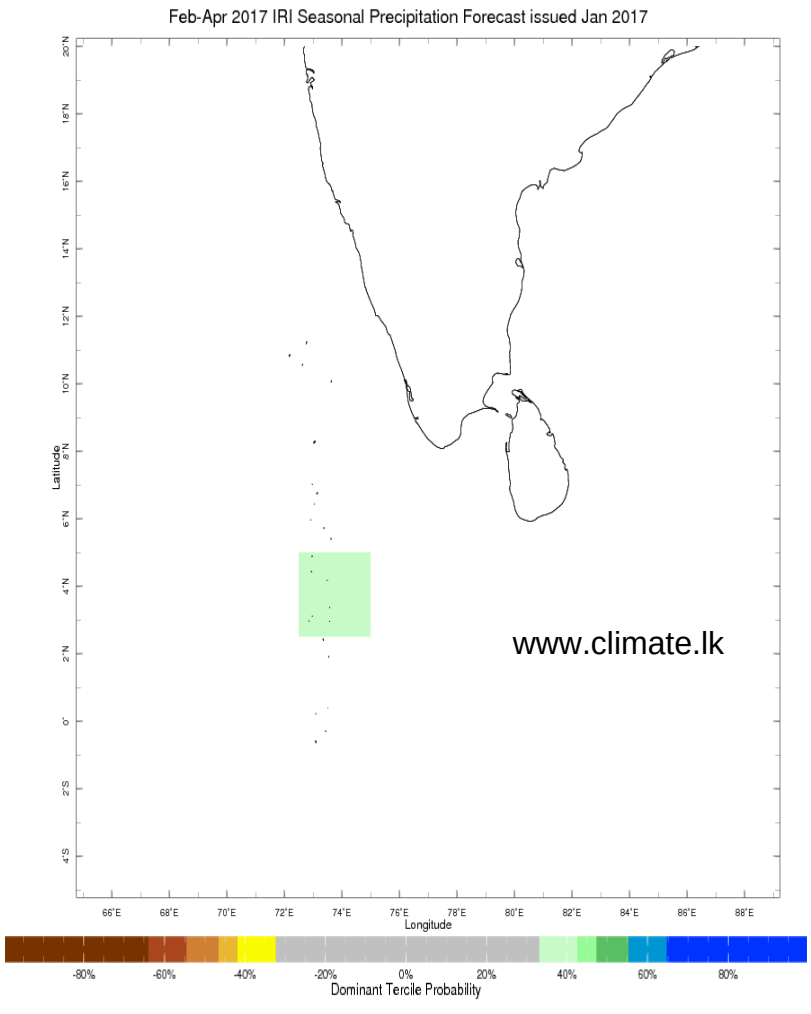
Extreme Rainfall Forecast



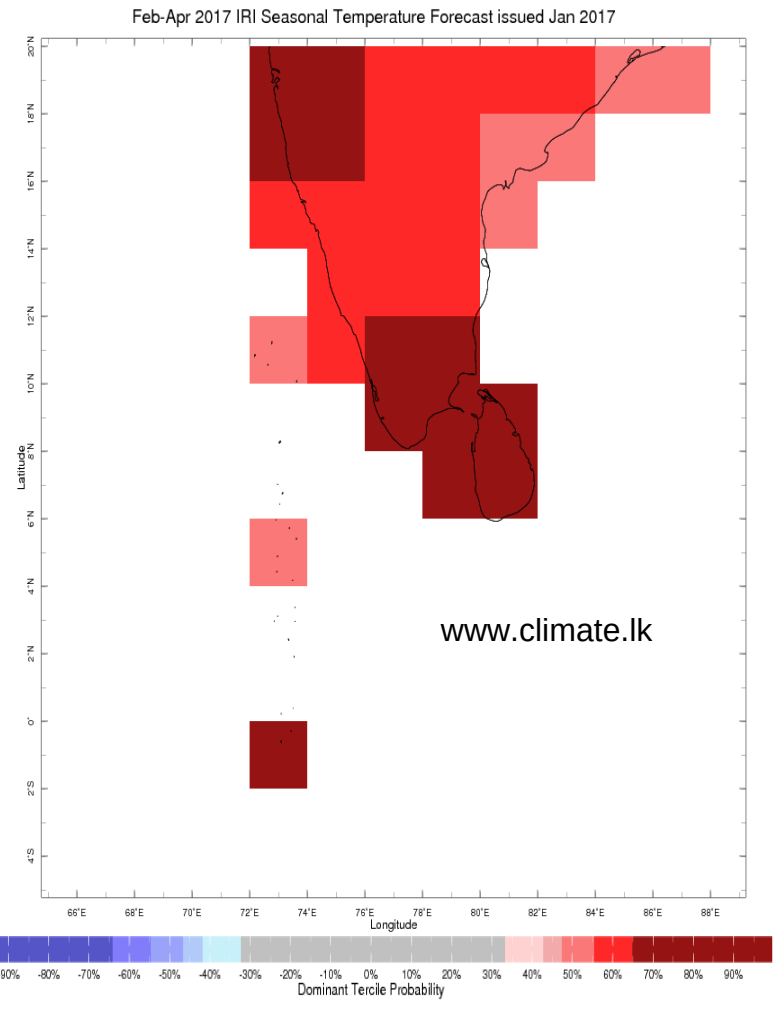
Total Six Day Precipitation Forecast

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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