

Federation for Environment, Climate and Technology

c/o, Maintenance Office, Mahaweli Authority, Digana Village, Rajawella, Sri Lanka. Phone (+94) 81-2376746, (+94) 81-2300415 E mail: fectsl@gmail.com Web Site http://www.climate.lk

6 November 2020

EXPERIMENTAL CLIMATE MONITORING AND PREDICTION

By: Nipuni Alahakoon, Ushan Adithya, Azra Munas, Tuan Hadgie, Lareef Zubair and Michael Bell¹ (FECT and IRI¹)



•Between 5th-11th Nov: up to 85 mm rainfall will be experienced by the southwest and northwest of the island.

Monitoring Rainfall



•Between 29th Oct- 4th Nov: up to 120 mm in Ampara district on 30th Oct.



HIGHLIGHTS

•From 28th Oct - 4th Nov:up to 4 km/h northwesterly winds were experienced by the Northern and Southeast of the island.



Monitored Sea Surface

•Less than 0.5°C above average sea surface temperature was observed in the seas around Sri Lanka.

Weekly Monitoring from 29th October – 4th November

Monitored Rainfalls





Federation for Environment, Climate and Technology

c/o, Maintenance Office, Mahaweli Authority, Digana Village, Rajawella, Sri Lanka. Phone (+94) 81-2376746, (+94) 81-2300415 E mail: fectsl@gmail.com Web Site http://www.climate.lk

Total Rainfall for the Past Week

The RFE 2.0 tool shows total up to 150 - 200 mm in Moneragala, Badulla and Ratnapura districts; up to 100 - 150 mm in Nuwara Eliya, Matale, Ampara, Batticaloa, Polonnaruwa and Anuradhapura districts; up to 75 - 100 mm in Hambantota, Galle, Matara, Kalutara, Kandy, Kegalle, Kurunegala, and Puttalam districts; up to 50 - 75 mm in Trincomalee, Mannar, Colombo, Gampaha and Vavuniya districts; up to 25 - 50 mm Mullaitivu and Jaffna districts and up to 10 - 25 mm in Kilinochchi district.

Above rainfall average up to 100 – 200 mm in Moneragala and Badulla districts; up to 50 – 100 mm in Ratnaputa, Matale, Ampara and Batticaloa districts; up to 25 – 50 mm in Kalutara, Galle, Matara, Hambantota, Nuwara Eliya, Kandy, Kurunegala, Polonnaruwa and Anuradhapura districts; up to 10 – 25 mm in Kegalle, Mannara and Puttalam, districts; Below rainfall average up to 50 – 100 mm in Jaffna district; up to 25 – 50 mm in Kilinochchi, Mullaitivu, Vavuniya, Trincomalee, Gampaha and Colombo districts.

Monthly Monitoring

During October – Above average rainfall conditions up to 4 mm in Vavuniya, Anuradhapura, Badulla, Ampara and Moneragala districts; up to 2 mm in Mannar, Batticaloa, Ratnapura and Hambantota districts; Below average rainfall up to 8 mm in Galle, Kalutara and Colombo district; up to 6 mm in Matara, Gampaha, Kegalle, Nuwara Eliya, Kandy, Kurunegala, Puttalam, Jaffna districts; up to 4 mm in Kilinochchi, Mullaitivu, Polonnaruwa, Matale and Trincomalee districts.

Ocean State (*Text Courtesy IRI*)

Pacific sea state: October 28, 2020

Equatorial Eastern Pacific SST decreased to near the La Niña threshold in late-October, and the atmospheric variables were either ENSO-neutral or indicative of weak La Niña conditions. The average of the forecasts of many models just short of the borderline of weak La Niña SST conditions through fall, becoming slightly weaker beginning in early winter.

Indian Ocean State

Less than 0.5 ^oC above average sea surface temperature was observed in the seas around Sri Lanka.

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 5th – 11th November: Total rainfall up to 85 mm in Northeast and Southwest of the island; up to 75 mm rainfall in North, Northwest, west, east and central of the island and up to 55 mm rainfall in South and Southeast of the island.



Federation for Environment, Climate and Technology

c/o, Maintenance Office, Mahaweli Authority, Digana Village, Rajawella, Sri Lanka. Phone (+94) 81-2376746, (+94) 81-2300415 E mail: fectsl@gmail.com Web Site http://www.climate.lk

From 12th – **18**th **November:** Total rainfall up to 75 mm in East and Southwest of the island and up to 55 mm rainfall in North, Northeast, Northwest, West, Central, South and Southeast of the island.

NOAA Model Forecast:

From 24th – **29**th **September:** Total rainfall up to 75 mm in Badulla district; up to 50 mm in Ampara, Moneragala, Ratnapura, Nuwara Eliya, Kandy, Matale, Polonnaruwa, Anuradhapura, Batticaloa, Trincomalee, Vavuniya, Mullaitivu, Kilinochchi and Jaffna districts; and up to 25 mm in Mannar, Puttalam, Kurunegala, Kegalle, Gampaha, Colombo, Kalutara, Galle, Matara and Hambantota districts.

MJO based OLR predictions

For the next 15 days:

MJO shall suppress the rainfall over Sri Lanka from 4th – 18th November.

Interpretation

Monitoring

Rainfall: There has been high rainfall over the Eastern Province with significant rainfall over the Southern Province. Overall, however the rainfall is less than what should be seasonable in November. November is a month which typically has the highest rainfall in Sri Lanka.

Wind: As is typical for early November the wind direction is changing on the average from coming from South and South West to coming from North and North-East.

Temperatures: are cooling from the highs in the previous month as is seasonable.

Predictions

MJO: is in a phase that suppresses rainfall over Sri Lanka.

La Nina: has set in according to WMO while the thresholds that IRI and NOAA/CPC use are yet to be reached. Yet, the SST conditions in the Eastern Equatorial shall behave similar to La Nina phase. The SST in the Indian Ocean is reacting slowly and it is still warm but cooling. Usually with La Nina, the rainfall from October to December is suppressed but this is not getting picked up in enough models maybe because the rest of the SST is not typical for the La Nina.

¹ International Research Institute for Climate and Society, Columbia University Water Center, Earth Institute at Columbia University, New York.



FECTWeb





Past reports available at

http://fectsl.blogspot.com/





Facebook



@climatelk



www.climate.lk

www.tropicalclimate.org

Weekly Climate Bulletin for Sri Lanka

Inside This Issue

- Monitoring

 Daily Rainfall Monitoring
 Weekly Rainfall Monitoring
 Woekly Rainfall Monitoring
 Dekadal (10 Day) Satellite Derived Rainfall Estimates
 Weekly Temperature Monitoring
 Weekly Wind Monitoring
 Weekly Average SST Anomalies

- g. weekly Average SST Anomalies
 2. Predictions

 a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
 b. GFS (T574) Model Rainfall Forecast from RMSC New Delhi
 c. WRF Model Rainfall Forecast from IMD Chennai
 d. MJO Related OLR Forecast

 - e. Weekly Precipitation Forecast from IRI f. Weekly Temperature Forecast g. Weekly Wind Forecast

 - Seasonal Predictions from IRI



MONITORING

Daily Rainfall Monitoring

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













2 Nov 2020

3 Nov 2020



Weekly Rainfall Monitoring

The following figures show the total satellite observed rainfall in the last week in Sri Lanka. The figure in the left is the total 7-day rainfall from NOAA Climate Prediction Center (CPC) Unified Precipitation Analysis and the figure in the right is the total 7-day rainfall from CPC RFE 2.0 Satellite Rainfall Estimates. The bottom two figures are the respective anomalies.



Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis

7-day Prop Anomalies (mm) 290CT2020-04NOV2020 30 100 75 50 25 15 -15 -25 20N -50 -75 -100 101 60E zό 8ÓE aģ

Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis Climatology (1981-2010)

RFE2 7-Day Total Rainfall (mm) Period: 290ct2020 - 04Nov2020





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



The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in the past 30 days compared to normal rainfall in this period.



CPC Unified Gauge 30-Day Percent of Normal Rainfall (%)



RFE2 30-Day Percent of Normal Rainfall (%) Period: 060ct2020 - 04Nov2020

RFE2 30-Day Total Rainfall (mm)

Period: 060ct2020 - 04Nov2020



The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



Sri-Lanka

Data Source: CPC (Gauge-Based) Unified Precipitation (Climatology 1981-2010) (updated on D0Z04N0V2020)

Dekadal (10 Day) Satellite Derived Rainfall Estimates



Weekly Temperature Monitoring



Weekly Wind Monitoring

The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



Weekly Average SST Anomalies

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



Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC



NCEP GFS 1-14 Day prediction



IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India









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.



Forecast for 24-29 Sep 2020 Issued 0000 24 Sep 2020



Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

The Outgoing Longwave Radiation (OLR) is a proxy for rainfall. This can be used to identify convective rain clouds based on the MJO phase. Violet and Blue shading indicates enhanced tropical weather and Orange shading indicates suppressed conditions. The following figure shows the forecasts of MJO associated anomolous OLR for the next 15 days from the Constructed Analogue (CA) model forecasts.



Weekly Temperature Forecast

Weekly Minimum and Maximum Temperature prediction from the GFS model (from NOAA CPC)



Weekly Wind Forecast

Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)



GFS 700mb week1 Mean Vector Wind Total (m/s)



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%).

IRI Multi–Model Probability Forecast for Precipitation for November–December–January 2021, Issued October 2020 IRI Multi–Model Probability Forecast for Temperature for October–November–December 2020, Issued September 2020



Subscribe to our Weekly climate bulletin & Maldives report

email address

Subscribe

Follow @climate

Contact Us email: fectsl@gmail.com phone: (+94) 81 2300415 blog: www.fectsl.blogspot.com Foundation for Environment, Climate & Technology C/O Mahaweli Authority of Sri Lanka, Digana Village, Rajawella, SRI LANKA