Federation for Environment, Climate and Technology

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16 April 2020

EXPERIMENTAL CLIMATE MONITORING AND PREDICTION

By: Ruchira Lokuhetti, Divaskar Sathyendra, Chayana Gunathilake, Lareef Zubair and Michael Bell[1] (FECT and IRI[1])

HIGHLIGHTS

Rainfall Forecast

- *The NOAA weekly rainfall forecast predicts up to 150 mm of total rainfall in Nuwara Eliya and Badulla districts during 15 - 20 Apr.*

Monitored Rainfalls

- *Between 7 - 14 Apr: up to 170 mm of rainfalls were recoreded in Ratnapura, Badulla and Monaragala districts on the 13th.*

Monitored Wind

- *From 7 - 13 Apr: up to 18 km/h, northeasterly winds were experienced by the entire island.*

Monitored Sea Surface

- *0.5 ^{0}C above average sea surface temperature was observed in the seas around Sri Lanka.*

Monitoring

Rainfall

Weekly Monitoring

Date	Rainfall
7th April	Up to 10 mm in Mullaitivu, Vavuniya, Trincomalee, Anuradhapura, Polonnaruwa, Badulla, Monaragala, Kalutara, Galle and Matara districts.
8th April	Up to 20 mm in Vavuniya, Kalutara, Ratnapura, Monaragala, Galle, Matara and Hambantota districts; and up to 10 mm in most parts of the island.
9th April	Up to 20 mm in Matara and Hambantota districts; and up to 10 mm in Jaffna, Kilinochchi, Mullaitivu, Vavuniya, Trincomalee, Anuradhapura, Puttalam, Kurunegala, Colombo, Kalutara, Ratnapura, Badulla and Monaragala districts.
10th April	Up to 170 mm in Anuradhapura district; up to 70 mm in Badulla, Monaragala, and Ratnapura districts; up to 50 mm in Vavuniya, Polonnaruwa, Matale, Kandy, Nuwara Eliya and Ampara districts; up to 30 mm in Kurunegala district; and up to 20 mm in Mannar and Kegalle districts.
11th April	Up to 50 mm in Kegalle district; up to 30 mm in Kurunegala, Kandy, Kalutara, Galle and Ratnapura districts; and up to 20 mm in Gampaha and Nuwara Eliya districts.

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Date	Rainfall
12th April	Up to 70 mm in Matara, Kurunegala and Kandy districts; up to 60 mm in Ratnapura Kegalle and Matara districts; up to 50 mm in Nuwara Eliya, Badulla, Monaragala, Kalutara and Galle districts; up to 30 mm in Puttalam and Anuradhapura districts; and up to 20 mm in Gampaha, Colombo, Polonnaruwa and Ampara districts.
13th April	Up to 180 mm in Ratnapura, Badulla and Monaragala districts; up to 120 mm in Matara district; up to 70 mm in Nuwara Eliya, Galle, Hambantota and Kegalle districts; up to 50 mm in Puttalam, Anuradhapura, Kurunegala, Kandy and Kalutara districts; up to 30 mm in Matale district; and up to 20 mm in Ampara district.
14th April	Up to 70 mm in Matale and Kandy districts; up to 50 mm in Nuwara Eliya, Kegalle, Kurunegala, Ratnapura, Kalutara, Galle, Matara Badulla, Monaragala and Hambantota districts; up to 30 mm in Polonnaruwa and Ampara districts; and up to 20 mm in Gampaha and Colombo districts.

Total Rainfall for the Past Week

The RFE 2.0 tool shows total up to 150-200 mm in Ratnapura, Badulla and Monaragala districts; up to 100-150 mm in Kurunegala, Matale, Kandy, Kegalle and Nuwara Eliya districts; up to 75-100 mm in Mannar, Anuradhapura, Galle, Matara and Hambantota districts; and up to 50-75 mm in Polonnaruwa and Kalutara districts. Above average rainfall up to 100-200 mm is shown for in Ratnapura, Badulla and Monaragala districts; up and to 50-100 mm in Matale, Kandy, Nuwara Eliya, Galle and Matara districts. Below average rainfall up to 50-100 mm is shown for in Galle, Colombo and Kalutara districts; and up to 25-50 mm in Kilinochchi, Vavuniya Mullaitivu, Mannar, Puttalam Ampara and most places of Anuradhapura district.

Monthly Monitoring

During March – Below average rainfall conditions up to 240 mm were experienced by Anuradhapura, Kurunegala, Matale, Polonnaruwa, Ampara, Badulla, Monaragala, Kandy, Nuwara Eliya, Kegalle, Ratnapura, Colombo, Kalutara, Galle, Matara and Hambantota districts; and up to 150 mm in rest of the island. The CPC Unified Precipitation Analysis tool shows up to 100 mm of total rainfall in Kurunegala, Kegalle, Ratnapura, Nuwara Eliya, Kalutara, Galle and Matara districts; and up to 75 mm in Puttalam, Gampaha, Colombo, Badulla and Kandy districts.

Ocean State *(Text Courtesy IRI)*

Pacific sea state: April 9, 2020

SSTs in the east-central Pacific were near the borderline of El Niño during early April. However, patterns in atmospheric variables were mainly neutral. Most model forecasts favor warm-neutral SST conditions during the rest of spring, cooling to average by summer. The official CPC/IRI outlook is consistent with these model forecasts, calling for continuation of ENSO-neutral through fall.

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Indian Ocean State

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

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 15th – 21st Apr: Total rainfall up to 45 mm in Gampaha, Puttalam, Kurunegala and Kegalle districts; up to 35 mm in Ratnapura and Galle districts; and up to 25 mm is in Mannar, Anuradhapura, Matale, Kandy, Nuwara Eliya and Matara districts.

From 22nd – 28th Apr: Total rainfall up to 25 mm in Kurunegala, Puttalam, Gampaha, Colombo, Kegalle, Ratnapura, Galle and Matara districts.

NOAA Model Forecast:

From 15th – 20th Apr: Total rainfall up to 150 mm in Nuwara Eliya and Badulla districts; up to 100 mm in Kandy and Monaragala districts; up to 75 mm in Matale, Kurunegala, Kegalle, Ratnapura and Ampara districts; and up to 50 mm in Polonnaruwa, Batticaloa, Anuradhapura, Puttalam, Hambantota, Matara, Galle, Kalutara, Colombo and Gampaha 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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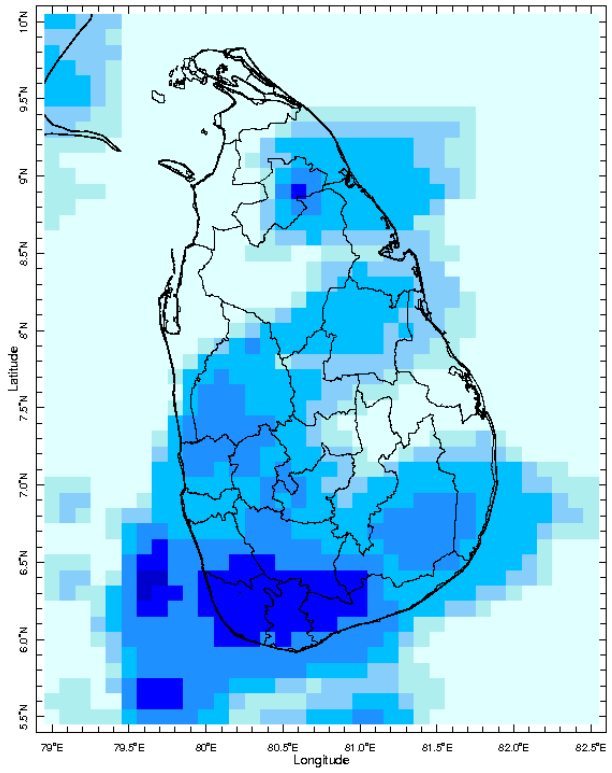
Weekly Hydro- Meteorological Report for Sri Lanka

Inside This Issue

MONITORING

Daily Rainfall Monitoring

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



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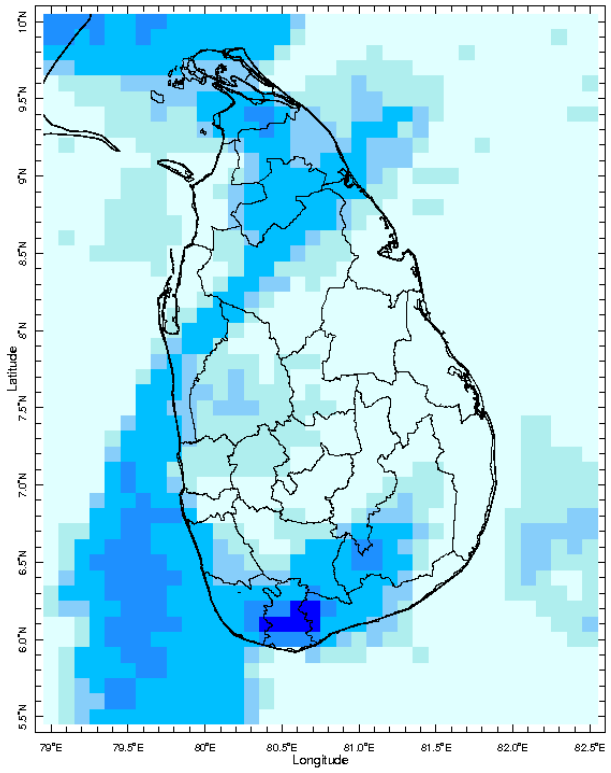
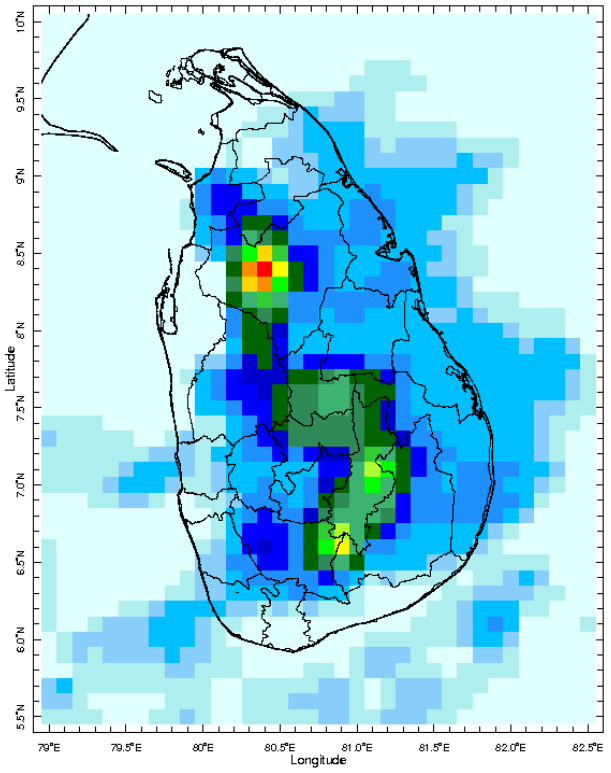


9 Apr 2020



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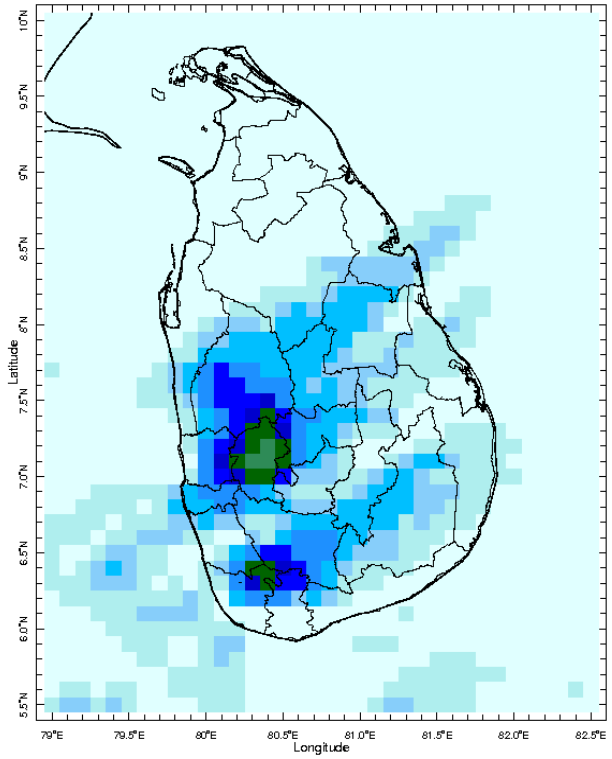

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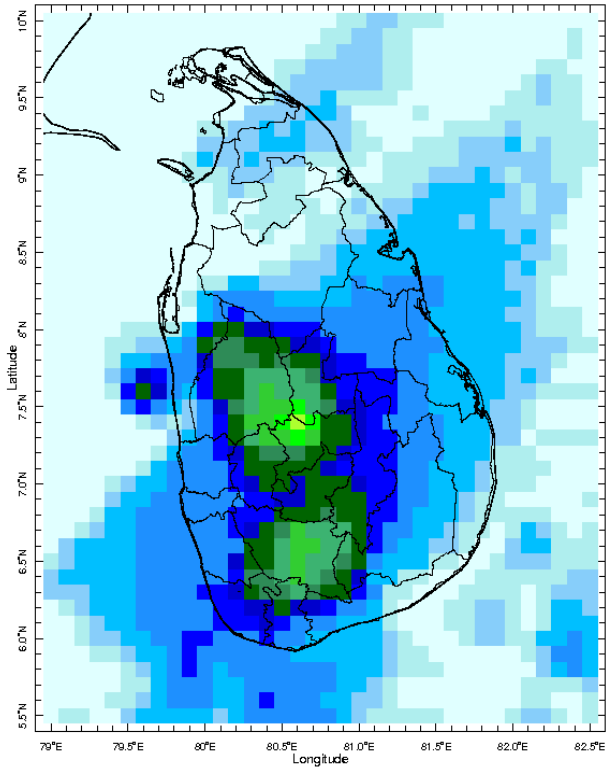
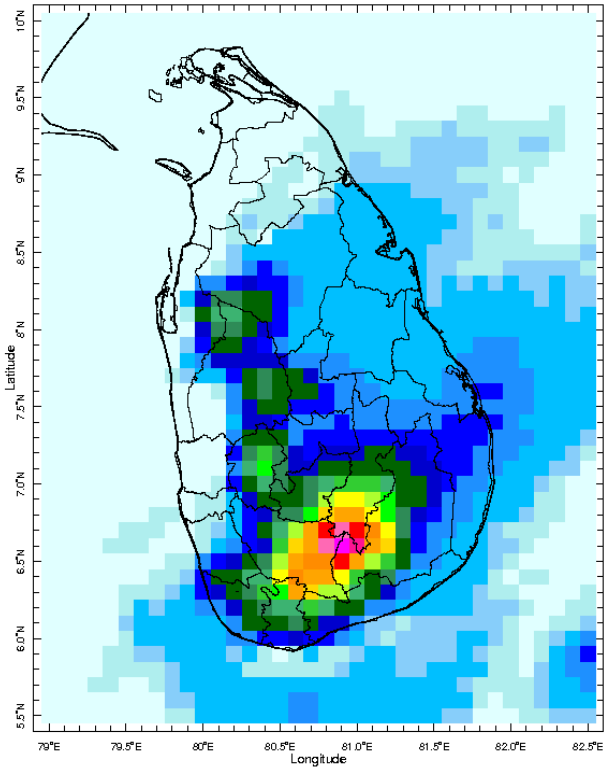
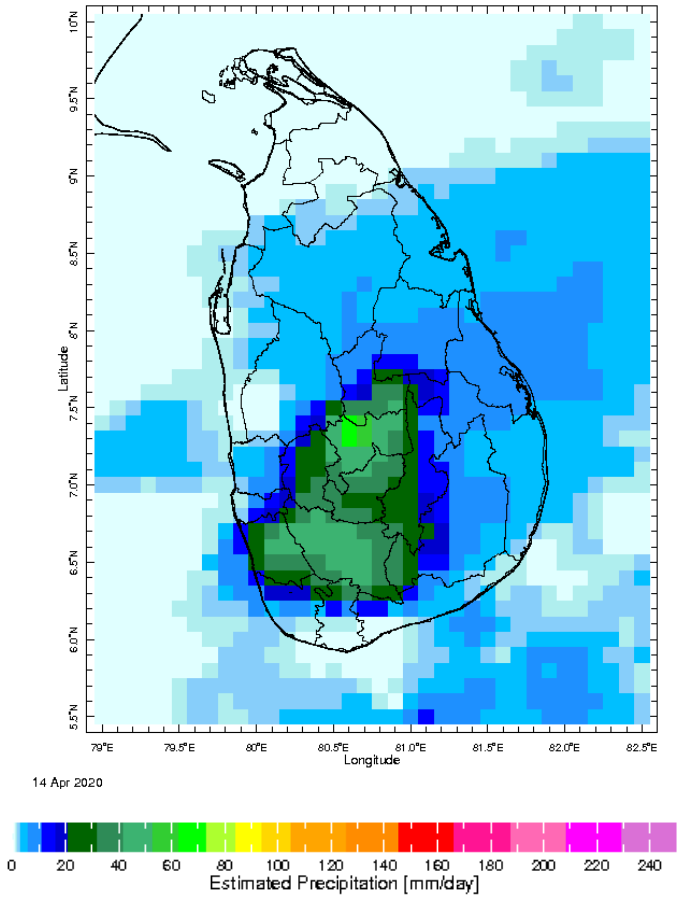


12 Apr 2020

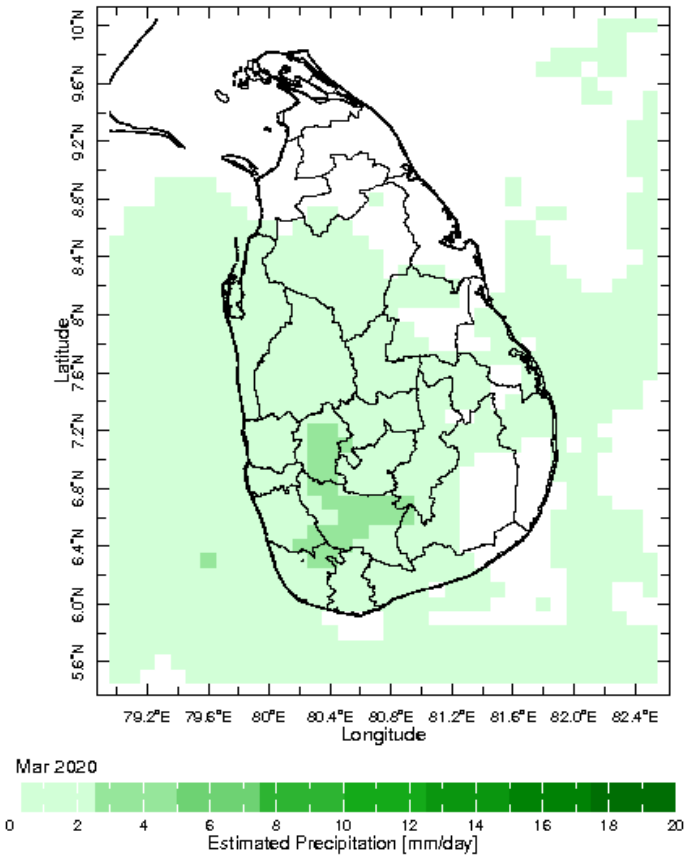


13 Apr 2020

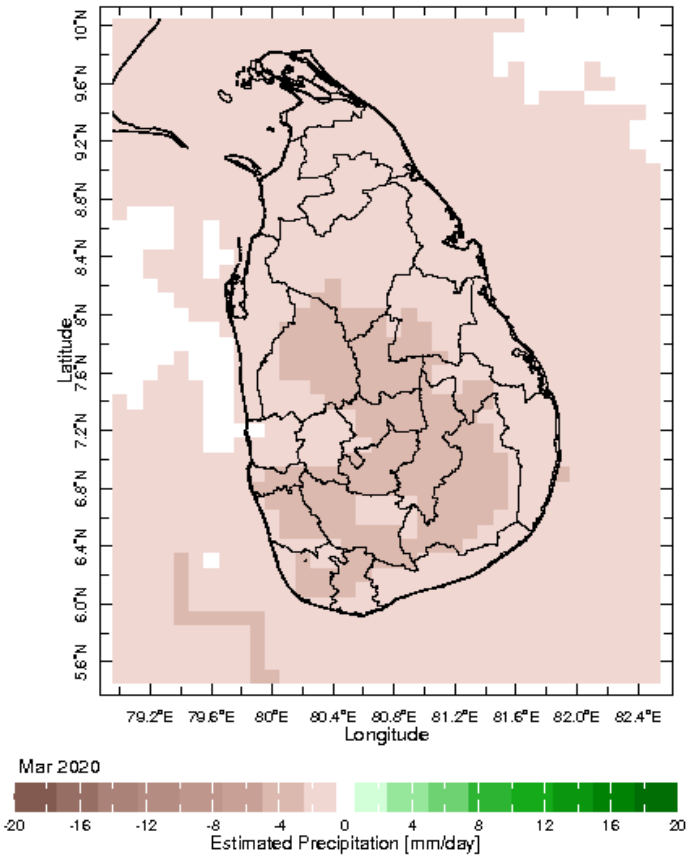


Monthly Rainfall Monitoring

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

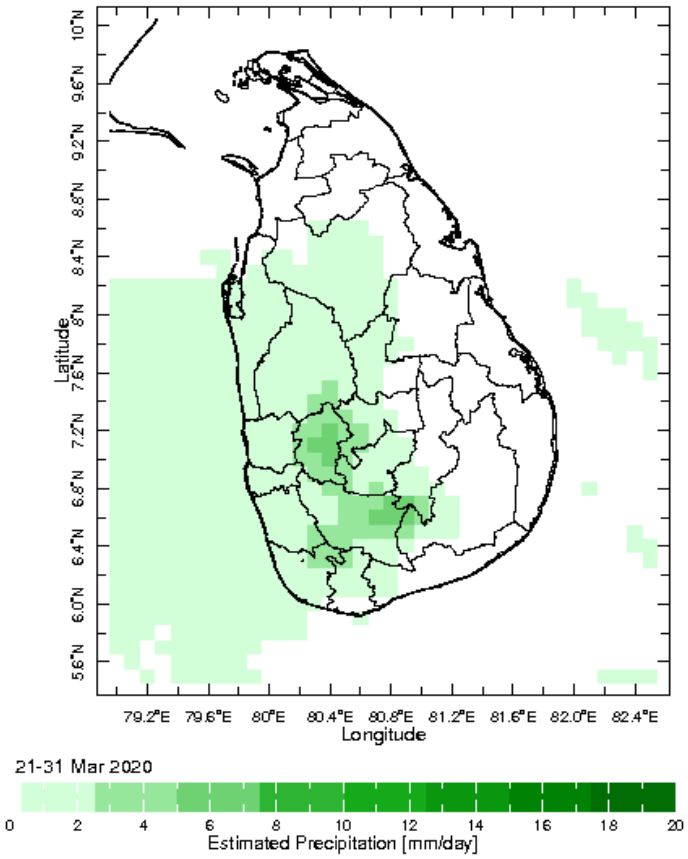


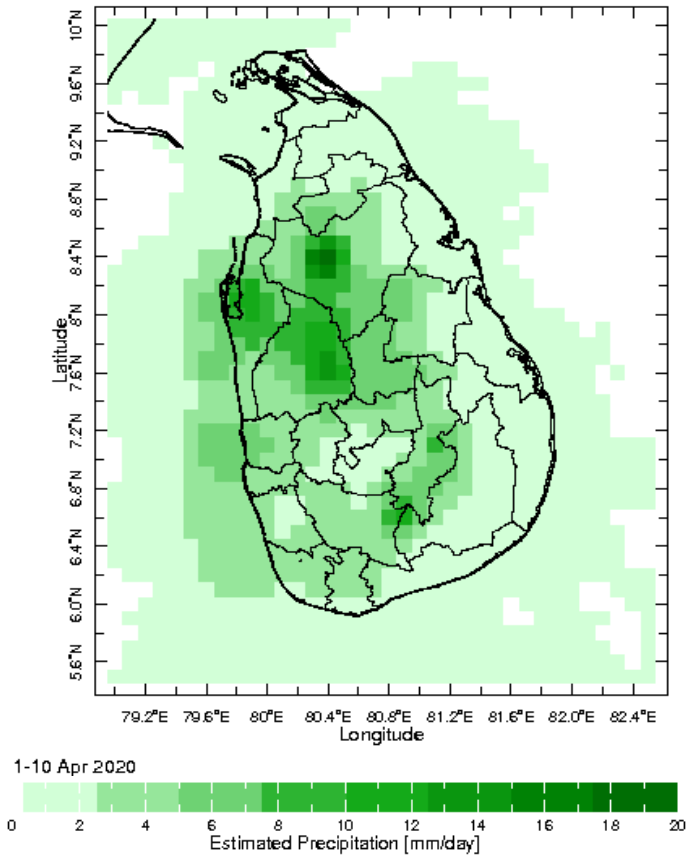
Monthly Average



Monthly Anomaly

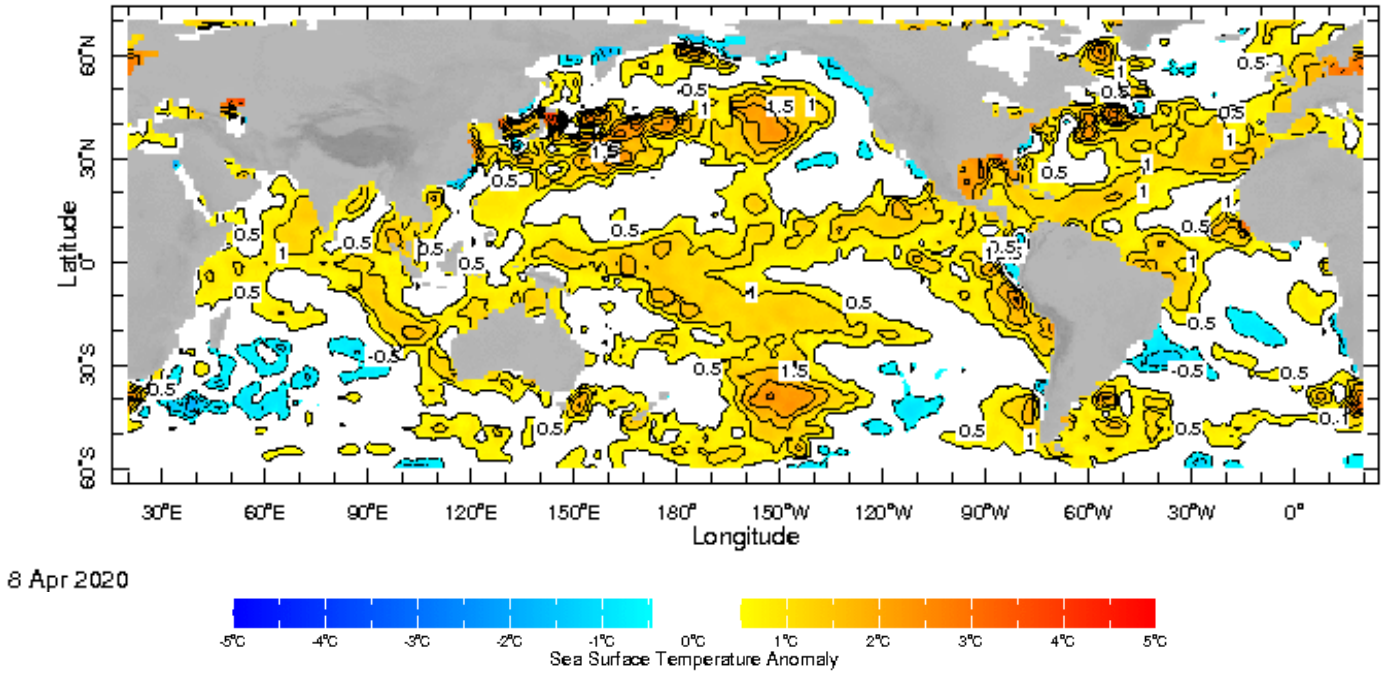
Dekadal (10 Day) Satellite Derived Rainfall Estimates





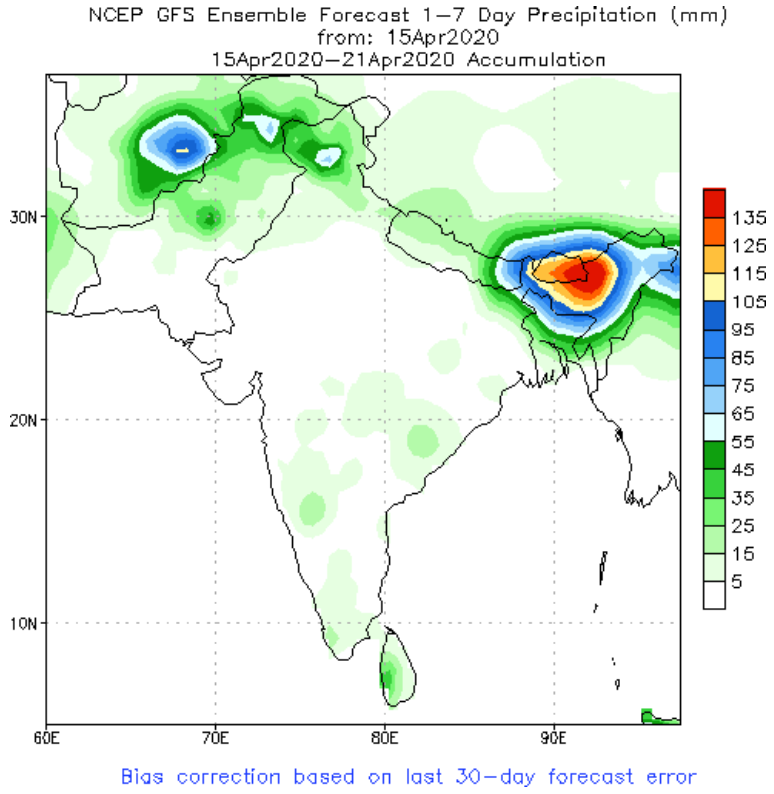
Weekly Average SST Anomalies

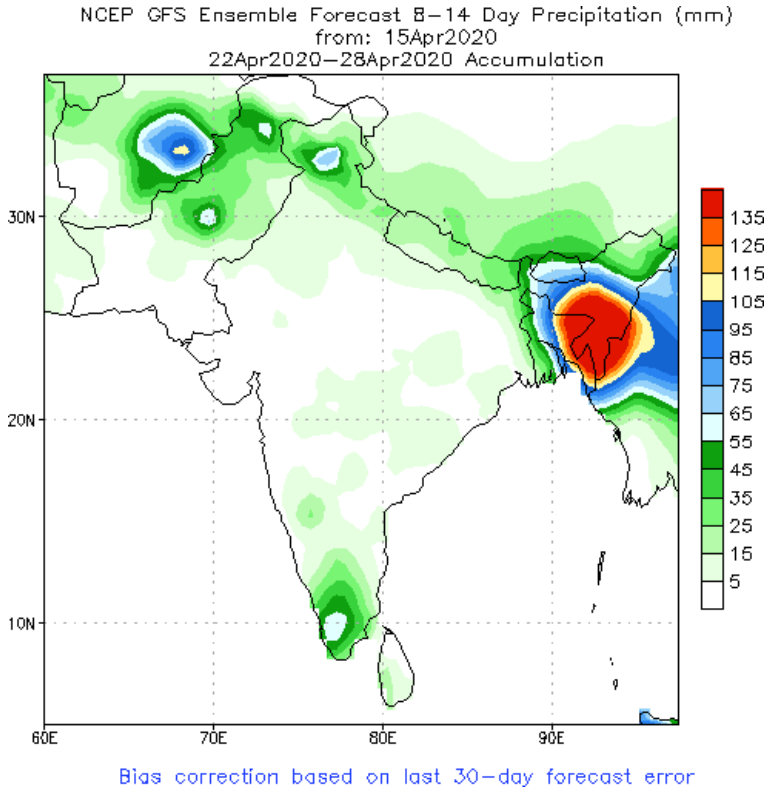
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



PREDICTIONS

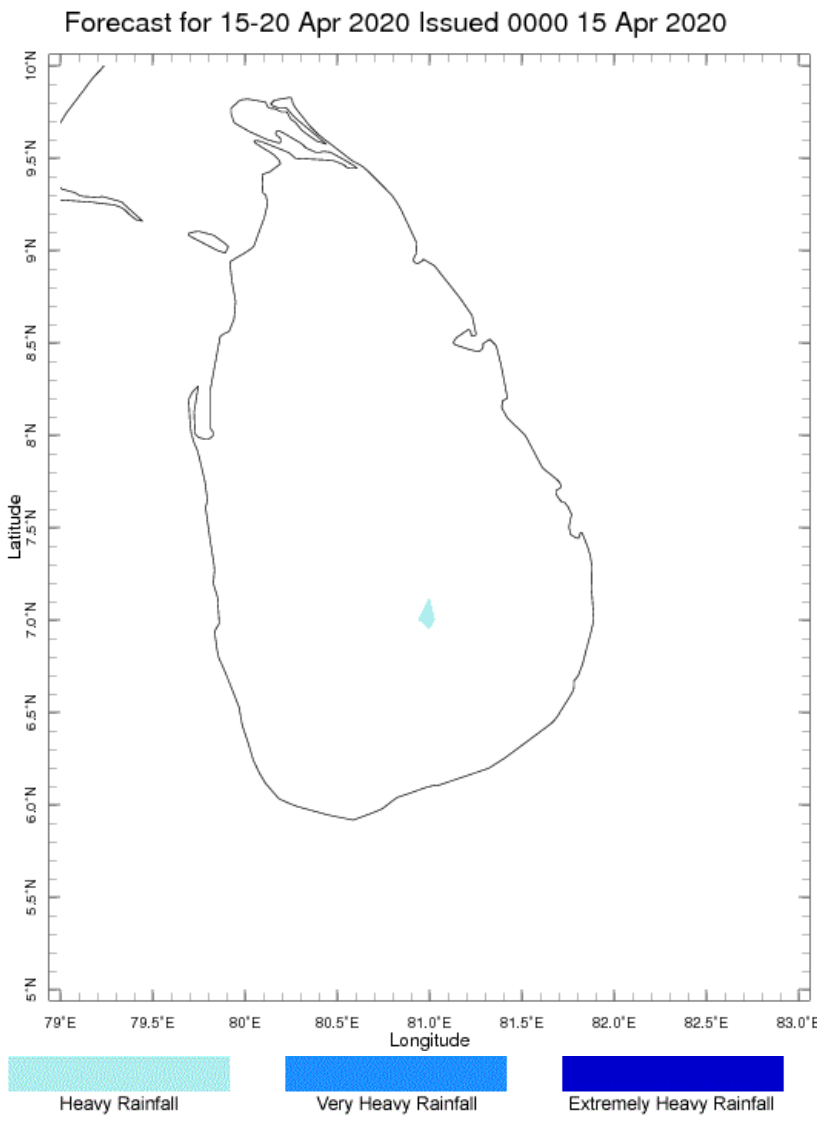
NCEP GFS 1- 14 Day prediction



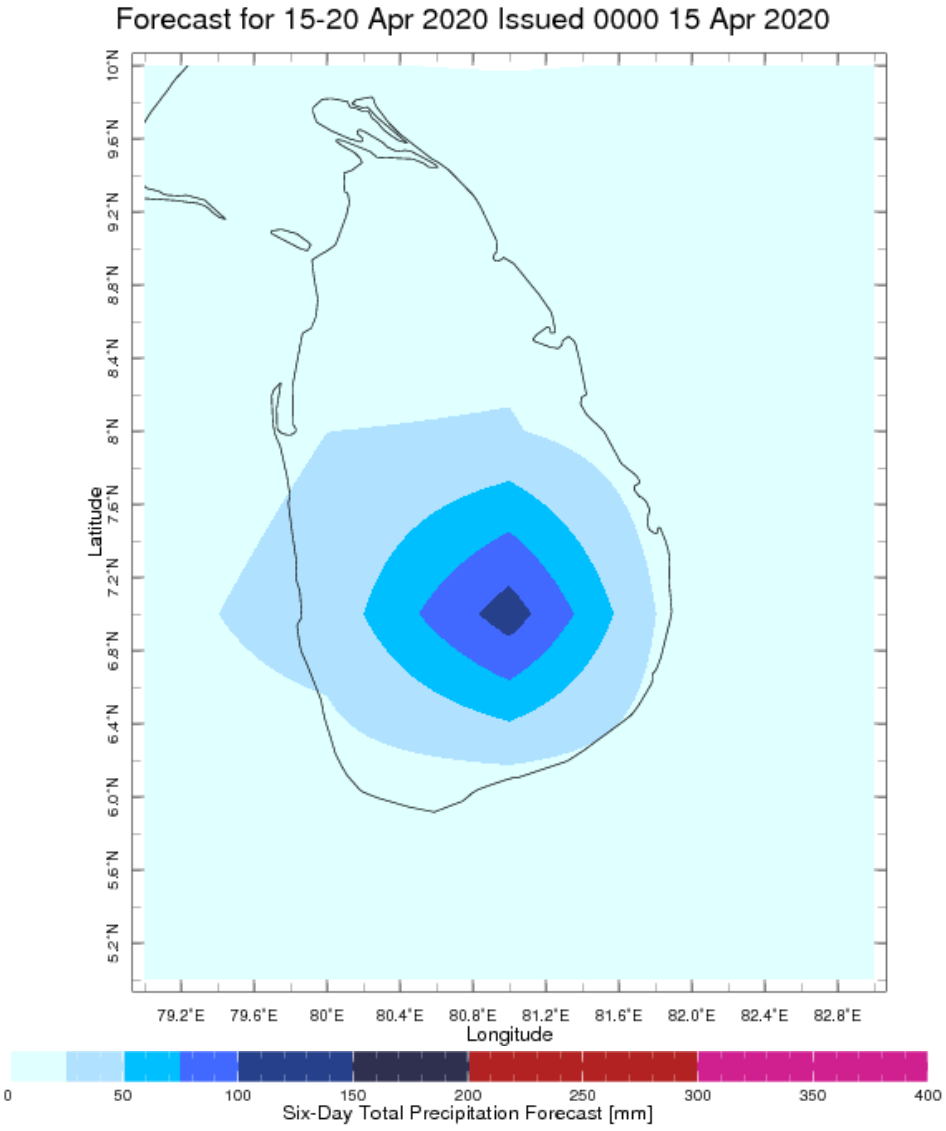


WRF Model Forecast (from IMD Chennai)

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