

# HIGHLIGHTS

**Rainfall Prediction**



- Heavy rainfall ( $\geq 115$  mm) is predicted for the Southern, Sabaragamuwa, Western, Uva, Central and Eastern provinces during 5 - 11 Oct.
- Fairly heavy rainfall ( $\geq 65$  mm) is predicted for the North Western and North Central provinces during 5 - 11 Oct.

**Monitored Rainfalls**



- During the last week, average daily rainfall over Sri Lanka was 17.0 mm and hydro catchment area received 18.0 mm.
- Extreme rainfall was recorded in southern coast.

**Monitored & Predicted Wind**



- From 26 Sep - 2 Oct, up to 15 m/s of south westerly winds were at 850 mb (1.5 km).
- During 6 - 12 Oct, up to 6 m/s of southwesterly winds are expected at 850 mb (1.5 km).

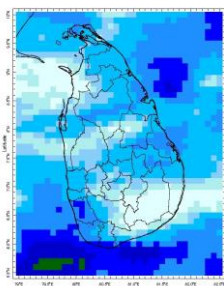
**Monitored Sea & Land Temp**



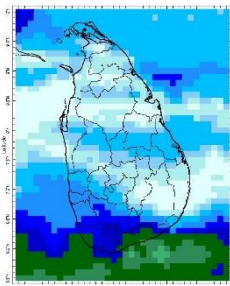
- Sea surface temperature around Sri Lanka was 0.25 - 1.0°C above normal.
- From 27 Sep - 4 Oct, maximum daily temperature was recorded in Vavuniya (36.5°C), Polonnaruwa (35.8°C) and Mullaitivu (35.4°C).

## Monitoring Rainfall

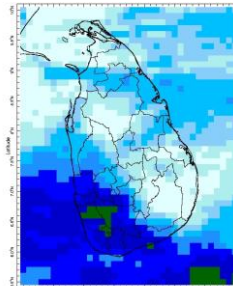
### Daily Estimates for Rainfall from 26<sup>th</sup> September - 3<sup>rd</sup> October 2023



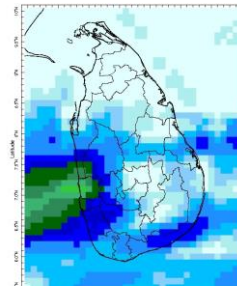
26 September



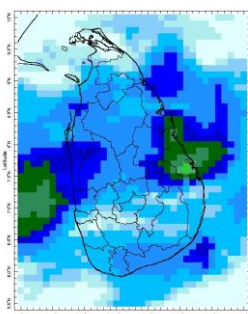
27 September



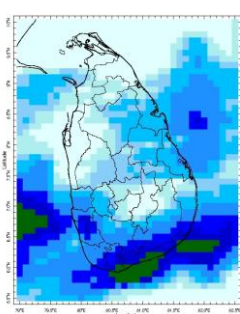
28 September



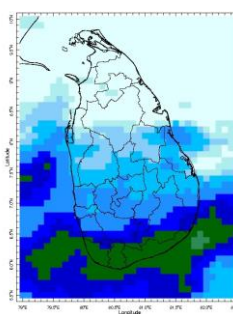
29 September



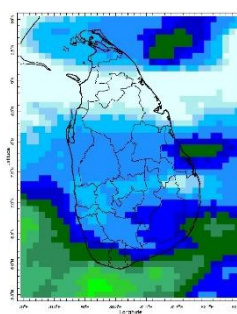
30 September



1 October



2 October



3 October



Federation for Environment, Climate & Technology

### Federation for Environment, Climate and Technology

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## Ocean State *(Text Courtesy IRI)*

### **Pacific sea state: October 2, 2023**

El Niño Mode has set in according to NOAA since 8<sup>th</sup> of June. Equatorial sea surface temperatures (SSTs) are above average across the central and eastern Pacific Ocean early-October. El Niño conditions will continue through the Northern Hemisphere winter (with greater than a 95% chance through January - March 2024).

### **Indian Ocean State**

Sea surface temperature around Sri Lanka was 0.5 °C above normal to the Western and Southern half of the country in 12<sup>th</sup> - 18<sup>th</sup> September, 2023. A positive Dipole Mode has set in across the Indian Ocean since 8<sup>th</sup> of June.

## Predictions

### Rainfall

#### **14 - day prediction: NOAA NCEP models**

**From 5<sup>th</sup> October - 11<sup>th</sup> October:**

Total rainfall by Provinces:

Rainfall (mm)	Provinces
≥ 135	Southern, Sabaragamuwa, Western, Uva
125	Central
115	Eastern
95	North Western
65	North Central
≤ 35	Northern

**From 12<sup>th</sup> October - 18<sup>th</sup> October:**

Total rainfall by Provinces:

Rainfall (mm)	Provinces
≥ 135	Southern, Sabaragamuwa, Western, Uva
125	Central
115	Eastern
105	North Western
75	North Central
45	Northern

### MJO based OLR predictions

#### **For the next 15 days:**

MJO shall near neutral the rainfall during 5<sup>th</sup> - 14<sup>th</sup> October and slightly enhance the rainfall during 15<sup>th</sup> - 19<sup>th</sup> October for Sri Lanka.

## Interpretation

### Monitoring

**Rainfall:** During the last two weeks, there had been very heavy rainfall over the following areas: Hambantota, Ratnapura

Daily Average Rainfall in the Met stations for previous week of (27<sup>th</sup> September - 4<sup>th</sup> October) = 17.0 mm

Maximum Daily Rainfall: 226.4 mm & Minimum Daily Rainfall: 0.0 mm.

Region	Average rainfall for last 8 days (mm)	Average temperature for last 8 days (°C)	
		Maximum	Minimum
Northern plains	3.5	32.2	25.4
Eastern hills	2.7	26.4	19.5
Eastern plains	6.5	33.2	25.0
Western hills	20.3	25.5	19.6
Western plains	31.2	29.7	23.9
Southern plains	46.0	28.9	23.9

Region	Average rainfall for last 8 days (mm)	Daily maximum rainfall for last 8 days (mm)	Daily minimum rainfall for last 8 days (mm)
Hydro catchment	18.0	120.0	0.0

**Wind:** South westerly winds prevailed in the sea area and around the island last week.

**Temperatures:** The temperature anomalies were near normal for the country driven by the warm SST's.

## Predictions

**Rainfall:** During the next week (5<sup>th</sup> October - 11<sup>th</sup> October), heavy rainfall ( $\geq 115$  mm) is predicted for the Southern, Sabaragamuwa, Western, Uva, Central, and Eastern provinces and fairly heavy rainfall ( $\geq 65$  mm) is predicted for the North Western and North Central provinces and less rainfall is predicted for the rest of the country.

**Temperatures:** The temperature will remain above normal for some parts of the Northern and Eastern provinces and below normal for some parts of the Central and Uva provinces during 6<sup>th</sup> - 12<sup>th</sup> October.

**Teleconnections:** A positive Dipole Mode has set in across the Indian Ocean since 8<sup>th</sup> of June. MJO shall near neutral the rainfall during 5<sup>th</sup> - 14<sup>th</sup> October and slightly enhance the rainfall during 15<sup>th</sup> - 19<sup>th</sup> October for Sri Lanka.

**Seasonal Precipitation:** The precipitation forecast for the October-November-December, 2023 season shows a 50 - 60% tendency toward above normal precipitation for the country.

### Terminology for Rainfall Ranges

	Rainfall (During 24 hours of period)
Light Showers	Less than 12.5 mm
Light to Moderate	Between 12.5 mm and 25 mm
Moderate	Between 25 mm and 50 mm
Fairly Heavy	Between 50 mm and 100 mm
Heavy	Between 100 mm and 150 mm
Very Heavy	More than 150 mm

Tropical Climate Guarantee, Federation of Environment, Climate and Technology, Columbia University Water Center, <sup>1</sup> International Research Institute for Climate and Society, , Earth Institute at Columbia University, New York.



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## Weekly Climate Bulletin for Sri Lanka

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#### 2. Predictions

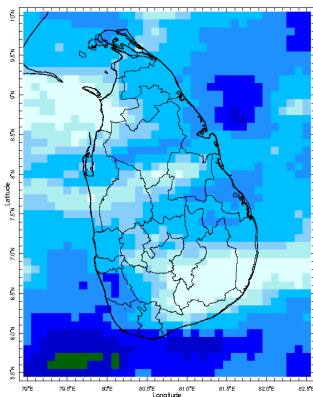
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
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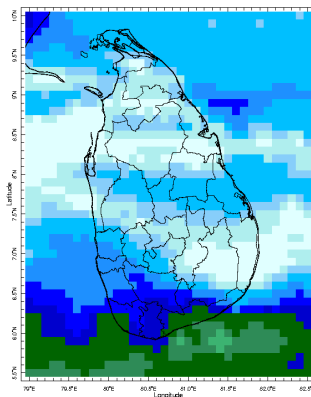
### MONITORING

#### Daily Rainfall Monitoring

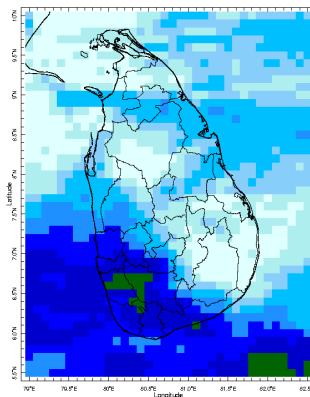
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



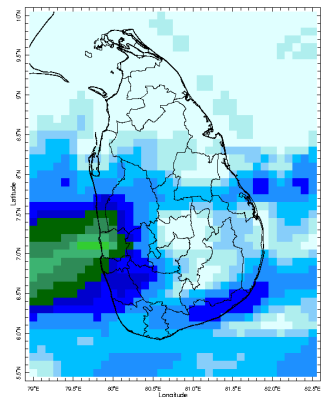
26 Sep 2023



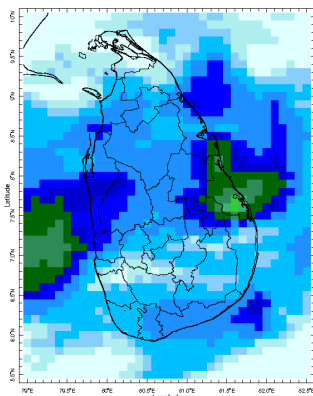
27 Sep 2023



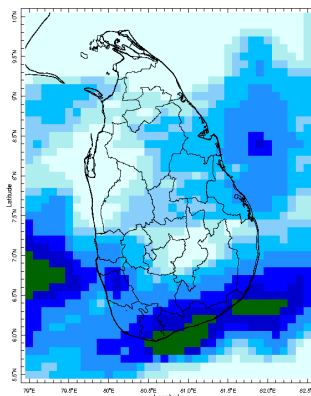
28 Sep 2023



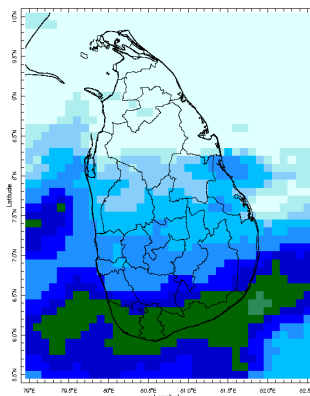
29 Sep 2023



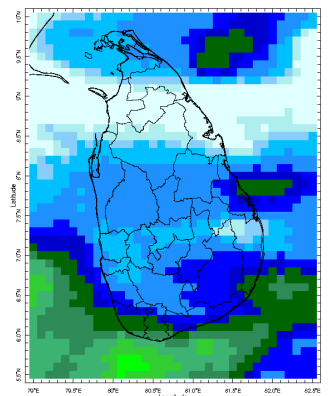
30 Sep 2023



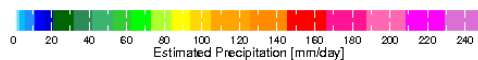
1 Oct 2023



2 Oct 2023

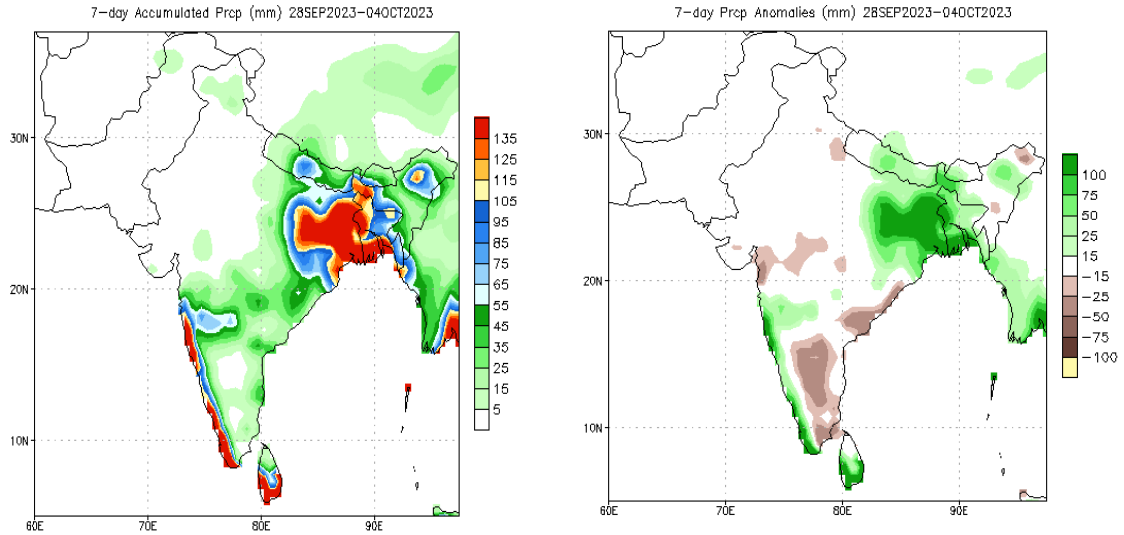


3 Oct 2023



## 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.

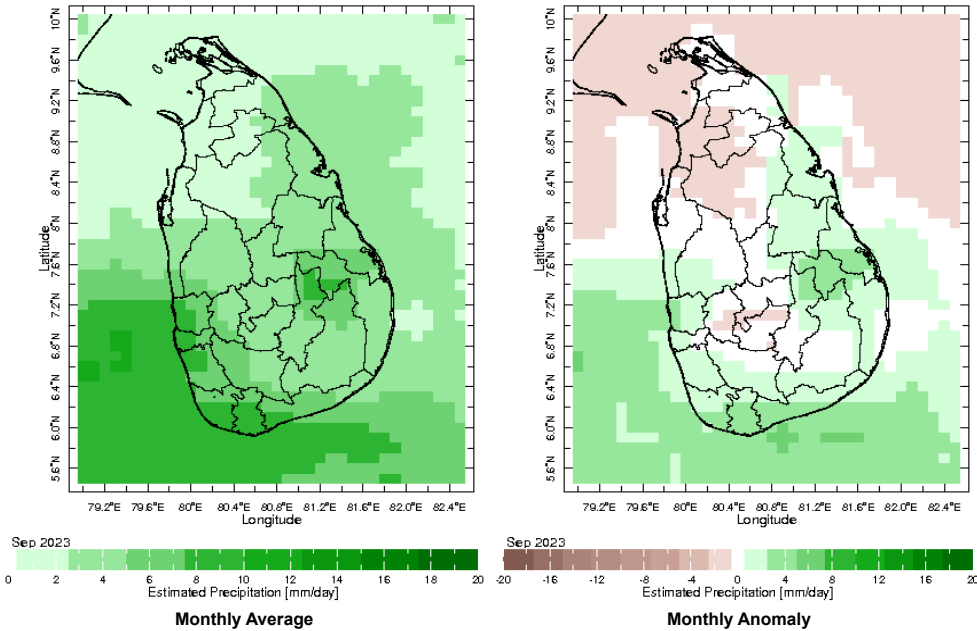


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis

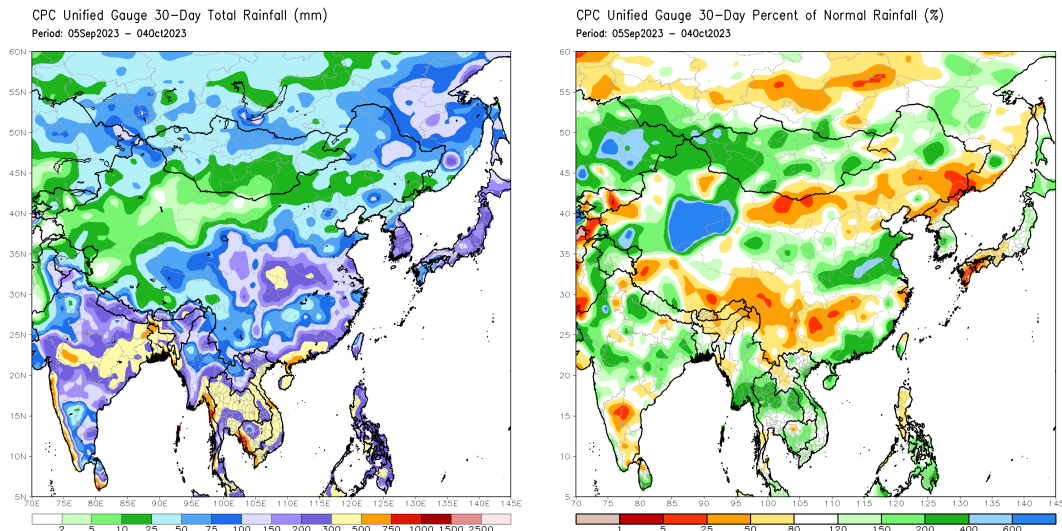
Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis Climatology (1991-2020)

## Monthly Rainfall Monitoring

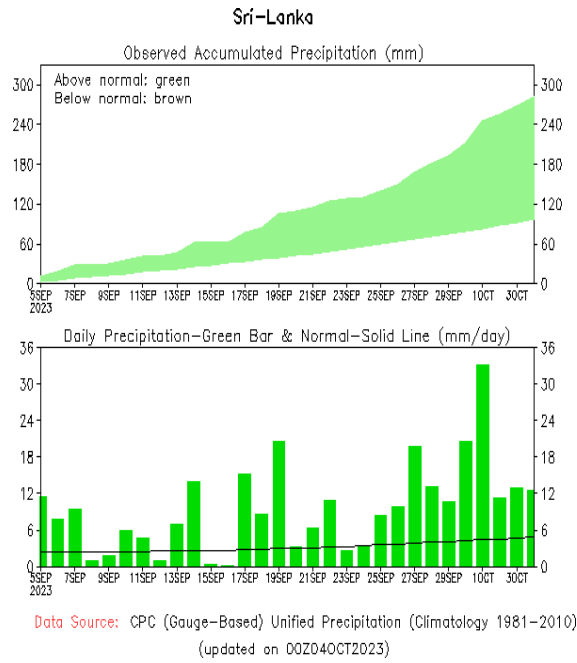
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places with above average rainfall. Darker shades show higher magnitudes in rainfall



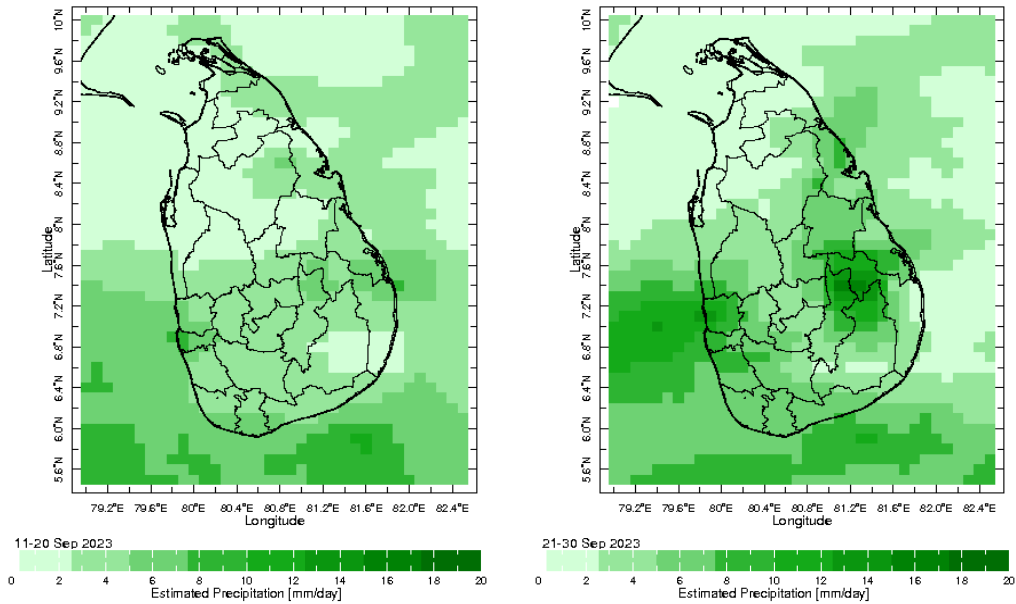
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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



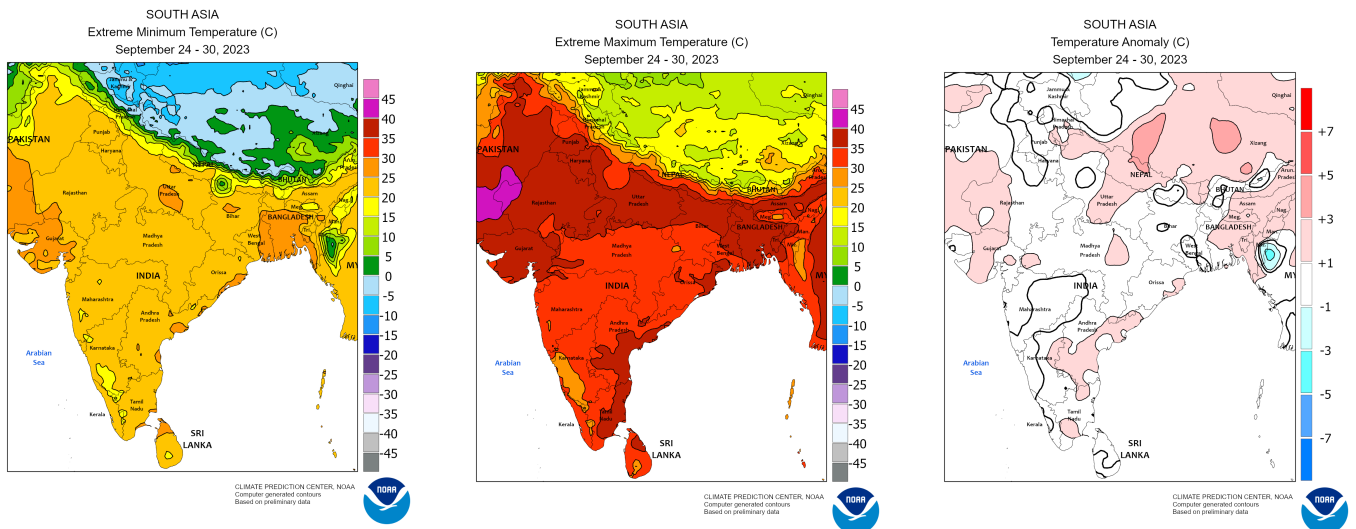
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



**Dekadal (10 Day) Satellite Derived Rainfall Estimates**

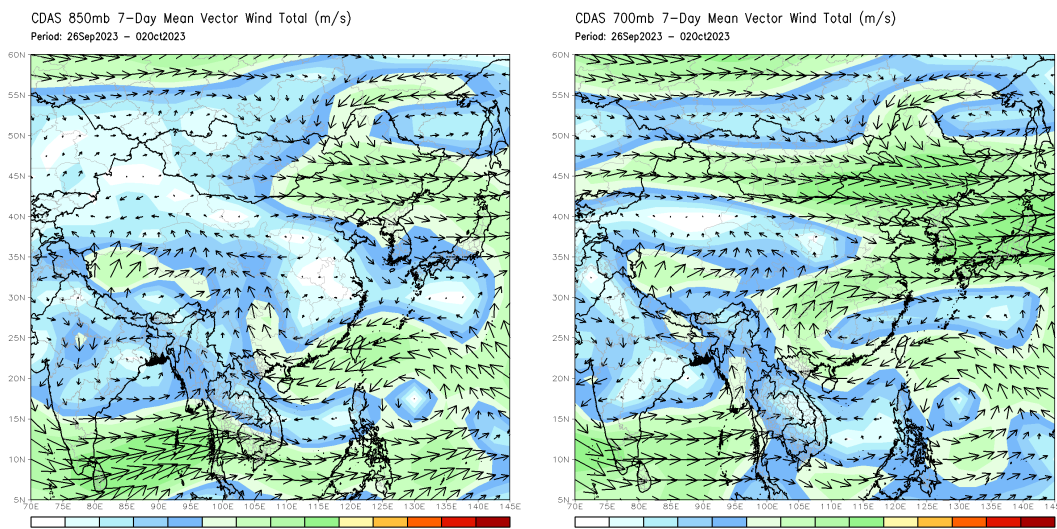


**Weekly Temperature Monitoring**



## Weekly Wind Monitoring

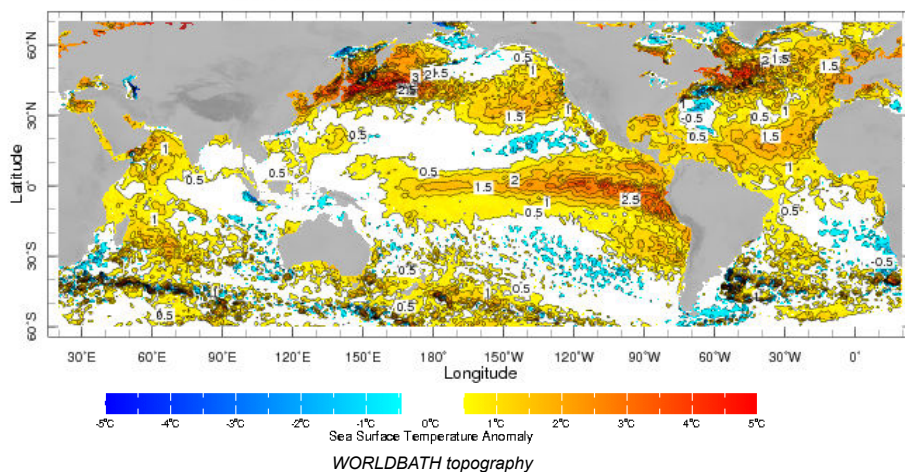
The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



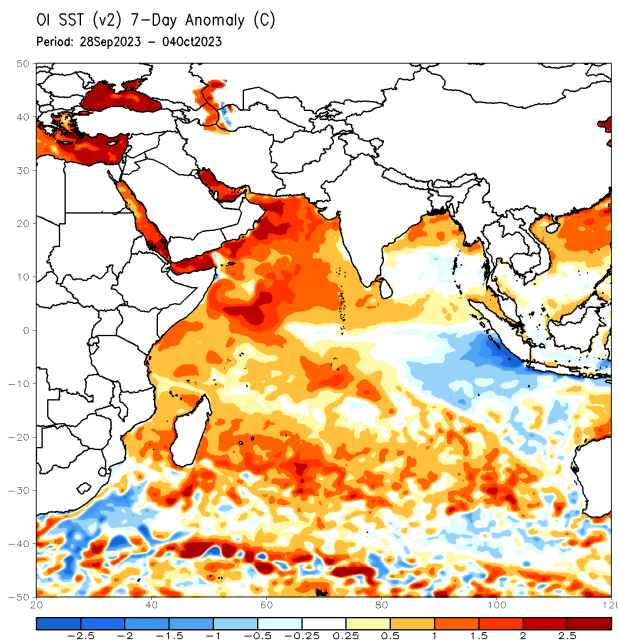
## Weekly Average SST Anomalies

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

zlev 0.0 meters Time 12-18 Sep 2023

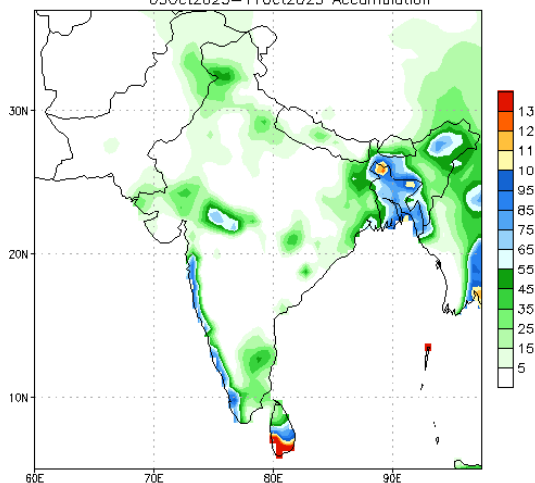


Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC



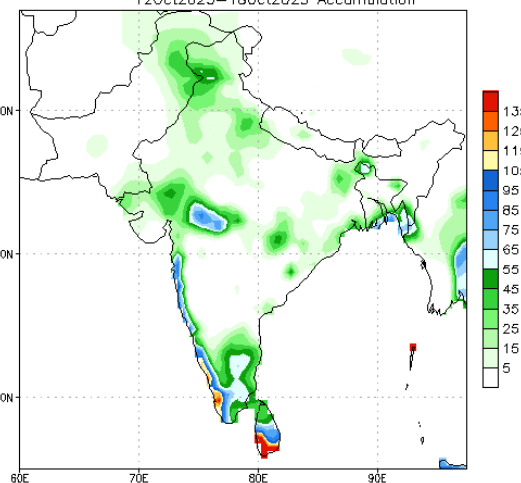
**NCEP GFS 1- 14 Day prediction**

NCEP GFS Ensemble Forecast 1-7 Day Precipitation (mm)  
from: 05Oct2023  
05Oct2023-11Oct2023 Accumulation



Bias correction based on last 30-day forecast error

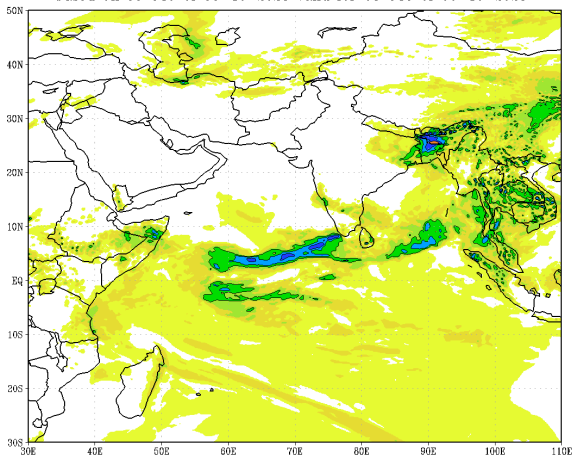
NCEP GFS Ensemble Forecast 8-14 Day Precipitation (mm)  
from: 05Oct2023  
12Oct2023-18Oct2023 Accumulation



Bias correction based on last 30-day forecast error

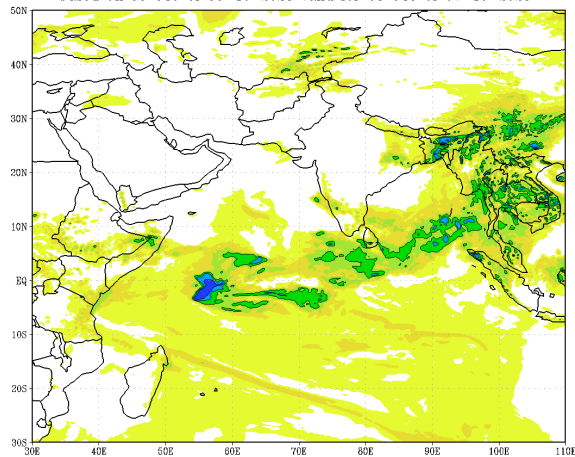
**IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India**

IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (24 HR)  
based on 00 UTC of 05-10-2023 valid for 03 UTC of 06-10-2023



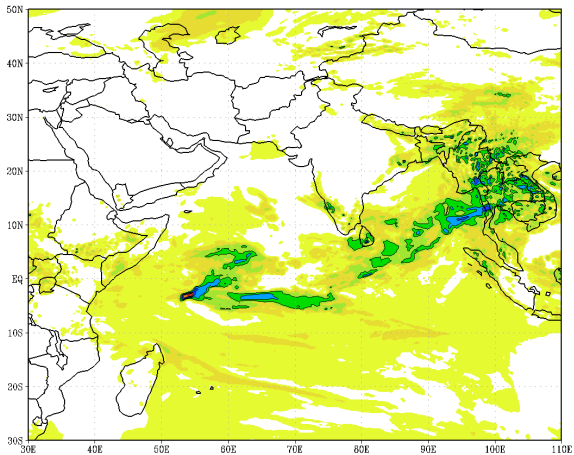
(Background does not depict political boundary)

IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (48 HR)  
based on 00 UTC of 05-10-2023 valid for 03 UTC of 07-10-2023



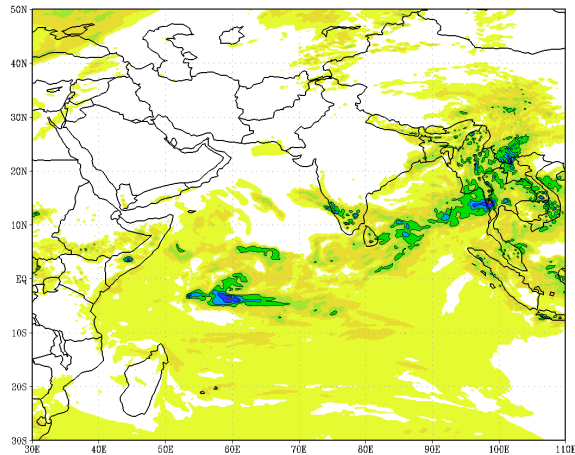
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IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (72 HR)  
based on 00 UTC of 05-10-2023 valid for 03 UTC of 08-10-2023



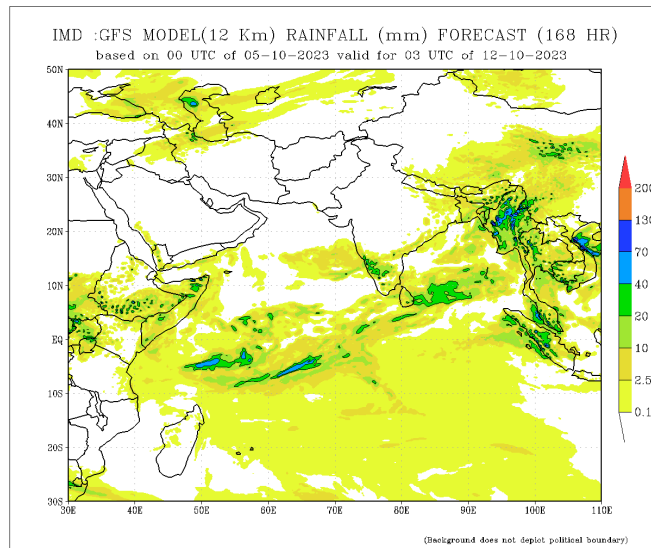
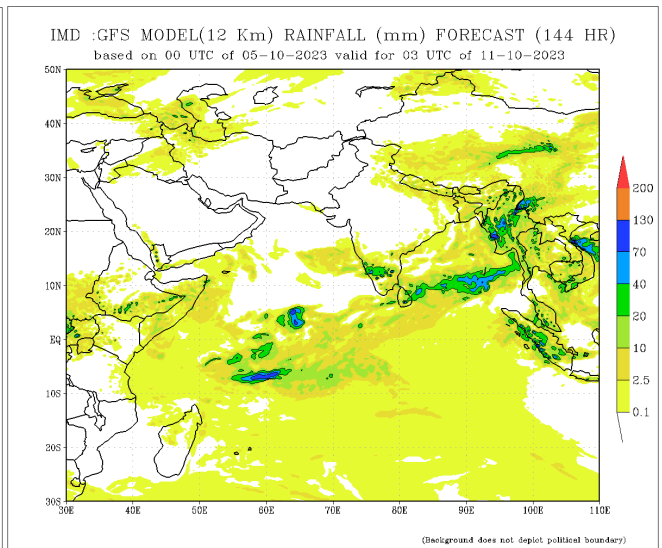
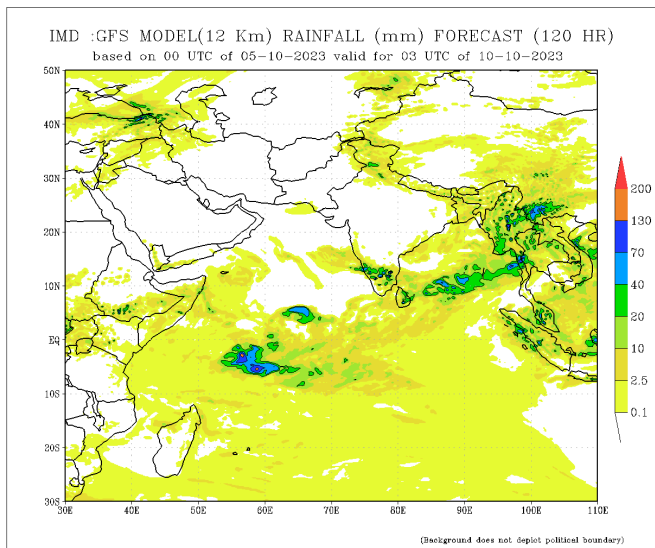
(Background does not depict political boundary)

IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (96 HR)  
based on 00 UTC of 05-10-2023 valid for 03 UTC of 09-10-2023



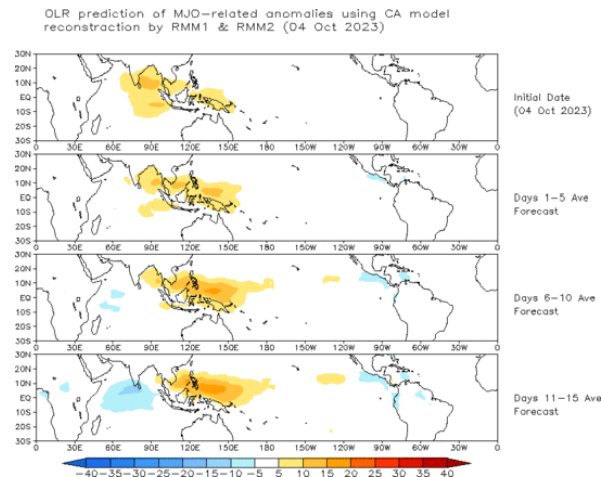
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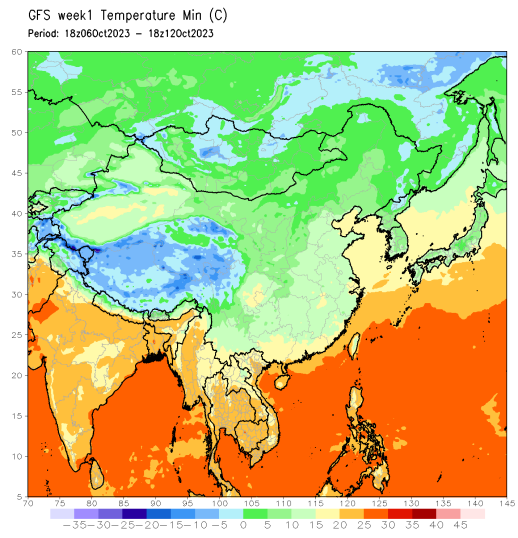
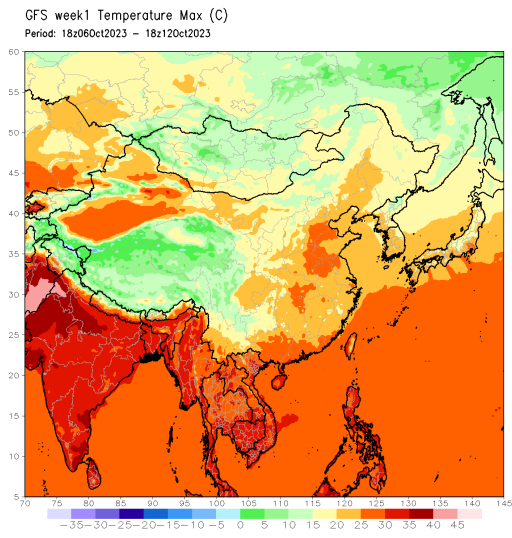
### Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

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 anomalous OLR for the next 15 days from the Constructed Analogue (CA) model forecasts.



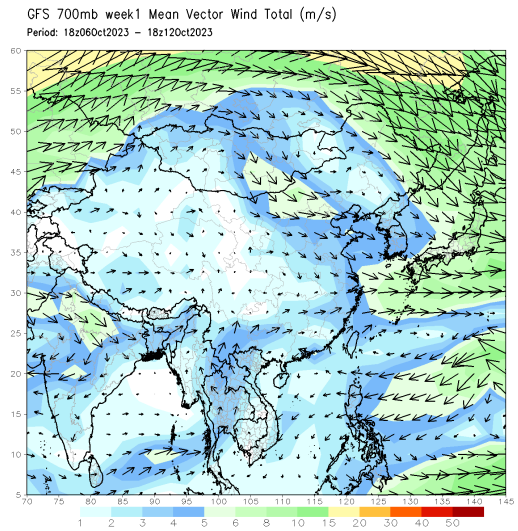
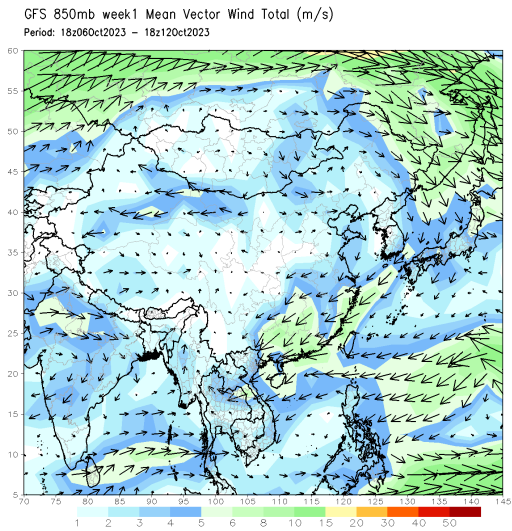
## Weekly Temperature Forecast

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



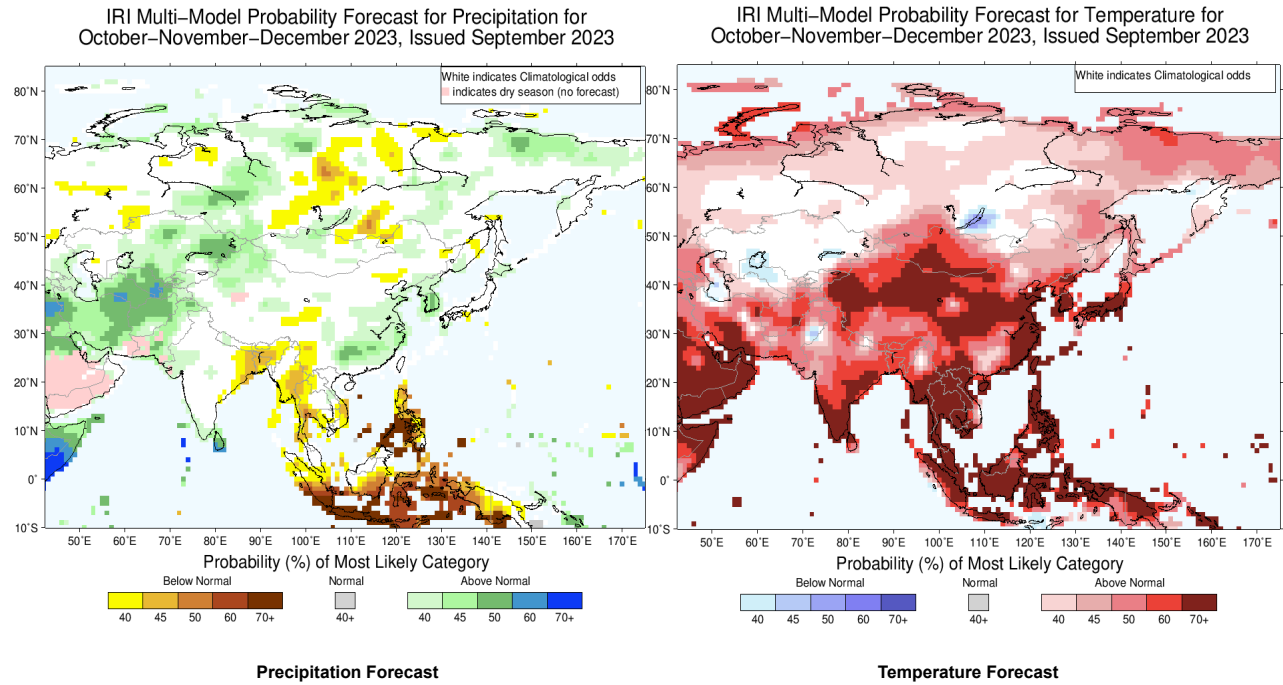
## Weekly Wind Forecast

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



## 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%).



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FECT is a federation of 7 organizations registered in four countries which works in countries across the Indian Ocean Islands and its littoral. Over the last 20 years, we have had operations in Africa, South Asia, South-East Asia but now it is mostly in the Indian Ocean Islands.

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