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Experimental Climate Monitoring and Prediction

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22 December 2016

Highlights

- ***The IMD WRF model predicts rainfall up to 35 mm on 23rd December in Galle, Matara and Balangoda regions.***
- ***Between Dec 13–19: highest rainfall of 100 mm was recorded on the 19th in the surrounding regions of Illavankulam in Puttalam district.***
- ***From Dec 11–17: 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 Dec 13–19: up to 10 km/h north easterly winds were experienced in the northern and southern regions of the island.***

Monitoring

Rainfall

***Weekly Monitoring*:** On December 13th Galle and Matara districts received up to 20 mm of rainfall. On 14th no significant rainfalls were recorded in any part of the island. On 15th Telulla and Galge in Monaragala district received up to 30 mm of rainfall; and Koslanda in Badulla district received up to 20 mm. On 16th Hasalaka received up to 30 mm of rainfall; and Hettipola up to 20 mm. On the 17th Kalutara, Galle, Ratnapura, Badulla, Monaragala, Kandy and Matale districts received up to 20 mm of rainfall. No significant rainfalls were recorded in any part of the island on the 18th. On 19th northern coastal regions of Puttalam districts received up to 100 mm of rainfall; Anuradhapura district received up to 50 mm; Trincomalee, Matale and Polonnaruwa districts up to 30 mm; Jaffna, Kilinochchi, Mullaitivu, Mannar, Batticaloa, Ampara, Vavuniya and several regions of Monaragala districts up to 20 mm of rainfall; and adjacent eastern sea regions received up to 80 mm of rainfall.

Total Rainfall for the Past Week: The RFE 2.0 tool shows total rainfall up to 75 mm in the northern regions of Puttalam district; up to 50 mm for Anuradhapura, Trincomalee, Kandy and Badulla districts; and up to 25 mm for many parts of the island. It shows above average rainfall of 25-50 mm for the northern regions of Puttalam district; below average rainfall of 100-200 mm for the coastal regions of the Ampara district; 50-100 mm below average rainfall for rest of the eastern coastal belt; and 25-50 mm below average rainfall for many parts of the island.

***Monthly Monitoring*:** During November - above average rainfall conditions were experienced in Jaffna, Kilinochchi, Kegalla, Gampaha, Colombo, Galle, Matara and several regions of Kurunegala and Puttalam districts. Monthly average rainfall for these regions amounted to 360 mm/month; rest of the island experienced below average rainfall conditions with a monthly average not exceeding 180 mm/month. The CPC Unified Precipitation Analysis tool shows ~300 mm of total rainfall in Kilinochchi, Mullaitivu, Gampaha, Colombo, Ratnapura, Batticaloa, Kalutara, Hambantota, Galle and Matara districts; ~200 mm in Vavuniya, Mannar, Anuradhapura, Polonnaruwa, Puttalam, Kurunegala, Kegalla and Monaragala districts; and 150 mm in rest of the island.

Ocean State (*Text Courtesy IRI*)

Pacific sea state: December 15, 2016

During mid-December 2016 the tropical Pacific SST anomaly was near -0.5C, the threshold for weak La Niña. Also, most of the atmospheric variables across the tropical Pacific have been consistent with weak La Niña conditions, although subseasonal atmospheric variability weakened some of them in late November. The upper and lower atmospheric winds have been suggestive of a strengthened Walker circulation, and the cloudiness and rainfall have also been consistent with weak La Niña conditions. The collection of ENSO prediction models indicates SSTs near the threshold of La Niña persisting through mid-winter, then weakening to cool-neutral by later winter.

Indian Ocean State

Sea surface temperature was climatological in the seas around Sri Lanka.

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Predictions

Rainfall

14-day prediction:

NOAA NCEP models:

From 21st – 27th December: Total rainfall up to 45 mm for the coastal regions of Jaffna; 25-35 mm for Kilinochchi district; and 15-25 mm in western coastal regions and Vavuniya district.

From 28th Dec- 03rd Jan: Total rainfall between 65-75 mm is expected in the south eastern coastal regions; 45-55 mm in Ampara, Monaragala, Hambantota and Matara districts; and 25-35 mm in Badulla and Ratnapura districts.

IMD WRF & IRI Model Forecast*:*

Up to 35 mm of rainfall is expected on the 23rd in Galle, Matara and Balangoda; and up to 7 mm of rainfall in rest of the south western parts of the island. On the 24th, coastal regions of Trincomalee district will receive up to 7 mm of rainfall.

Seasonal Prediction: As per IRI Multi Model Probability Forecast for January to March 2017, the total 3-month precipitation has 40-50% likelihood of being in the above-normal tercile 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 during this period.

MJO based OLR predictions

For the next 15 days: MJO shall suppress the rainfall for the next 10 days and shall not have a significant impact on rainfall for the following 5 days.

[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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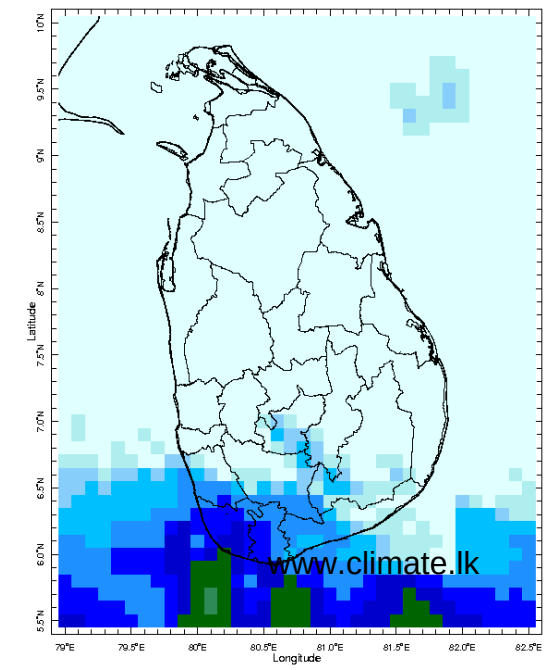
Daily Rainfall Monitoring

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



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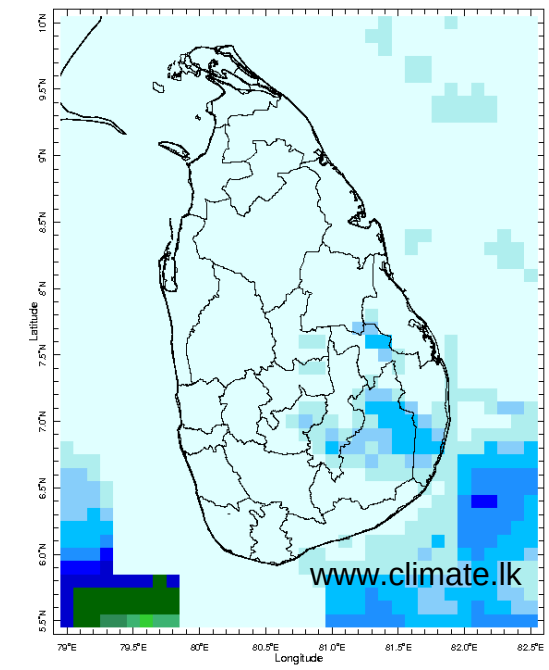

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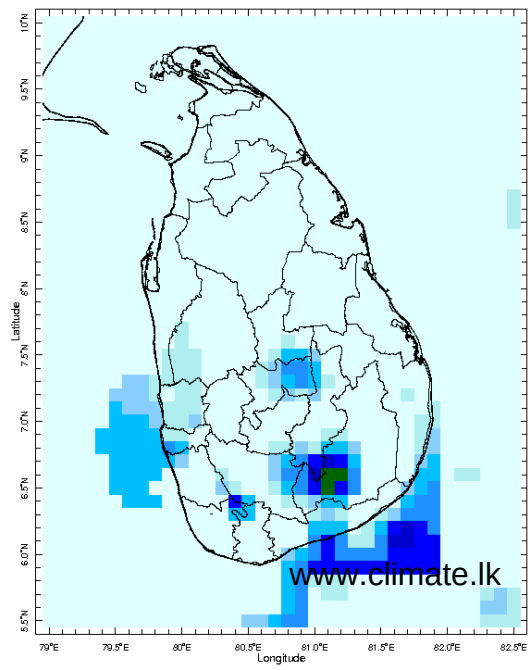

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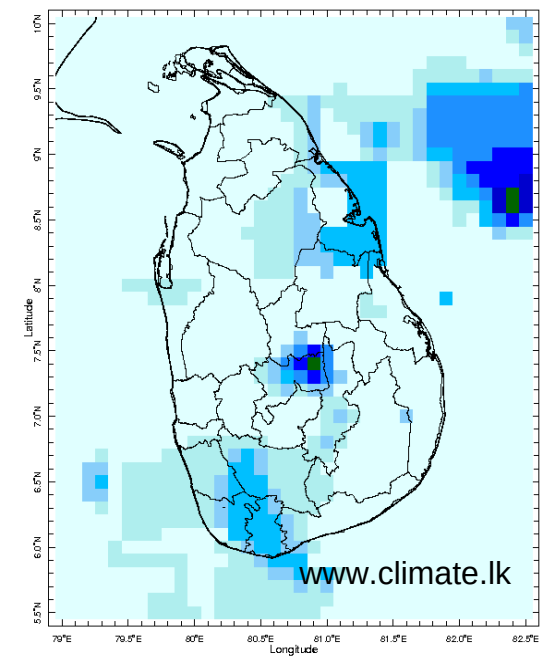

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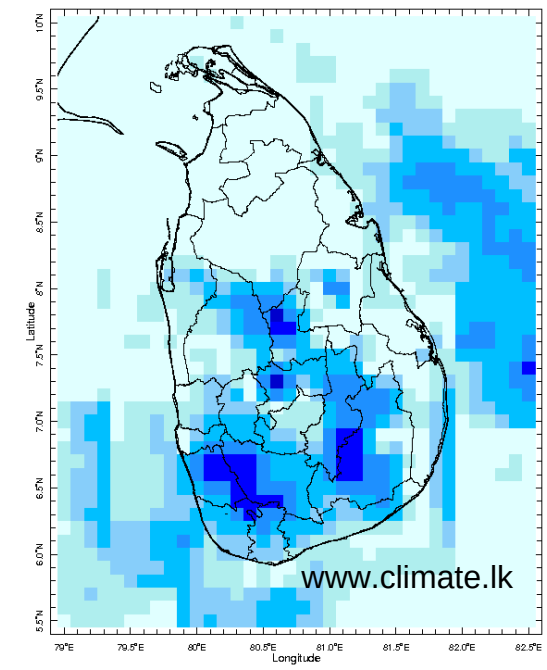

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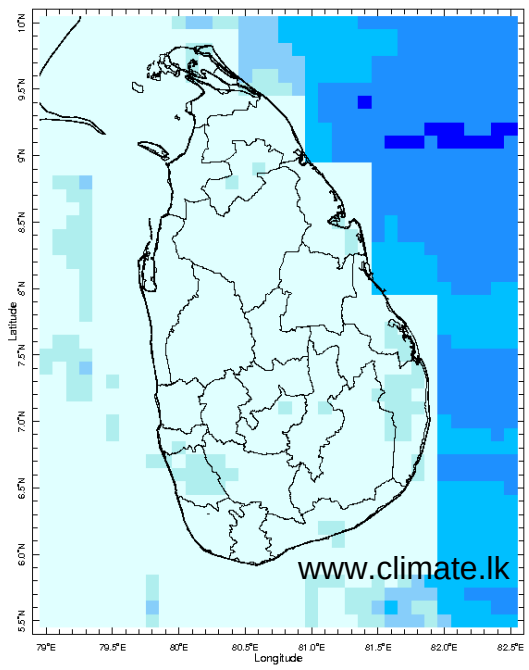

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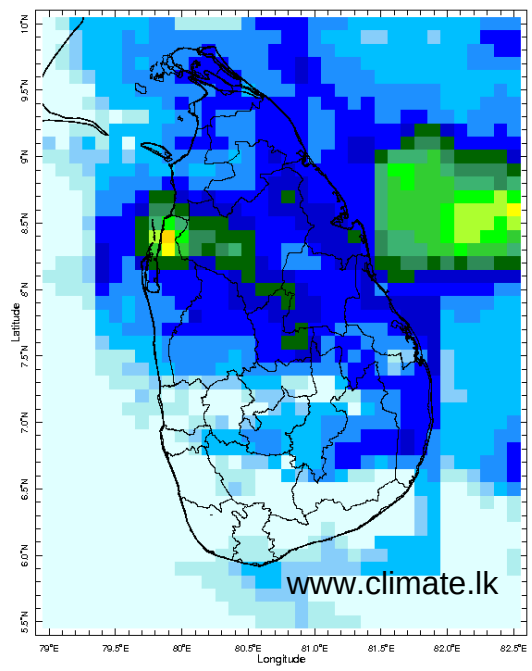

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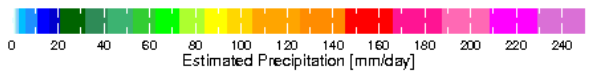
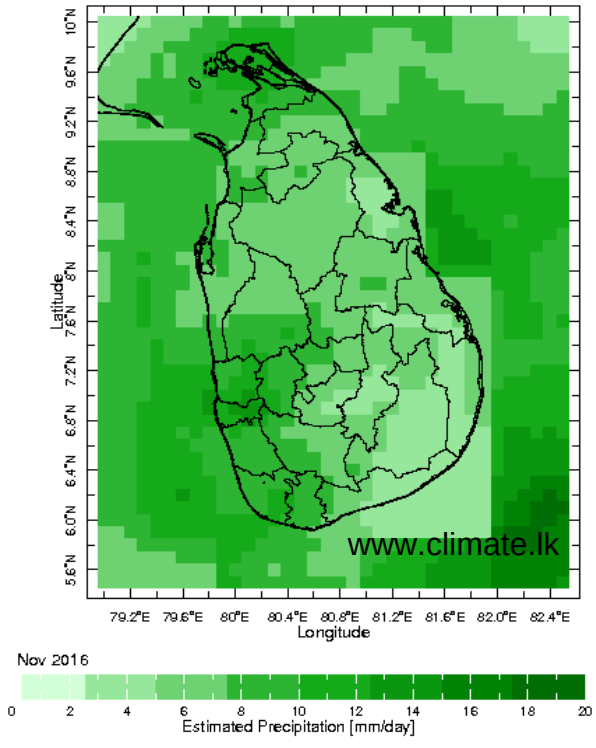
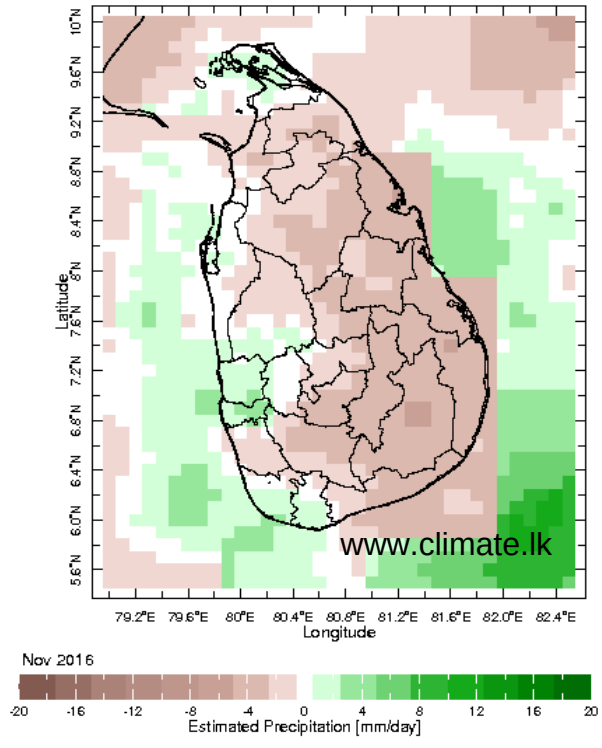


Monthly Rainfall Monitoring

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

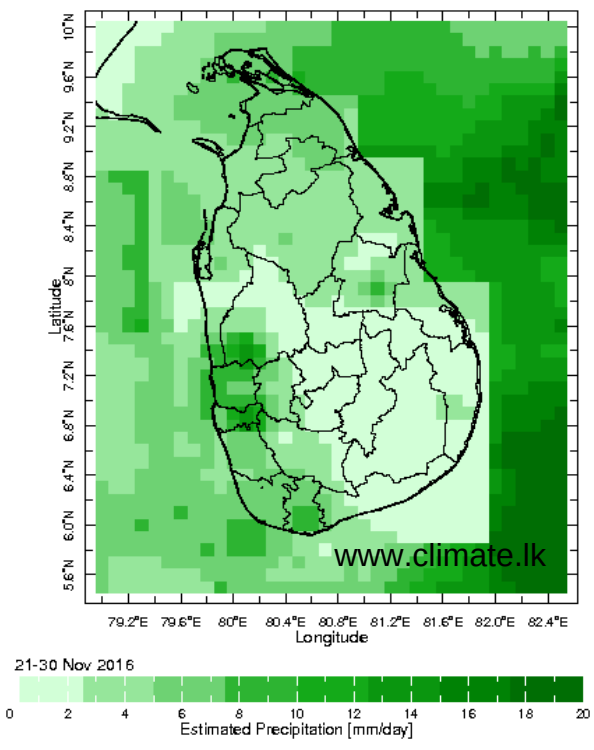


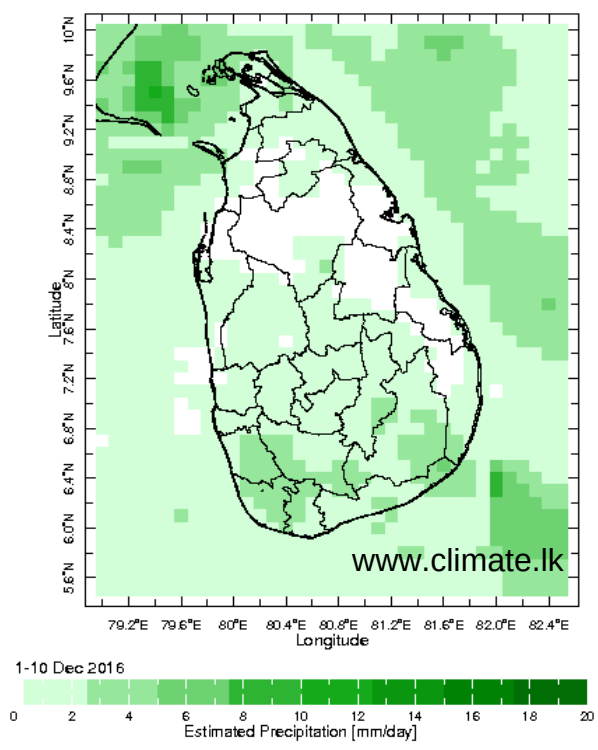
Monthly Average



Monthly Anomaly

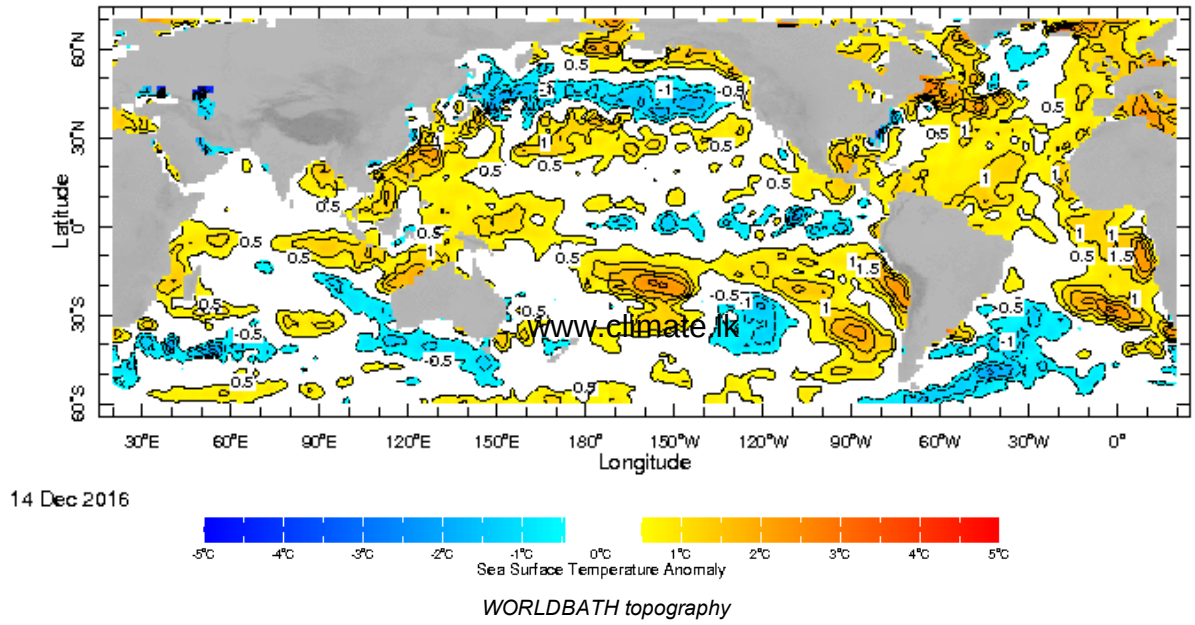
Dekadal (10 Day) Satellite Derived Rainfall Estimates





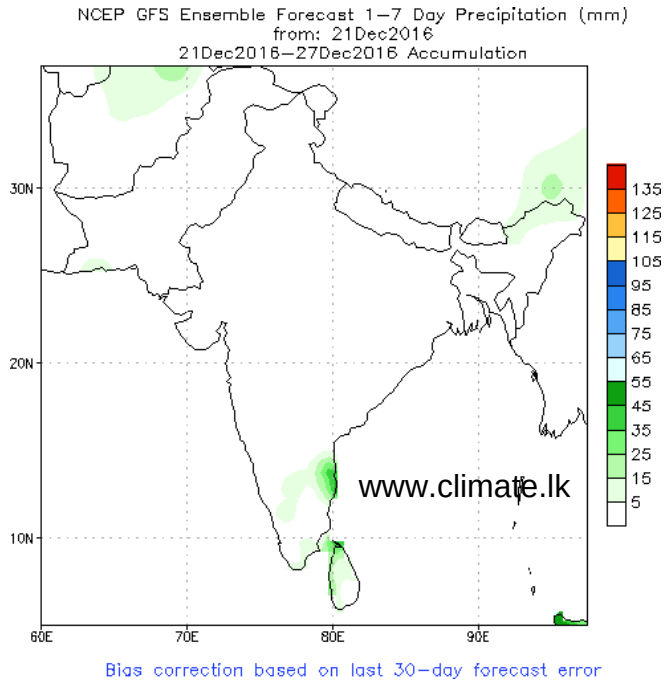
Weekly Average SST Anomalies

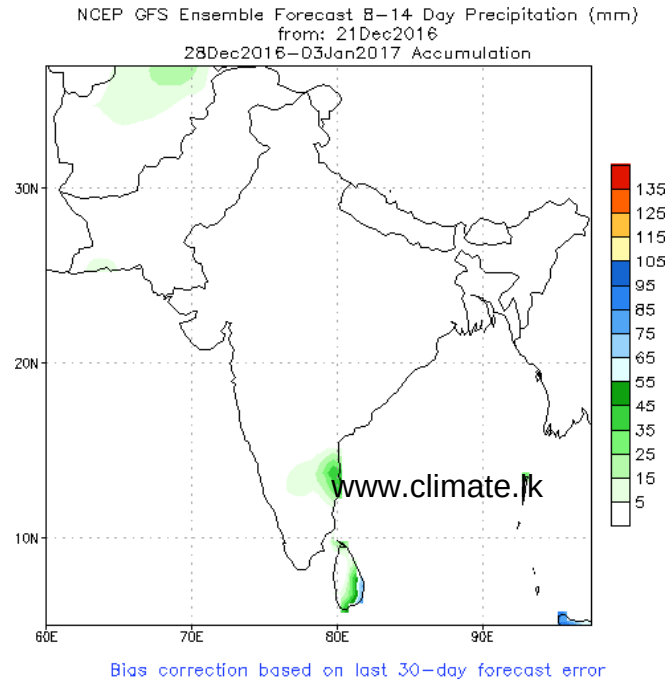
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



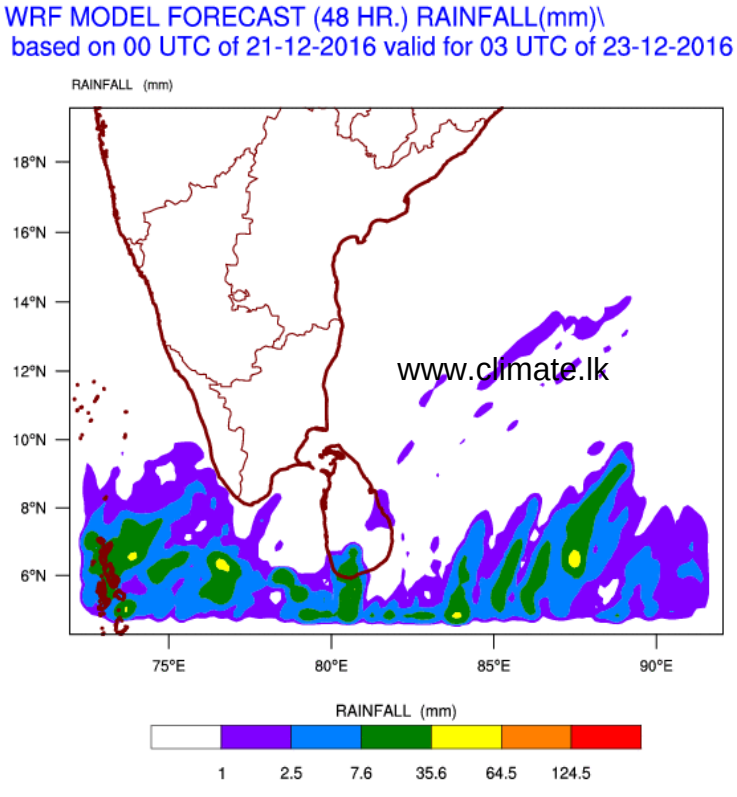
PREDICTIONS

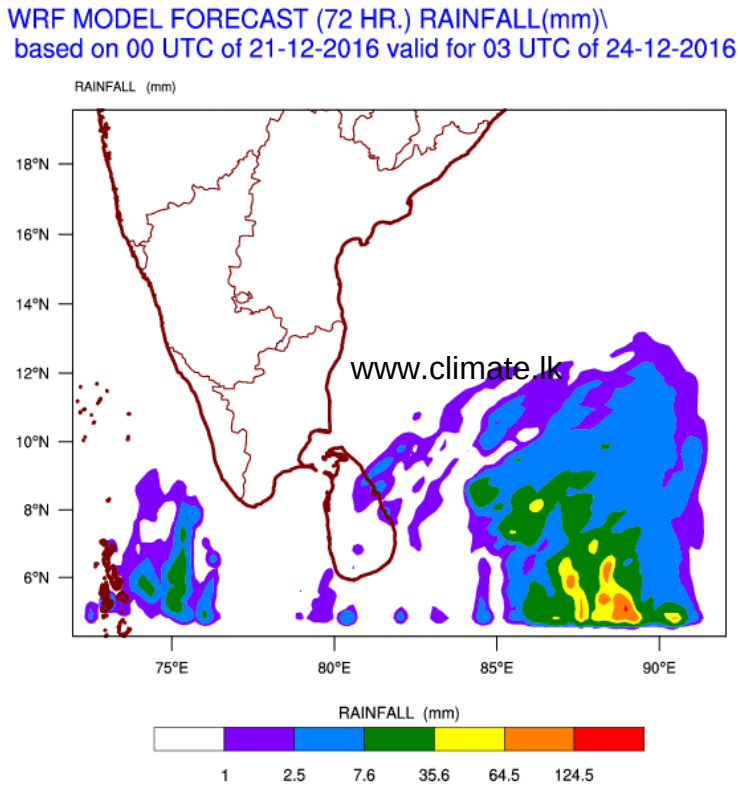
NCEP GFS 1- 14 Day prediction





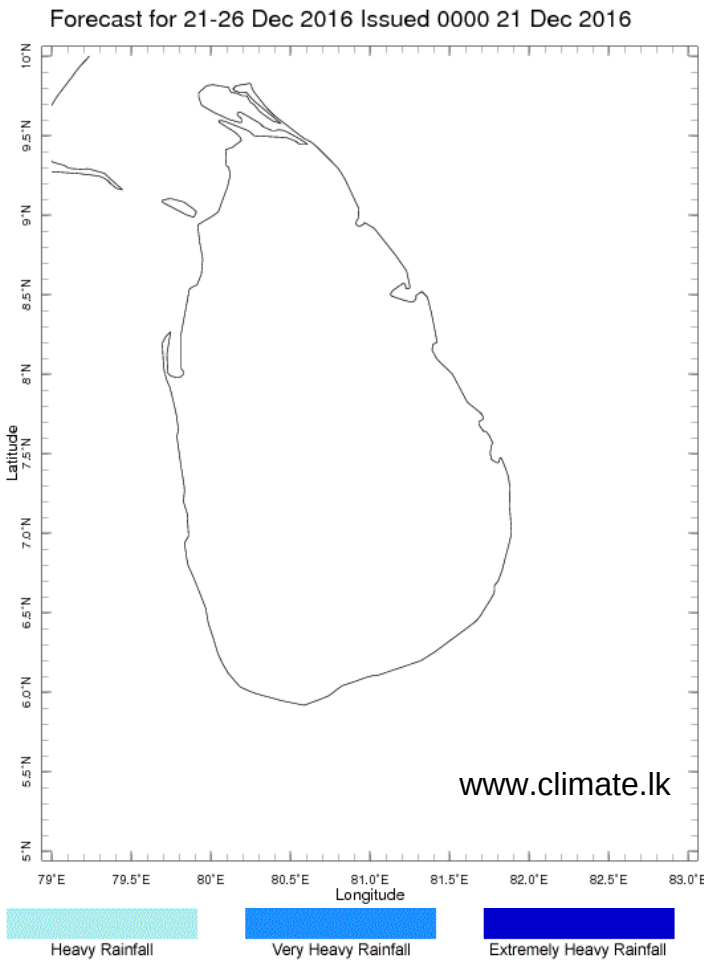
WRF Model Forecast (from IMD Chennai)



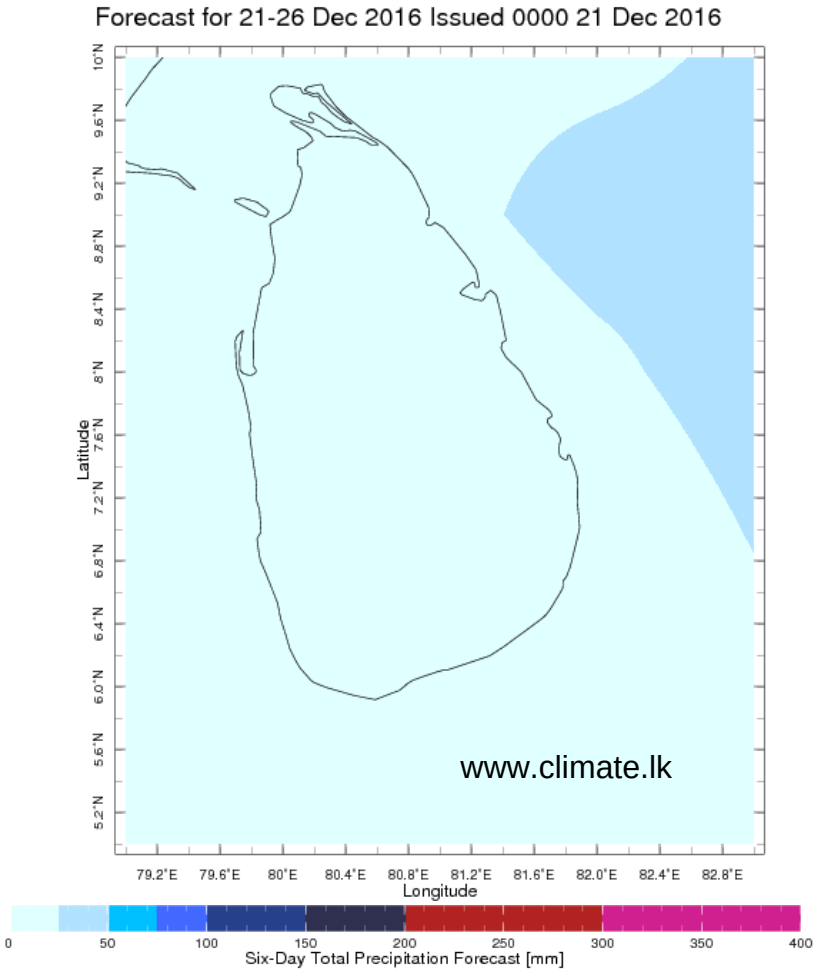


Weekly Rainfall Forecast from IRI

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.



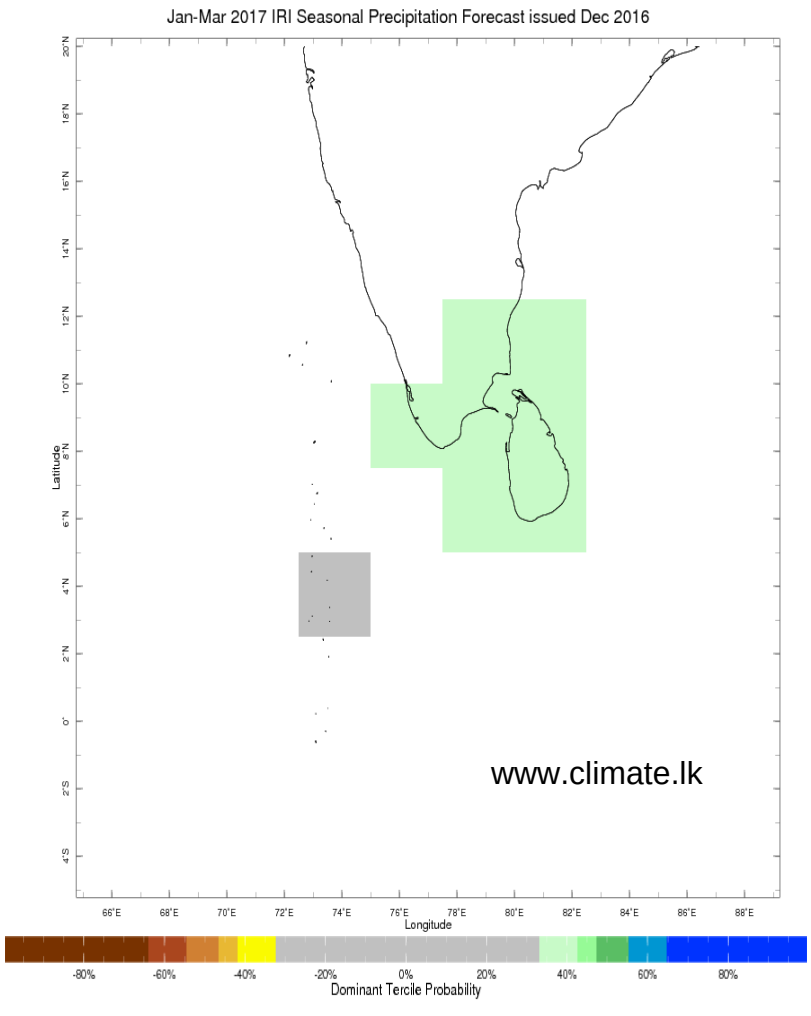
Extreme Rainfall Forecast



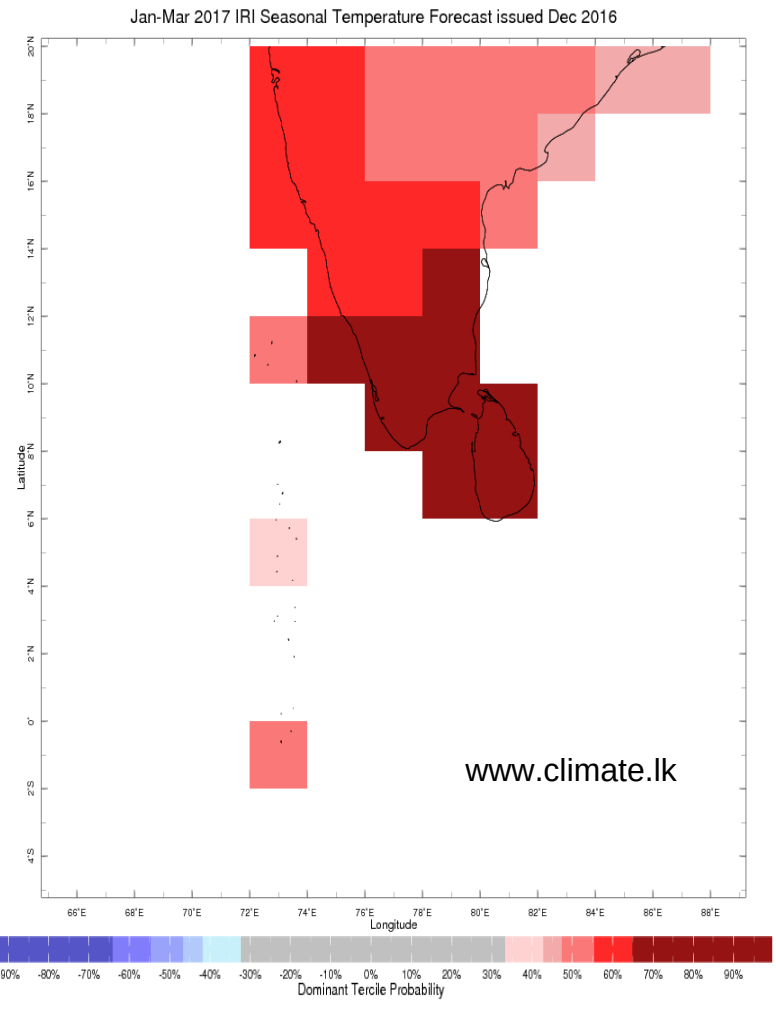
Total Six Day Precipitation Forecast

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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