Federation for Environment, Climate and Technology

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26 December 2019

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 25 mm of total rainfall in the entire islandduring 25-30 Dec.*

Monitored Rainfalls

- *Between 17-23 Dec: up to 160 mm of rainfall was recorded in Ampara district on the 19th.*

Monitored Wind

- *From 17-23 Dec: up to 36 km/h, easterly 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
17th December	Up to 60 mm in Badulla district; up to 50 mm in Kandy, Nuwara Eliya and Ampara districts; up to 30 mm in Anuradhapura, Matale, Polonnaruwa, Batticaloa, Monaragala, and Hambantota districts; and up to 20 mm in Mullaitivu, Kurunegala and Ratnapura districts.
18th December	Up to 70 mm in Monaragala district; up to 60 mm in Badulla and Ampara districts; up to 50 mm in Nuwara Eliya and Hambantota districts; 30 mm in Ratnapura district; and up to 20 mm in Polonnaruwa, Trincomalee, Kurunegala, Matale, Batticaloa, Gampaha, Kegalle and Kandy district.
19th December	Up to 160 mm in Ampara district; up to 140 mm in Polonnaruwa and Matale districts; up to 70 mm in Colombo, Batticaloa, Kegalle, Puttalam, Badulla, Monaragala, and Hambantota districts; up to 60 mm in Anuradhapura, Kurunegala, Kandy and Nuwara Eliya districts; 50 mm in Galle, Matara, Ratnapura, and Kalutara districts; up to 30 mm in Trincomalee and Gampaha districts; and up to 20 mm in Mullaitivu district.

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Date	Rainfall
20th December	Up to 70 mm in Matale and Ampara districts; up to 60 mm in Anuradhapura and Monaragala districts; up to 50 mm in Kurunegala, Kandy, Nuwara Eliya, Badulla and Hambantota districts; 30 mm in Puttalam district; and up to 20 mm in Kegalle, Ratnapura, Galle and Matara districts.
21st December	Up to 30 mm in Batticaloa district; and up to 20 mm in Polonnaruwa, Ampara, Badulla and Monaragala districts.
22nd December	Up to 70 mm in Trincomalee and Anuradhapura districts; up to 60 mm in Vavuniya district; up to 50 mm in Mullaitivu, Polonnaruwa, Batticaloa, Kurunegala and Ratnapura districts; 30 mm in Kilinochchi, Mannar, Puttalam, Kalutara, Galle, Matale and Ampara districts; and up to 20 mm in Jaffna, Kegalle, Kandy, Nuwara Eliya, Monaragala and Hambantota districts.
23rd December	Up to 20 mm in Jaffna and Kilinochchi districts.

Total Rainfall for the Past Week

The RFE 2.0 tool shows total up to 200-300 mm in Badulla and Ampara districts; up to 150-200 mm in Matale and Monaragala districts; and up to 100-150 mm in Kurunegala, Kandy, Nuwara Eliya and Hambantota. Above average rainfall up to 100-200 mm is shown for Matale, Badulla, Monaragala, and Ampara districts and southern regions of Polonnaruwa district; up to 50-100 mm in Batticaloa, Kurunegala, Kandy, Nuwara Eliya, Ratnapura and Hambantota districts; and up to 25-50 mm in Puttalam, Kegalle and Matara districts. Below average rainfall up to 50-100 mm is shown for Trincomalee district; up to 25-50 mm in Anuradhapura district and northern regions of Puttalam district; and up to 10-25 mm in Mannar district.

Monthly Monitoring

During November – Above average rainfall conditions up to 300 mm were experienced by Batticaloa and Ampara districts; up to 240 mm in Gampaha, Colombo, Kalutara, Galle, Kegalle districts and southern regions of Polonnaruwa district; and up to 150 mm in Matale, Badulla, Monaragala, Nuwara Eliya, Ratnapura and Matara districts. Below average rainfall conditions up to 300 mm were experienced by Vavuniya district; up to 150 mm in Jaffna, Kilinochchi, Mullaitivu and several regions of Mannar, Trincomalee, Anuradhapura, Kandy, Puttalam, Kurunegala and Polonnaruwa districts. The CPC Unified Precipitation Analysis tool shows up to 750 mm were experienced by Batticaloa and Ampara districts; and up to 500 mm in most parts of the island.

Ocean State *(Text Courtesy IRI)*

Pacific sea state: December 19, 2019

SSTs in the east-central Pacific were neutral, but near the borderline of weak El Niño levels during mid-December. Patterns in most atmospheric variables have maintained neutral conditions. Most model forecasts favor warm-neutral to borderline weak El Niño SST conditions during early winter, returning to ENSO-neutral from late winter to spring and even early summer. The official CPC/IRI outlook is consistent with these model forecasts.

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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 25th – 31st Dec: Total rainfall up to 75 mm in Batticaloa and Ampara districts; up to 45-55 mm in Trincomalee and Polonnaruwa districts; and up to 35-45 mm in Anuradhapura district.

From 1st – 7th Jan: Total rainfall more than 135 mm in Batticaloa and Ampara districts; up to 85-95 mm in Badulla, Monaragala, Trincomalee and Polonnaruwa districts; and up to 75-85 mm in Anuradhapura and Matale districts.

NOAA Model Forecast:

From 25th – 30th Dec: Total rainfall up to 25 mm is expected in the entire island.

MJO based OLR predictions

For the next 15 days:

MJO shall suppress 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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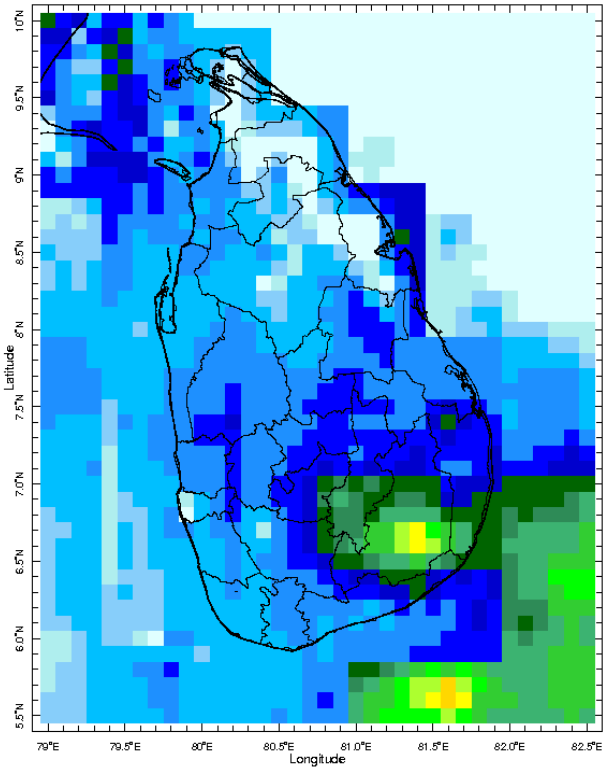
Weekly Hydro- Meteorological Report for Sri Lanka

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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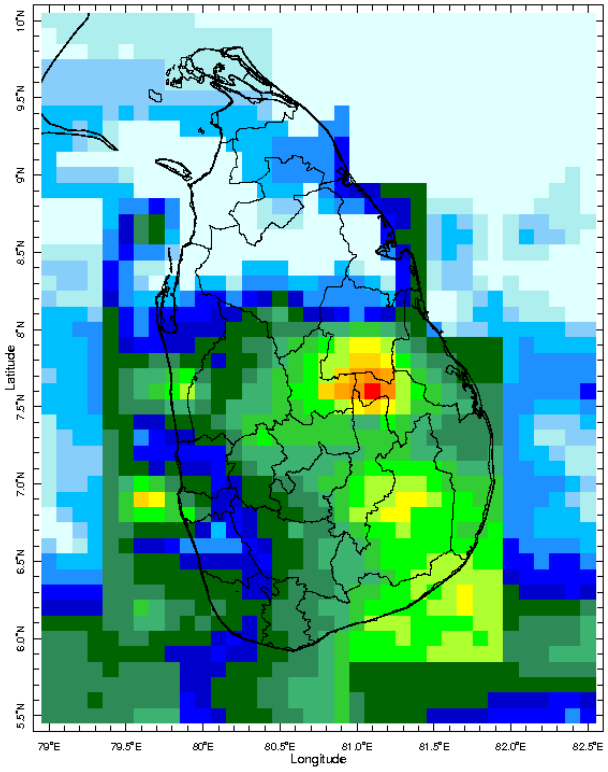

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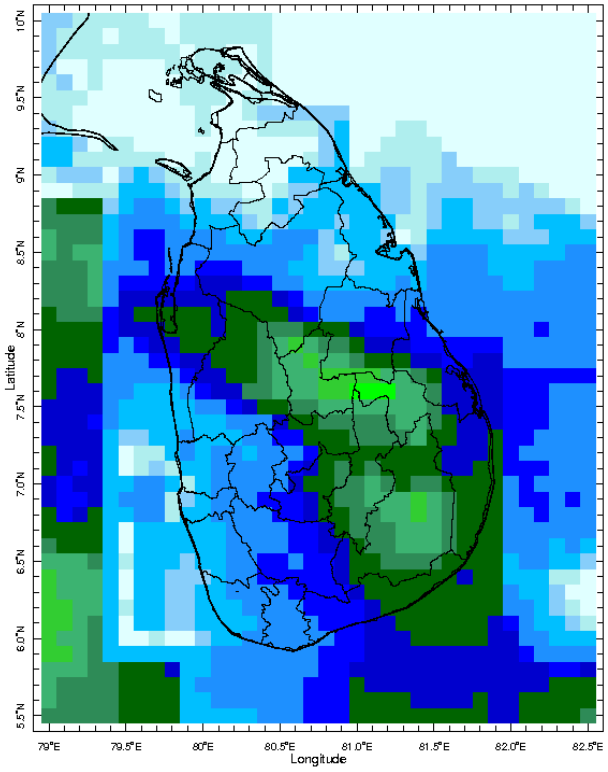

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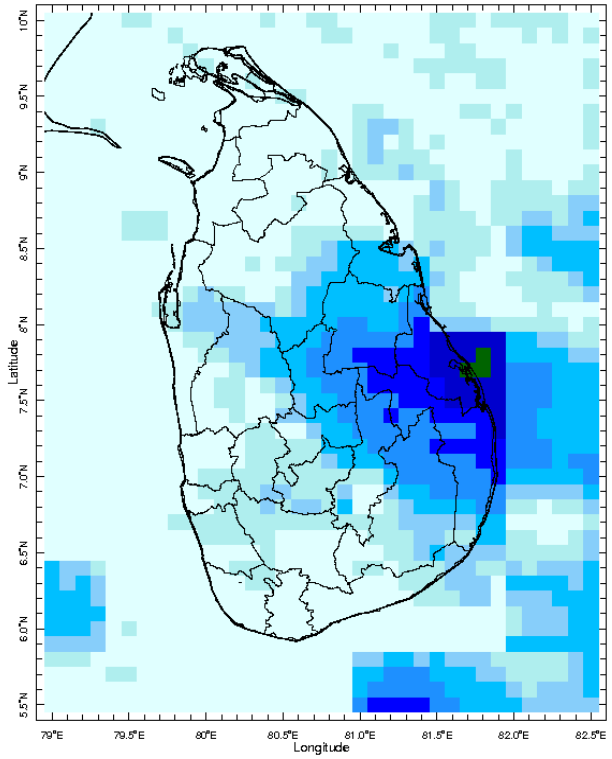
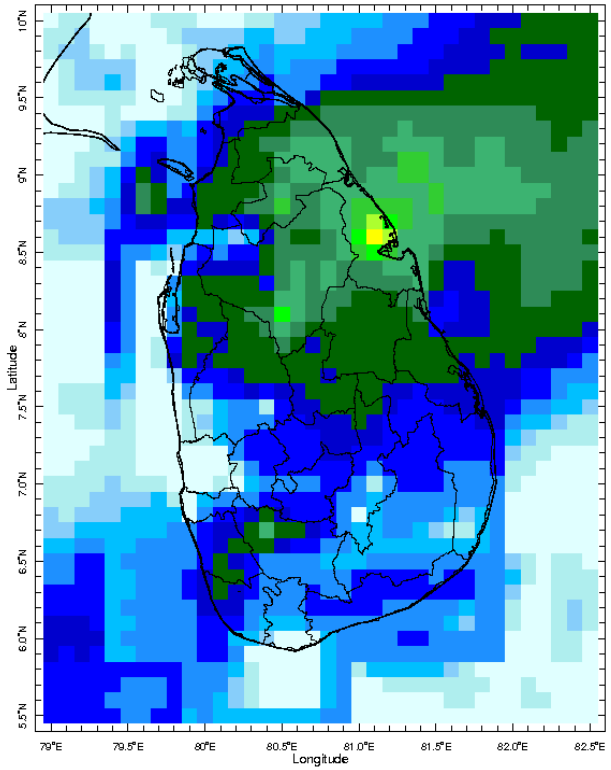
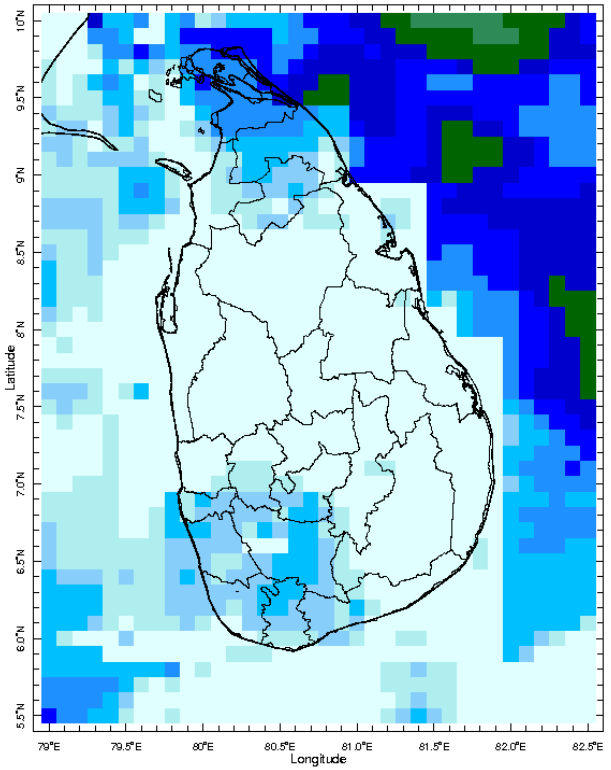


21 Dec 2019



22 Dec 2019



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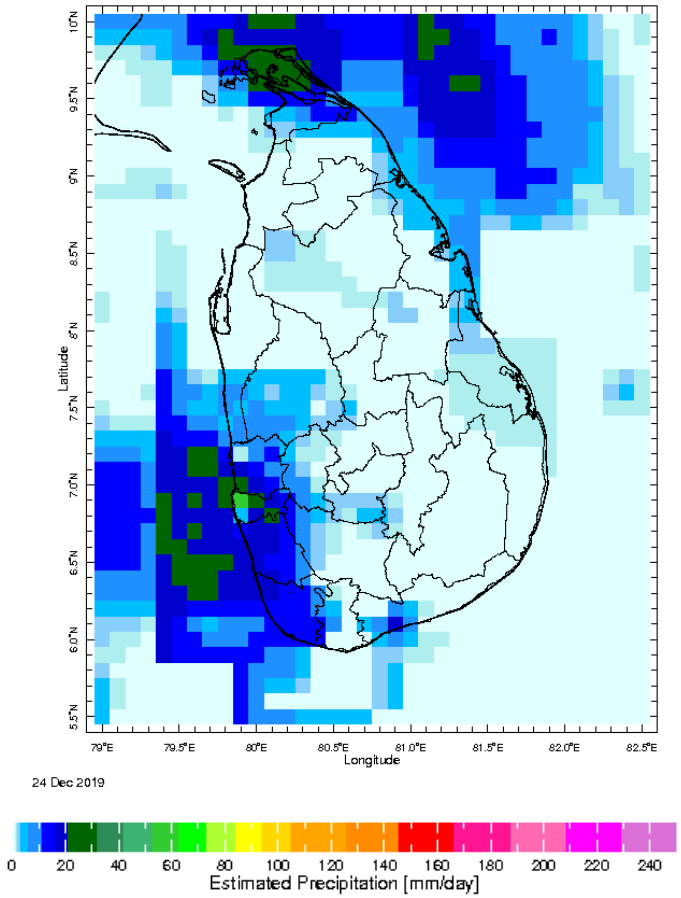
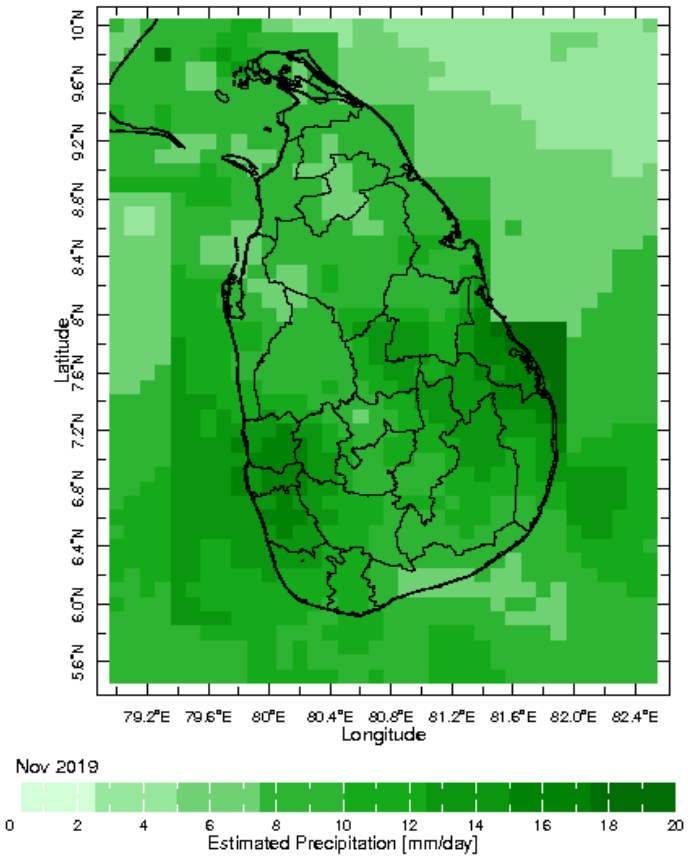
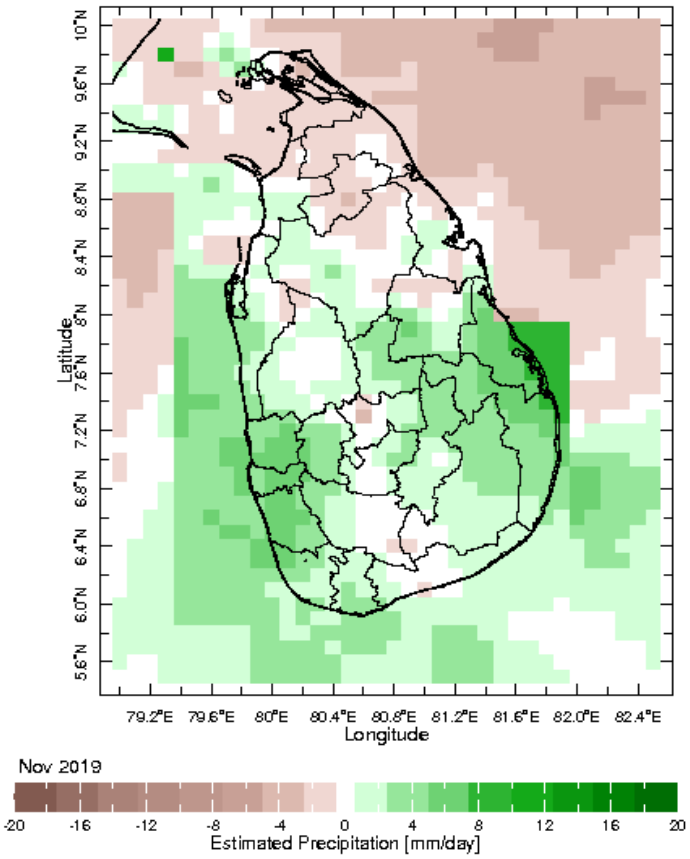


Monthly Rainfall Monitoring

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

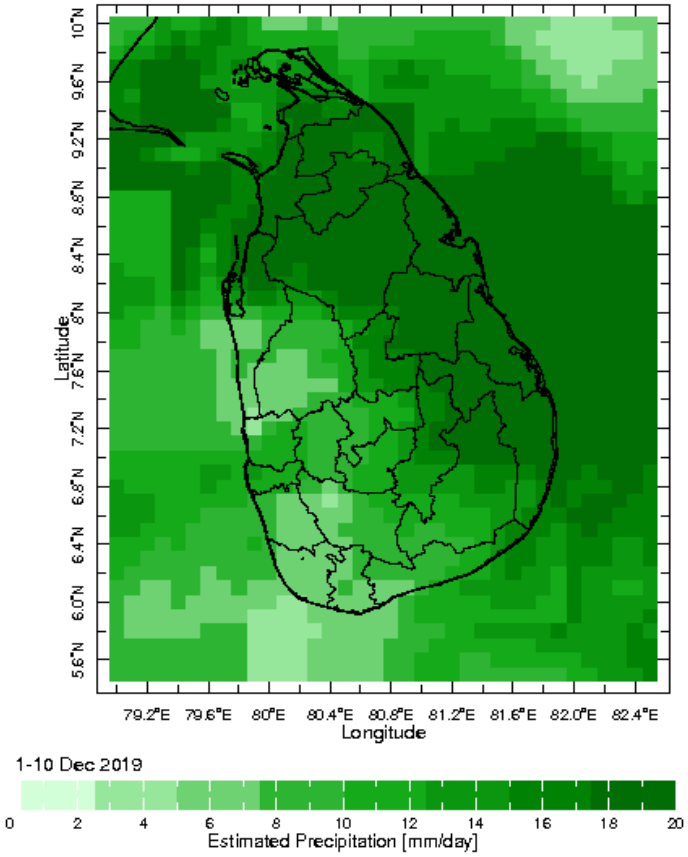


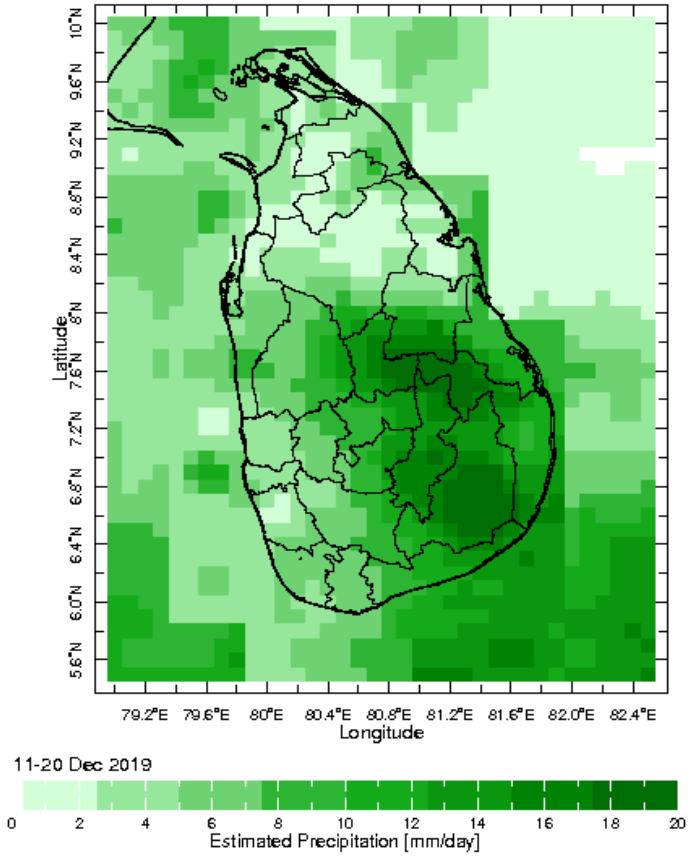
Monthly Average



Monthly Anomaly

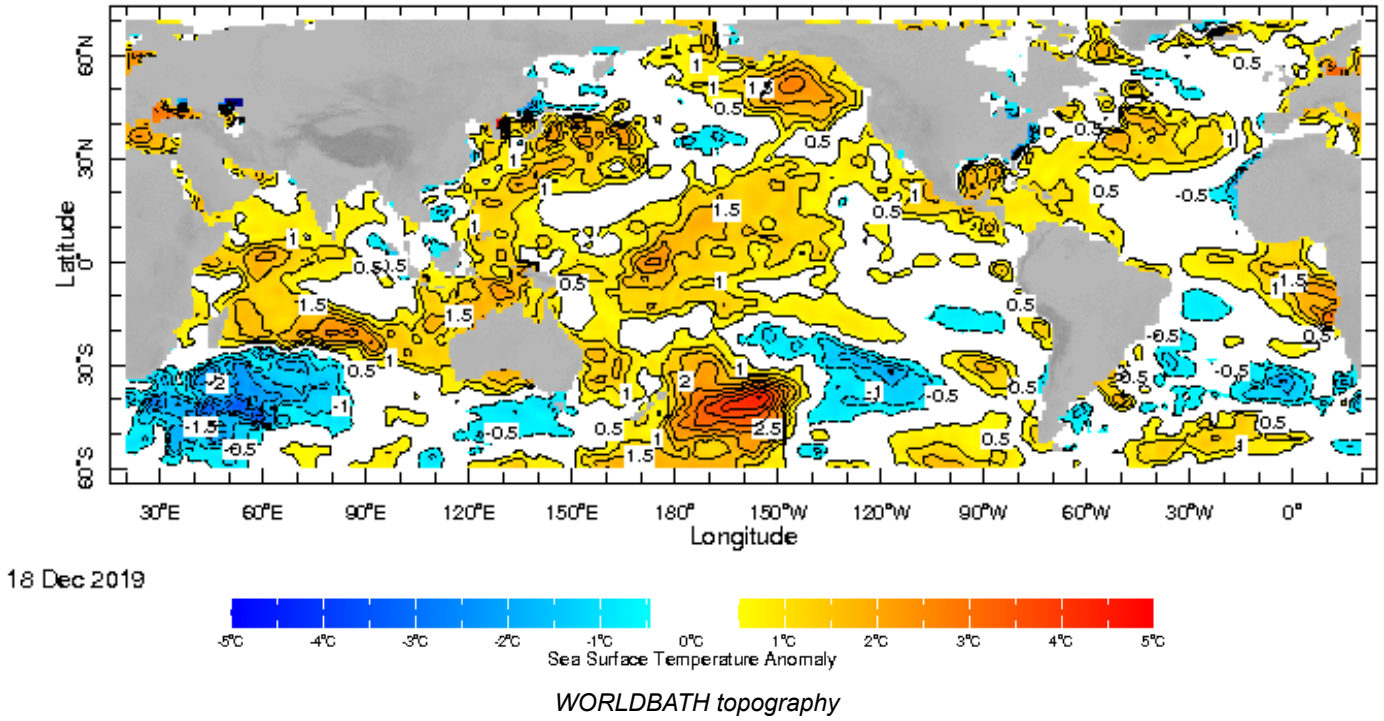
Dekadal (10 Day) Satellite Derived Rainfall Estimates





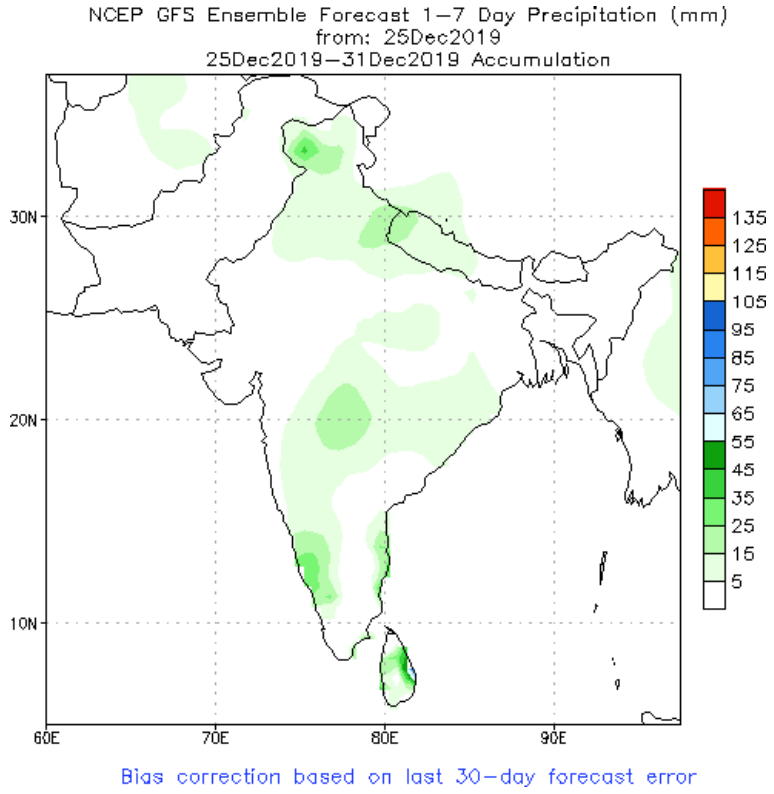
Weekly Average SST Anomalies

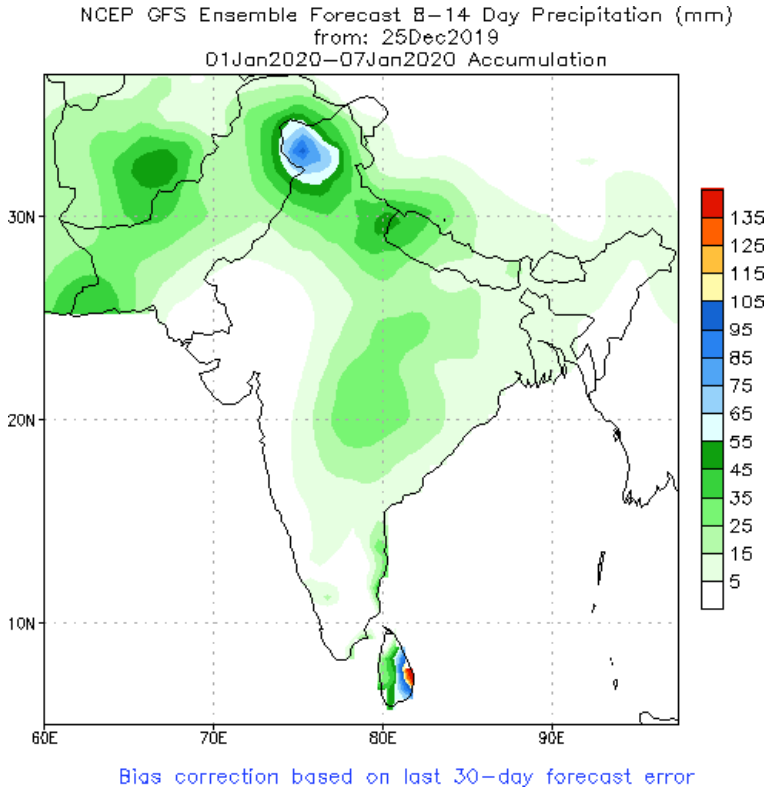
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



PREDICTIONS

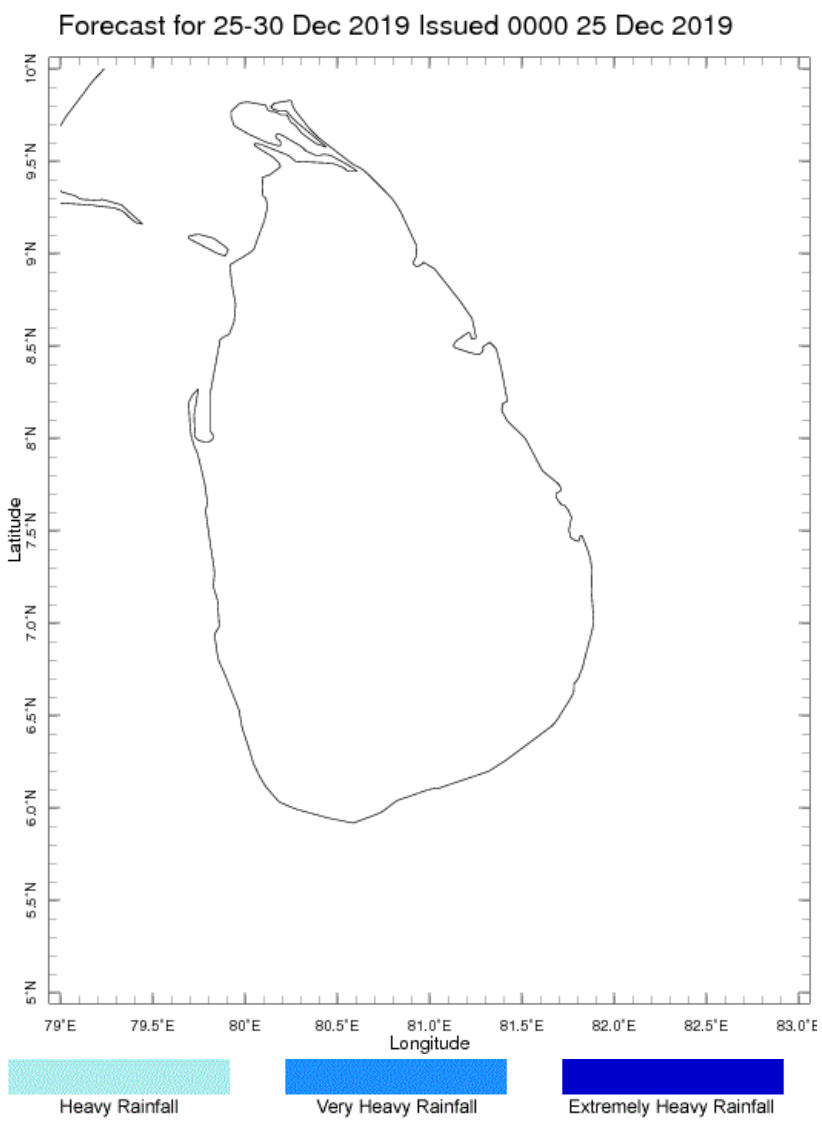
NCEP GFS 1- 14 Day prediction



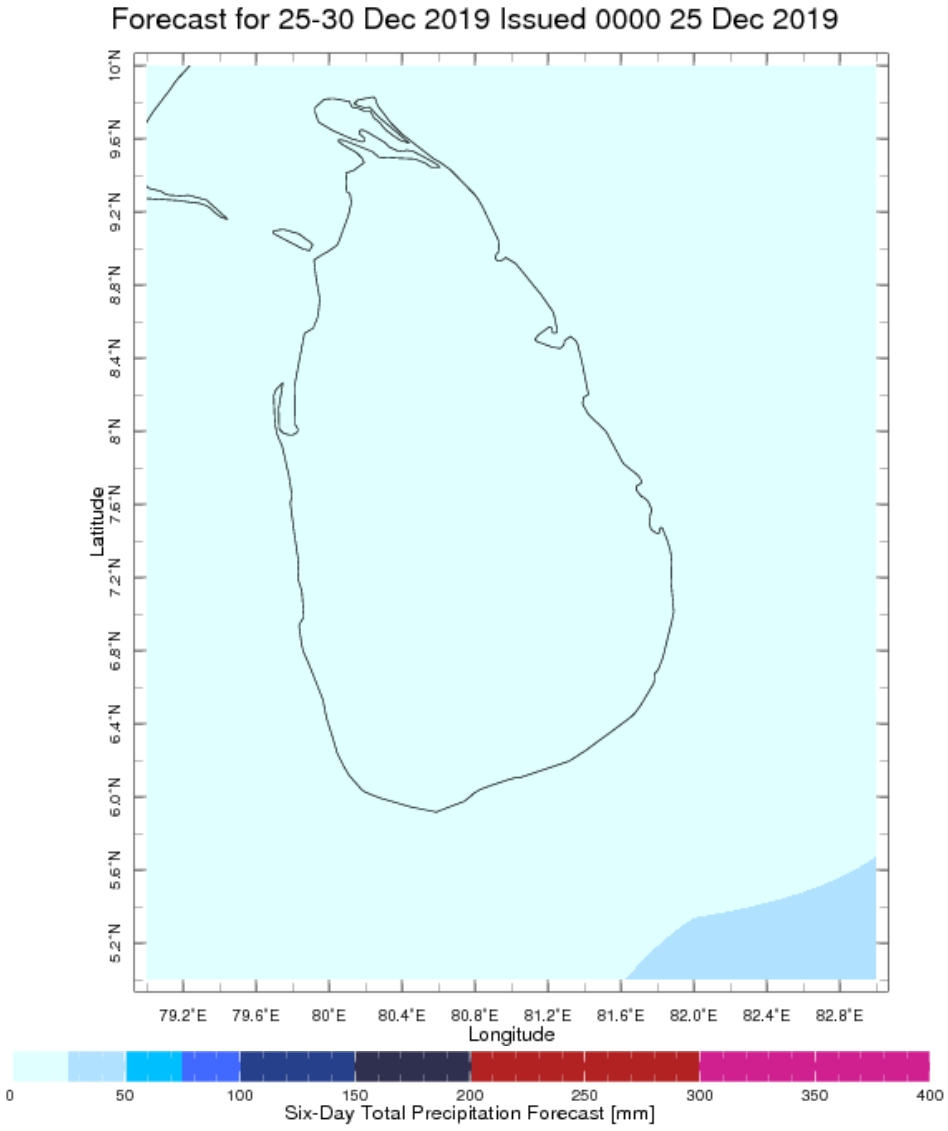


WRF Model Forecast (from IMD Chennai)

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