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Experimental Climate Monitoring and Prediction

by: Ruchira Lokuhetti, Chalani Malge, Janan Visvanathan, Lareef Zubair and Michael Bell[1] (FECT and IRI[1])

30 May 2019

Highlights

- ***The IRI weekly rainfall forecast predicts up to 50 mm of total rainfall in western and central parts of the island during 29 May – 3 Jun.***
- ***Between 21 - 27 May: up to 60 mm of rainfall was recorded in Colombo district on the 23rd.***
- ***From 21 - 27 May: up to 36 km/h, westerly winds were experienced by the entire island.***
- ***0.5 ^{0}C below average sea surface temperature was observed in the southern seas around Sri Lanka.***

Monitoring

Rainfall

Weekly Monitoring: On May 21st, Jaffna and Kilinochchi districts received up to 10 mm of rainfall. On the 22nd, Nuwara Eliya district received up to 20 mm of rainfall; and Galle and Hambantota districts up to 10 mm. On the 23rd, Colombo district received up to 60 mm of rainfall; Gampaha and Kalutara district up to 50 mm; Trincomalee, Polonnaruwa, Kegalle, Ratnapura and Galle districts up to 30 mm; and Puttalam, Anuradhapura, Kandy and Matara districts up to 20 mm. On the 24th, Colombo district received up to 30 mm of rainfall; and Gampaha, Kegalle, Ratnapura, Kalutara, Galle, Badulla and Monaragala districts up to 20 mm. On the 25th, Ampara, Galle and Matara districts received up to 20 mm of rainfall. On the 26th, Puttalam district received up to 20 mm of rainfall; and Colombo district up to 10 mm. No significant rainfalls were recorded in any part of the island on the 27th.

Total Rainfall for the Past Week: The RFE 2.0 tool shows total up to 75-100 mm in Colombo district; up to 50-75 mm in Gampaha and Kalutara districts; up to 25-50 mm in Kegalle, Ratnapura, Galle, Matara, Trincoalee and Badulla districts; and 10-25 mm in Polonnaruwa, Matale, Kandy, Nuwara Eliya, Monaragala, Puttalam, Kurunegala and Hambantota districts. Above average rainfall up to 25-50 mm is shown for Trincomalee, Polonnaruwa and Colombo districts. Below average rainfall up to 25-50 mm is shown for Kurunegala, Kandy, Nuwara Eliya, Ratnapura, Galle, Badulla, Monaragala and Ampara districts; and up to 10-25 mm in Matale, Puttalam, Kegalle, Matara and Hambantota districts.

***Monthly Monitoring*:** During April – Above average rainfall conditions up to 60 mm were experienced in western regions of Kurunegala district and central regions of Anuradhapura district. Below average rainfall conditions up to 240 mm were experienced by Matale, Kandy, Nuwara Eliya, Kegalle, Colombo, Kalutara, Galle, Matara, Ratnapura, Hambantota, Badulla and Monaragala districts; and up to 180 mm in rest of the island. The CPC Unified Precipitation Analysis tool shows up to 500 mm of total rainfall in Gampaha district; up to 300 mm in Puttalam, Kurunegala, Anuradhapura, Kegalle, Ratnapura, Colombo, Kalutara and Galle districts; up to 200 mm in Matale, Kandy, Nuwara Eliya and Matara districts; and up to 100 mm in Mannar, Vavuniya, Polonnaruwa, Badulla, Monaragala, Batticaloa, Ampara and Hambantota districts.

Ocean State (*Text Courtesy IRI*)

Pacific sea state: May 20, 2018

SSTs in the tropical Pacific maintained a weak El Niño level during April and early May, while temperature anomalies of subsurface waters decreased markedly to just slightly above average. Some patterns in the atmosphere show weak El Niño conditions. Collective model forecasts show a continuation of at least weak El Niño-level SSTs lasting through 2019. The official CPC/IRI outlook, with an El Niño advisory, calls for an approximate 70% chance of El Niño continuing during Jun-Aug, decreasing to 55-60% for Sep-Nov.

Indian Ocean State

0.5 ^{0}C below average sea surface temperature was observed in the southern seas around Sri Lanka.

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Predictions

Rainfall

14-day prediction:

NOAA NCEP models:

From 29th May – 4th Jun: Total rainfall up to 55 mm Ratnapura and Matara districts; up to 35-45 mm in Hambantota district; and up to 25-35 mm in Colombo and Gampaha districts.

From 5th – 11th Jun: Total rainfall up to 55 mm in Ratnapura, Galle districts; up to 35-45 mm in Ratnapura and Matara districts; up to 25-35 mm in Colombo, Gampaha, Kegalle and Hambantota districts.

IMD NCMWRF Forecast:

31st May: Not Available

1st Jun: Not Available

IRI Model Forecast:

From 29th May – 3rd Jun: Total rainfall up to 50 mm is expected in Nuwara Eliya, Kandy, Badulla, Kegalle, Ratnapura, Gampaha, Colombo, Kalutara, Galle and Matara districts.

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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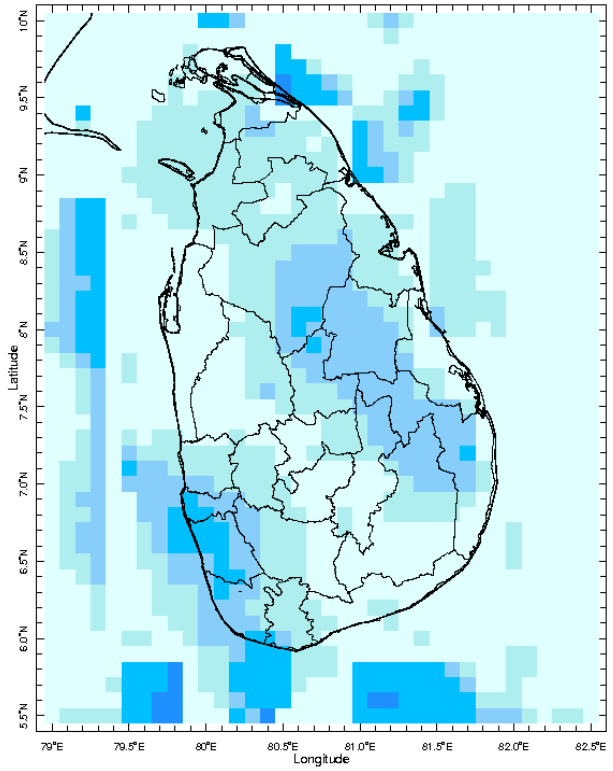
Weekly Hydro- Meteorological Report for Sri Lanka

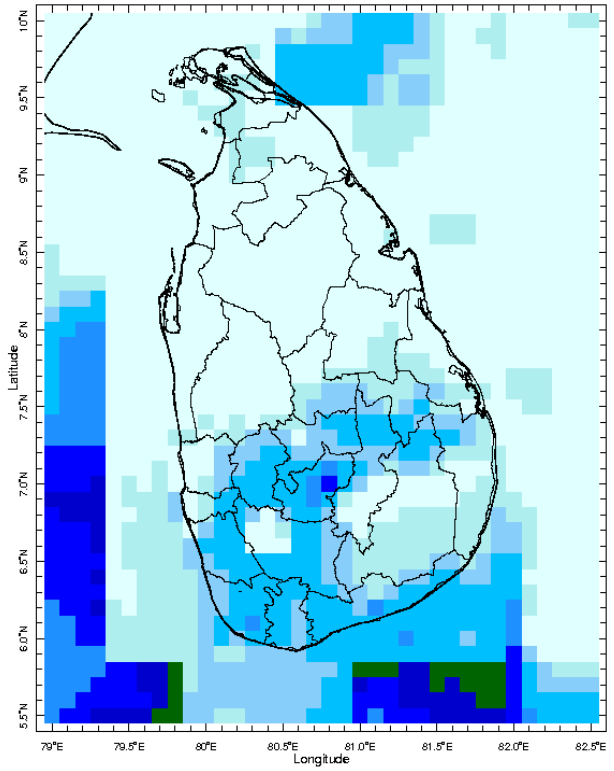
Inside This Issue

Daily Rainfall Monitoring

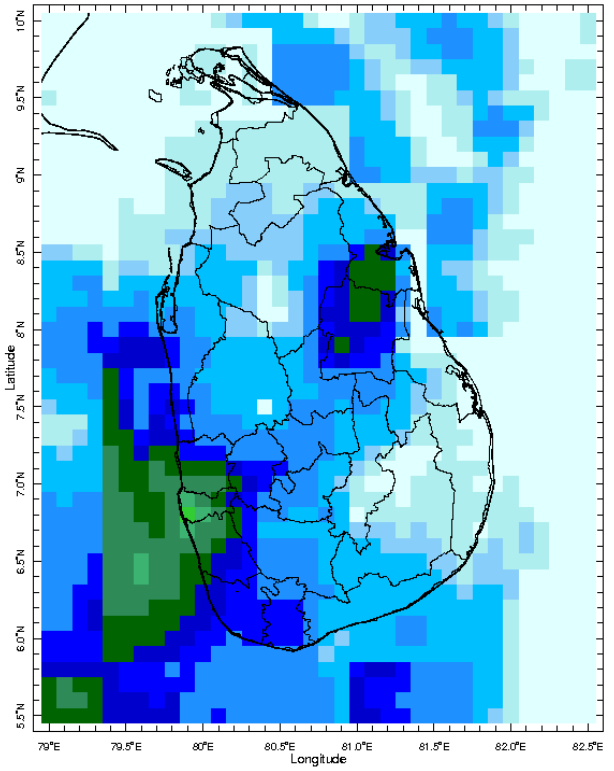
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



21 May 2019



22 May 2019



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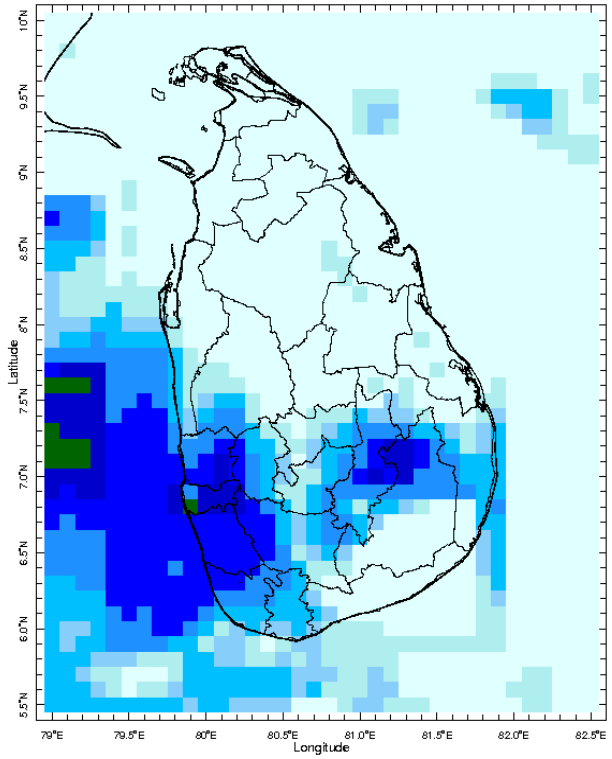

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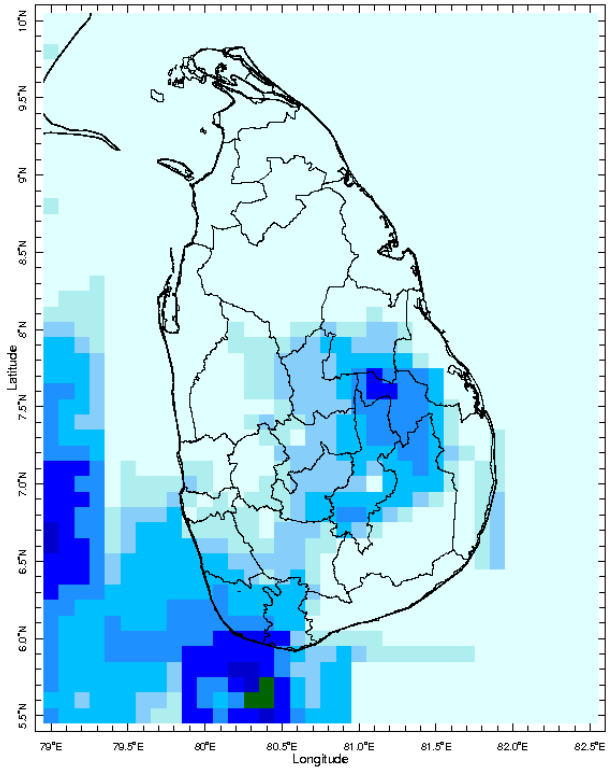
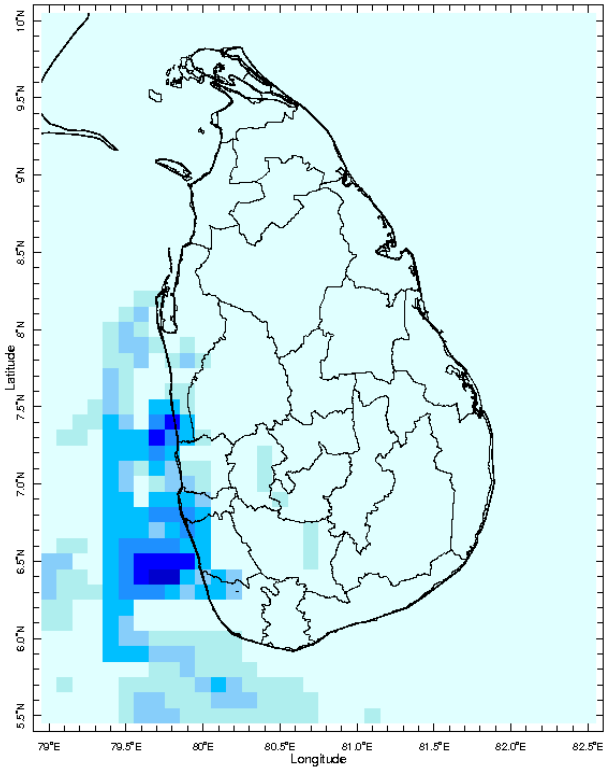
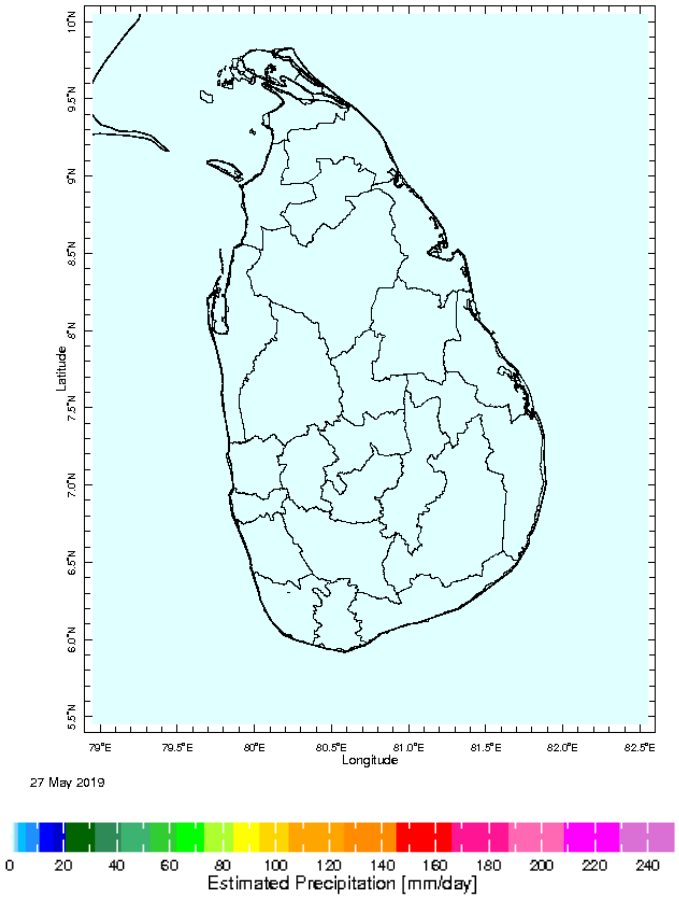


25 May 2019



26 May 2019

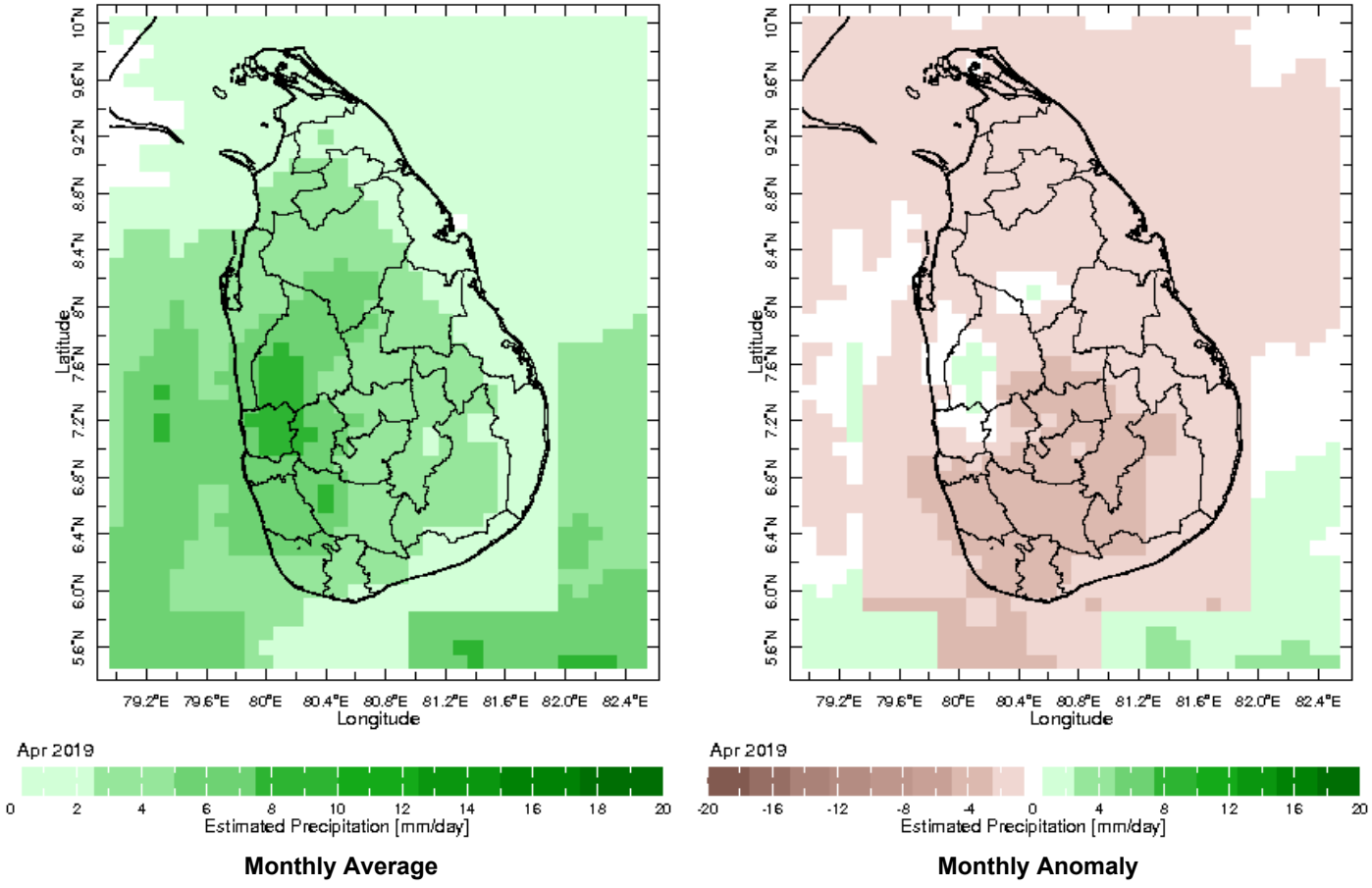

10°N
9.5°N
9°N
8.5°N
8°N
7.5°N
7.0°N
6.5°N
6.0°N
5.5°N
Latitude
79°E
79.5°E
80°E
80.5°E
81.0°E
81.5°E
82.0°E
82.5°E
Longitude

27 May 2019

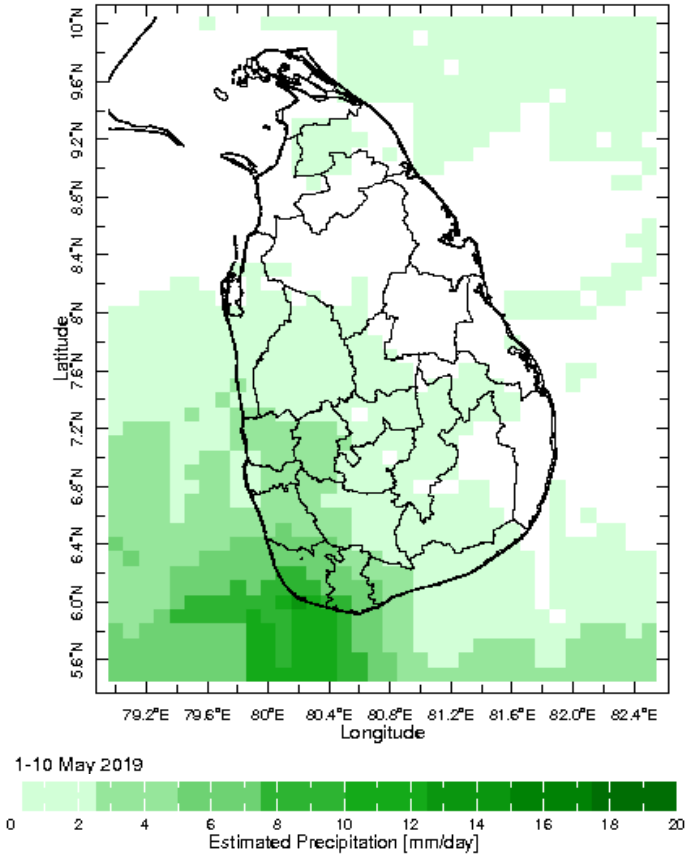
0
20
40
60
80
100
120
140
160
180
200
220
240
Estimated Precipitation [mm/day]

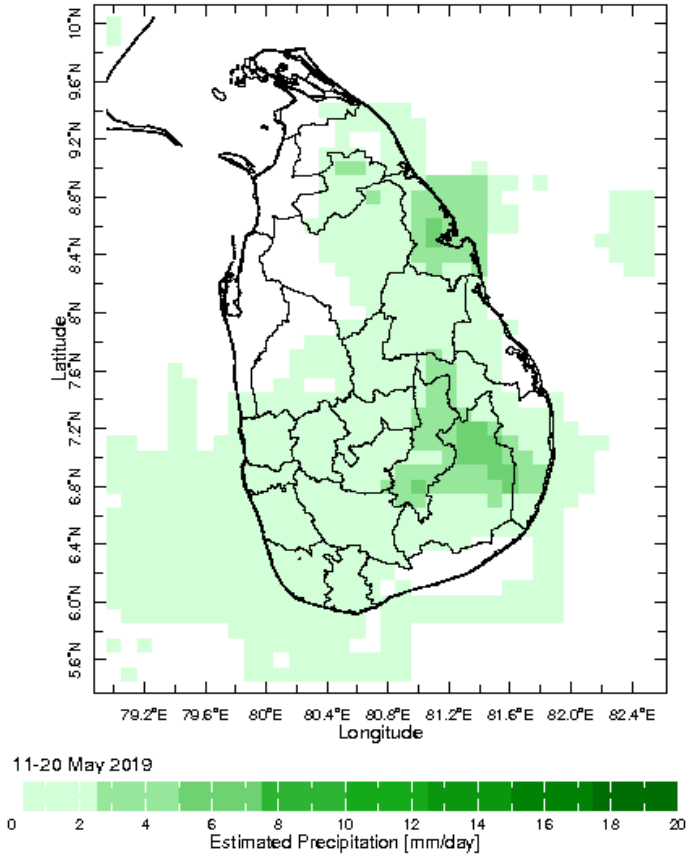
Monthly Rainfall Monitoring

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



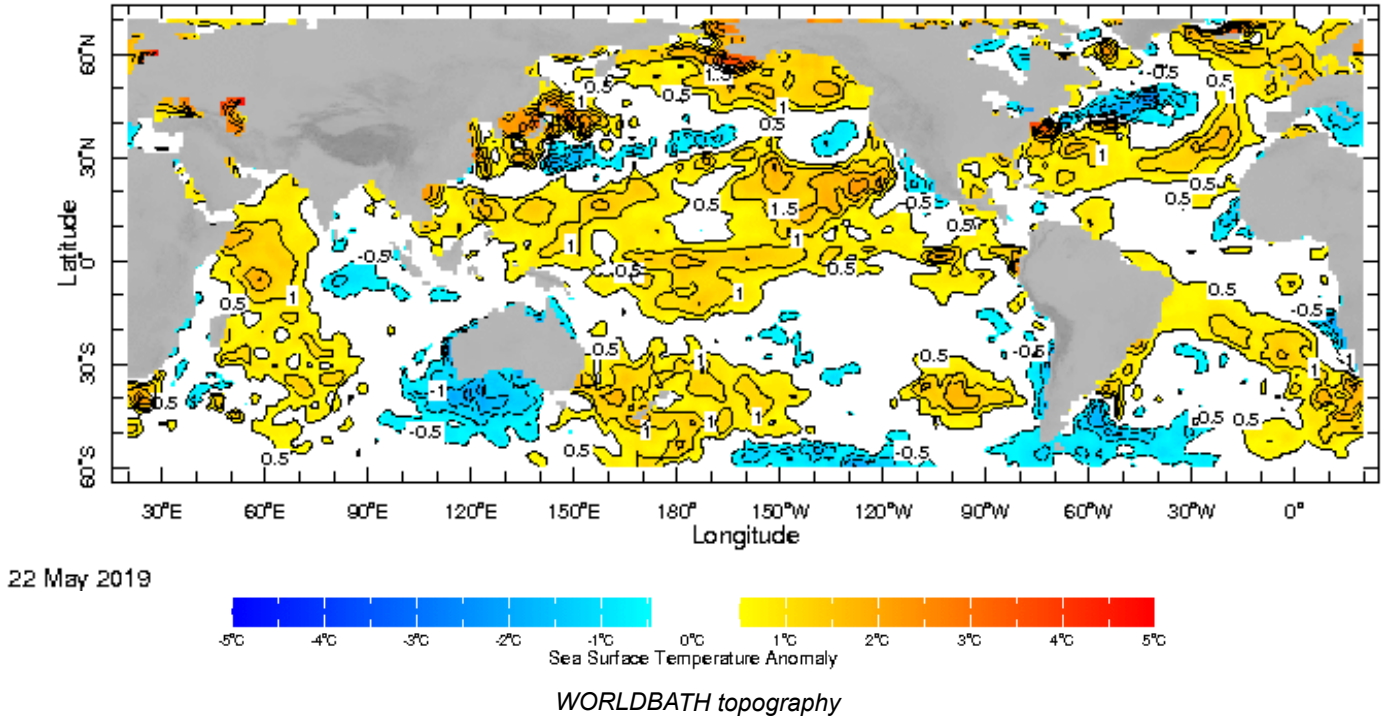
Dekadal (10 Day) Satellite Derived Rainfall Estimates





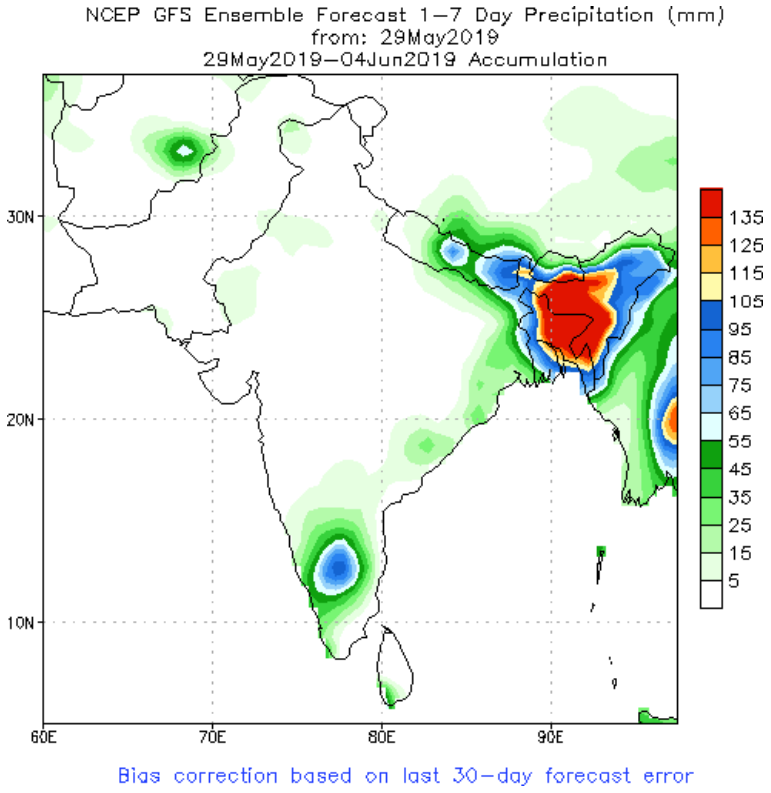
Weekly Average SST Anomalies

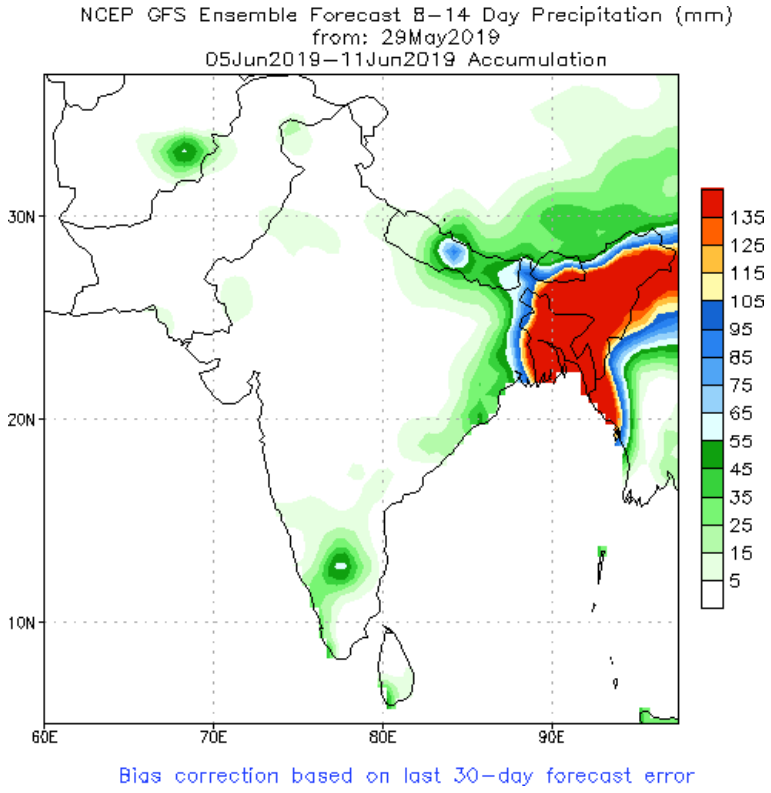
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



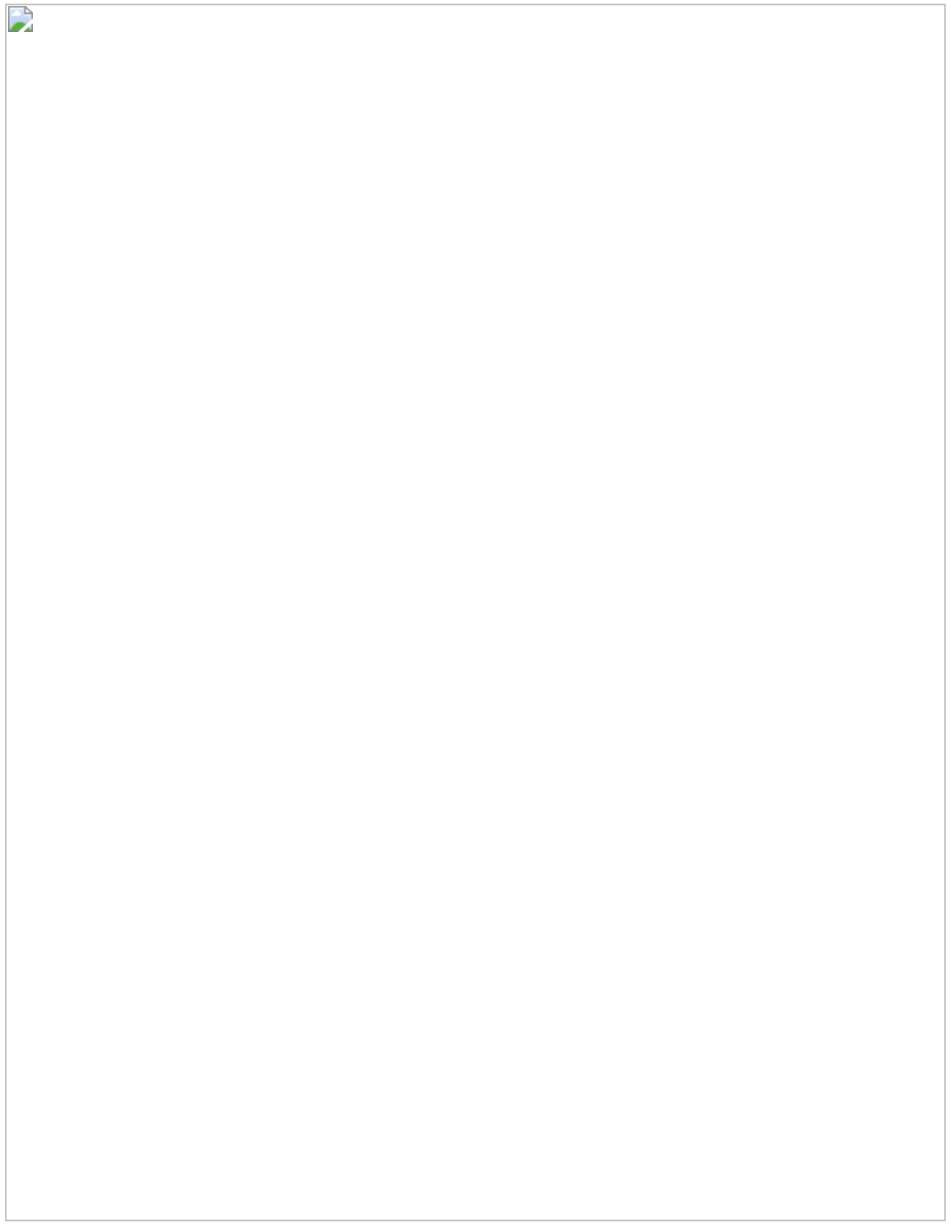
PREDICTIONS

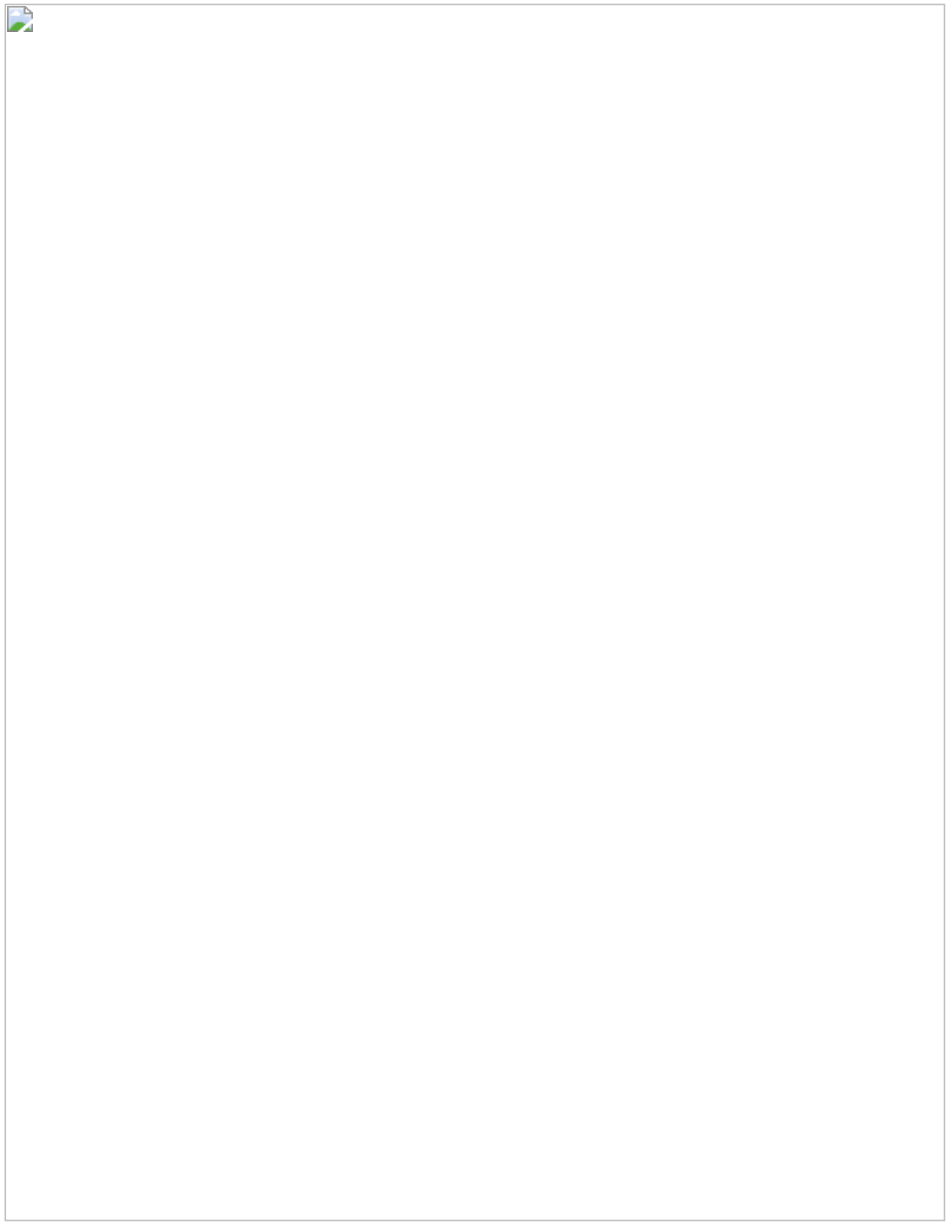
NCEP GFS 1- 14 Day prediction





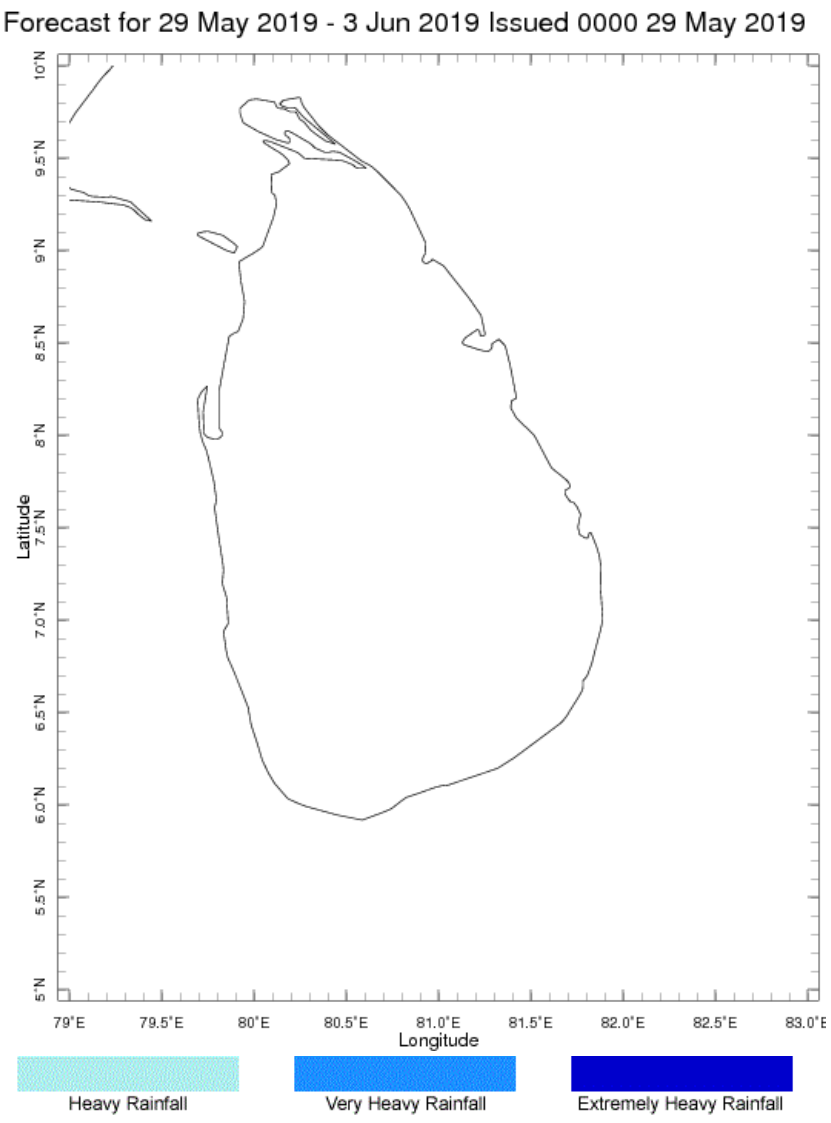
WRF Model Forecast (from IMD Chennai)



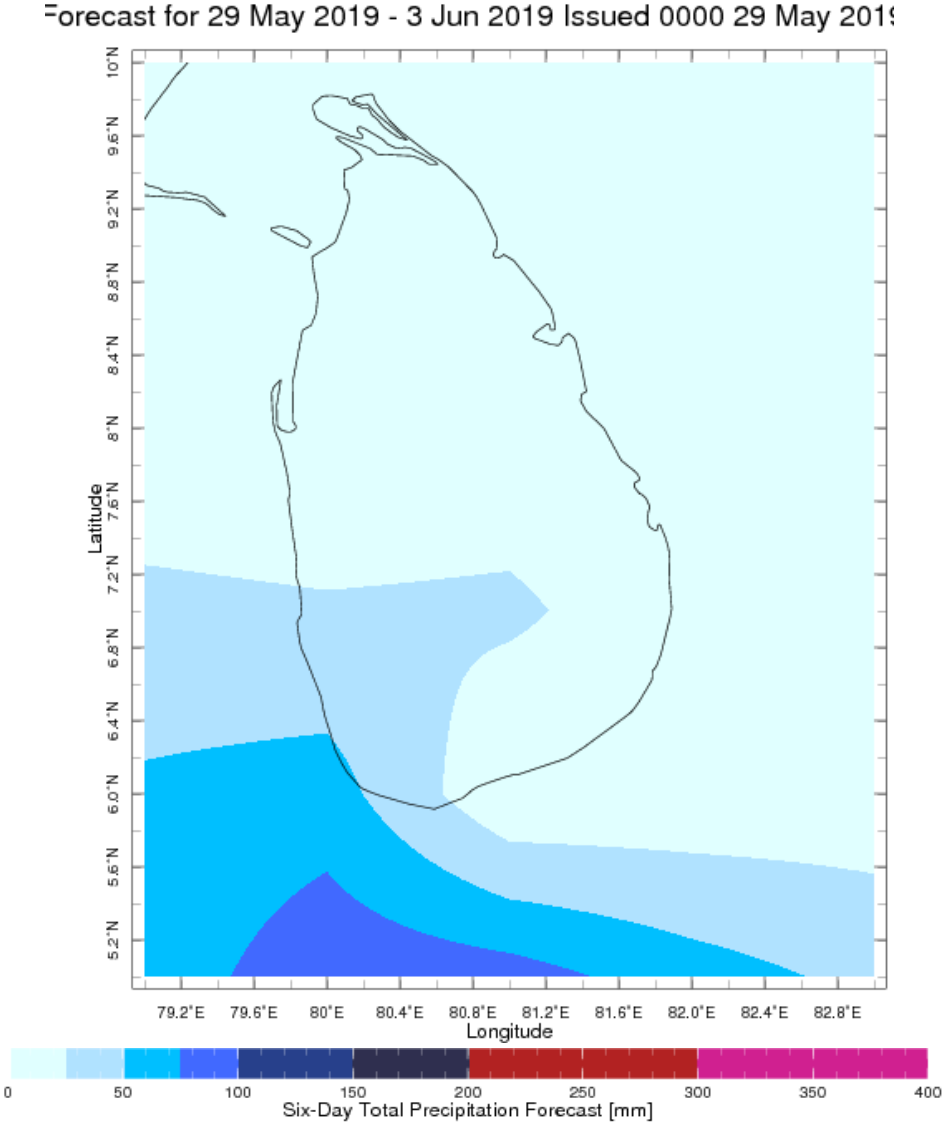


Weekly Rainfall Forecast from IRI

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