16 DECEMBER 2022

CLIMATE MONITORING AND PREDICTION FOR SRI LANKA

HIGHLIGHTS

Rainfall Prediction

- *Fairly heavy (≥75 mm) rainfall is predicted for the Eastern, Western, Sabaragamuwa, Uva, Central, and North Central provinces and ≥ 55 mm rainfall is predicted for the rest of the country during 14th - 20th December.*

Monitored Rainfalls

- *During the last week, average daily rainfall over Sri Lanka was 5.8 mm & hydro catchment areas received 3.0 mm on average*
- *Due to the intense impact of cyclonic storm 'Mandous', highest average rainfall (10.2 mm) was received to the Northern plains of the country .*

Monitored Wind

- *From 5th - 11th Dec, up to 10m/s of north westerly winds were experienced by the effect of cyclonic storm 'Mandous' at 850 mb level over the island .*
- *During 15th - 21st Dec, up to 8m/s of north easterly winds are expected to the country.*

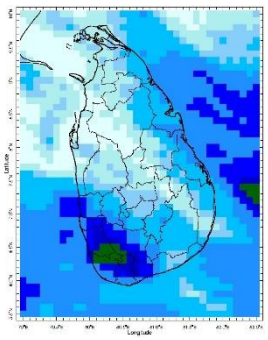
Monitored Sea & Land Temp

- *Sea surface temperature around Sri Lanka was above normal to the western, eastern, and southern half of the country.*
- *Land surface temperature remained near normal.*

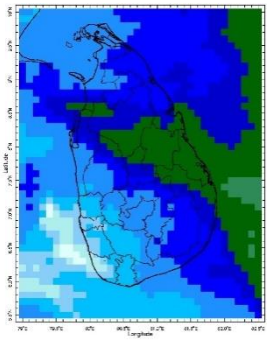
Monitoring

Rainfall

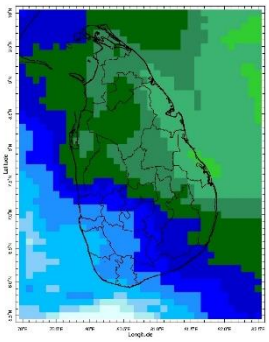
Daily Estimates for Rainfall from 5th December – 12th December 2022



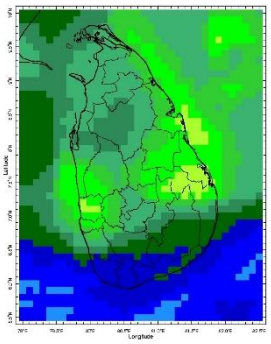
5 December



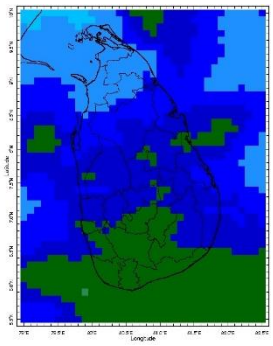
6 December



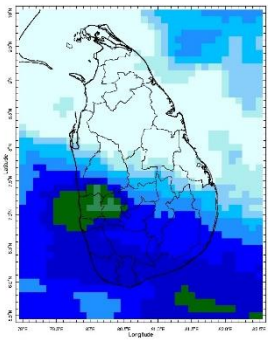
7 December



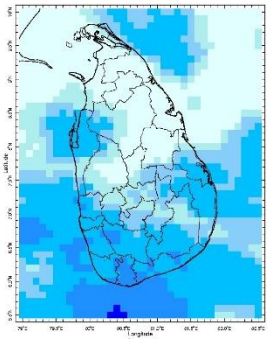
8 December



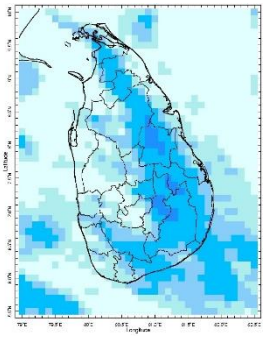
9 December



10 December



11 December



12 December

Federation for Environment, Climate & Technology

Federation for Environment, Climate and Technology

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Ocean State *(Text Courtesy IRI)*

Pacific sea state: December 12, 2022

Equatorial sea surface temperatures (SSTs) are below average across most of the Pacific Ocean mid - December. The tropical Pacific atmosphere is consistent with La Niña. A large majority of the models indicate La Niña is favored to continue into the winter, with equal chances of La Niña and ENSO-neutral during January-March 2023. In February-April 2023, there is a 71% chance of ENSO-neutral.

Indian Ocean State

Sea surface temperature around Sri Lanka was above 0.5℃ to the western, eastern, and southern half of the country in 30th November, 2022. Across the Indian Ocean, a classical negative Indian Ocean Dipole prevails as is typical during a La Niña.

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 14th December – 20th December:

Total rainfall by Provinces:

Rainfall	Provinces
85 mm	Eastern
75 mm	Western, Sabaragamuwa, Uva, Central, North Central
65 mm	Northern
55 mm	North Western, Southern

From 21st December – 27th December:

Total rainfall by Provinces:

Rainfall	Provinces
65 mm	Western
55 mm	Sabaragamuwa, Eastern
45 mm	Northern, Uva, Central, North Central
≤ 35 mm	Southern, North Western

MJO based OLR predictions

For the next 15 days:

MJO shall near neutral the rainfall during 14th – 18th December, slightly increase the rainfall during 19th – 23rd December, and moderately increase the rainfall during 24th – 28th December for Sri Lanka.

Interpretation

Monitoring

Rainfall: During the last two weeks, there had been very heavy rainfall over the following area: Jaffna

Daily Average Rainfall in the Met stations for previous week of (6th December – 13th December) = 5.8 mm

Rmax: 145.1 mm & Rmin: 0.0 mm.

Region	Average rainfall for the Last 8 days
Northern Plains	10.2 mm
Eastern	5.0 mm
Western	4.3 mm
Southern Plains	1.6 mm

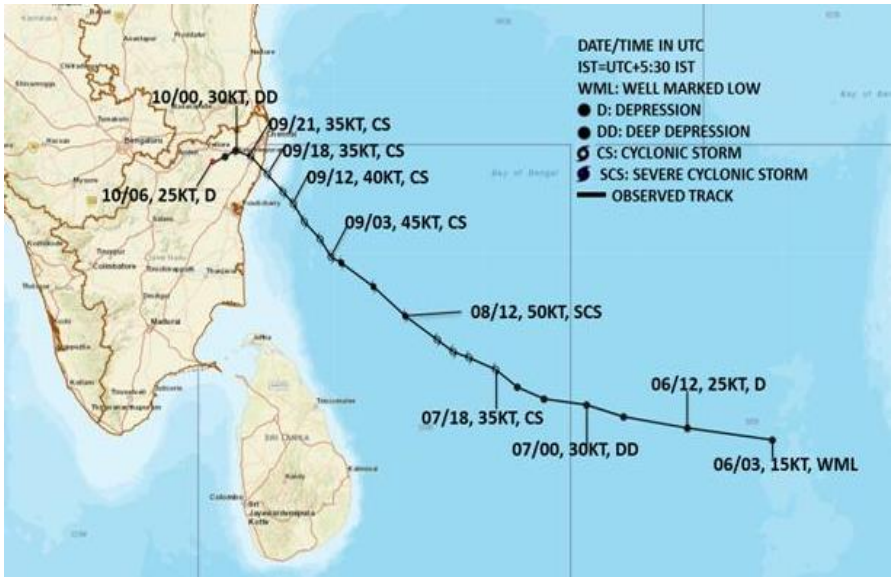
The Hydro Catchment Areas recorded 3.0 mm of average rainfall for the last week

Rmax: 36.0 mm & Rmin: 0.0 mm.

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

Temperatures: The temperature anomalies were below normal for Central, North Central provinces and some parts of the Northern, Eastern, Western, Sabaragamuwa, and North Western provinces, driven by the warm SST's.

Cyclone: The cyclonic storm 'Mandous' originated as a low pressure area over the southwest Bay of Bengal (8.2° N 88.2° E) and intensified into the cyclonic storm (CS) on 7th December. Then it moved west-northwestwards and developed as a severe cyclonic storm (SCS) on 8th December, maintaining 85 - 95 kmph peak wind speed for north Tamilnadu and Puducherry coasts. After making landfall on 10th December, it weakened into a deep depression (DD) over North Tamil Nadu and adjoining South Karnataka and North Kerala.



Observed track of cyclonic storm 'MANDOUS' over the BoB during 6th-10th December, 2022: IMD

Predictions

Rainfall: During the next week (14th Dec – 20th Dec), fairly heavy (≥ 75 mm) rainfall is predicted for the Eastern, Western, Sabaragamuwa, Uva, Central, and North Central provinces; and ≥ 55 mm rainfall is expected for the rest of the country.

Temperatures: The temperature will remain below normal for some parts of the Central, and Uva provinces during 15th – 21st December.

Teleconnections: La Niña is favored to continue into the winter, with equal chances of La Niña and ENSO-neutral during January-March 2023.

MJO shall near neutral the rainfall during 14th – 18th December, slightly increase the rainfall during 19th – 23rd December, and moderately increase the rainfall during 24th – 28th December for Sri Lanka.

Seasonal Precipitation: The precipitation forecast for the December-January-February 2023 season shows a higher tendency for near-normal precipitation to 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, [1] International Research Institute for Climate and Society, , Earth Institute at Columbia University, New York.

Weekly Climate Bulletin for Sri Lanka

Inside This Issue

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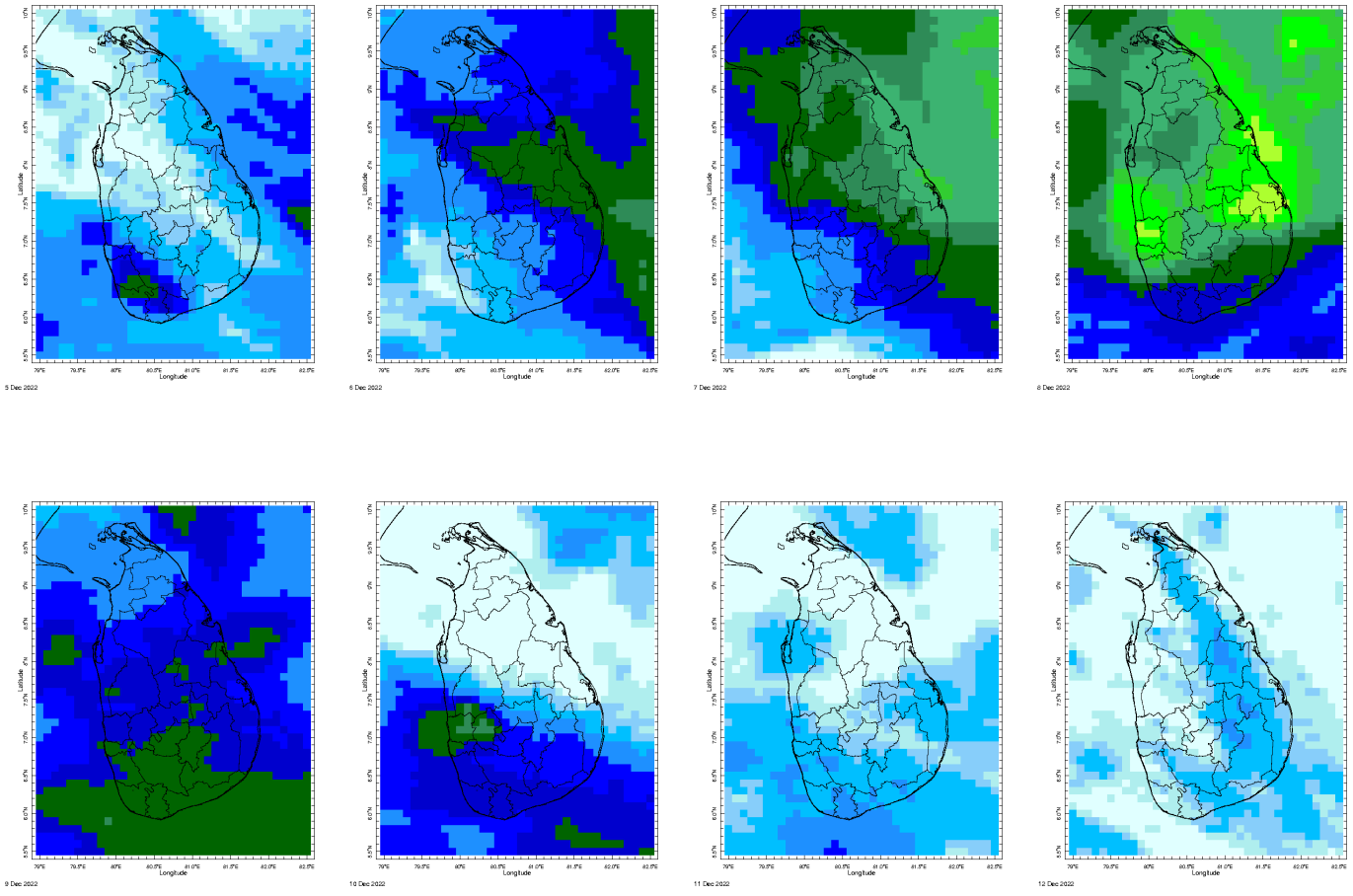
MONITORING

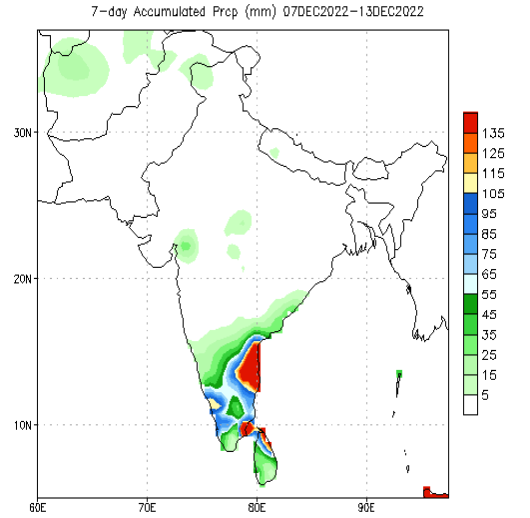
Daily Rainfall Monitoring

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

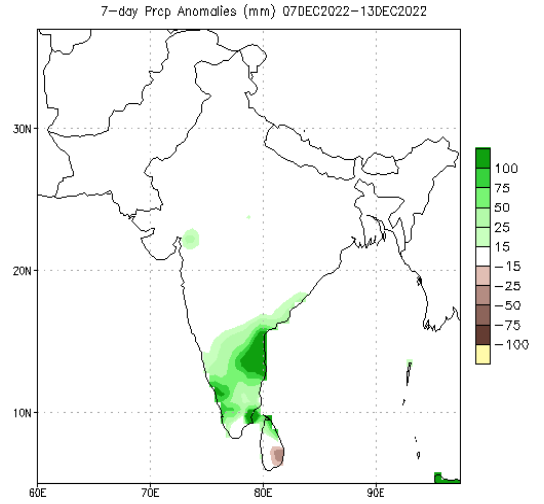


Weekly Rainfall Monitoring

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.



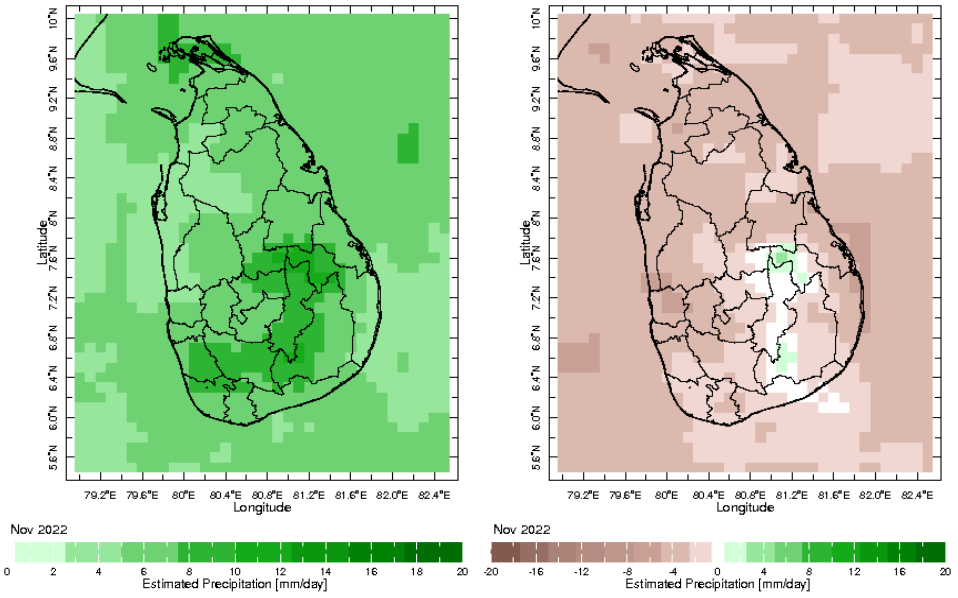
Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis



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

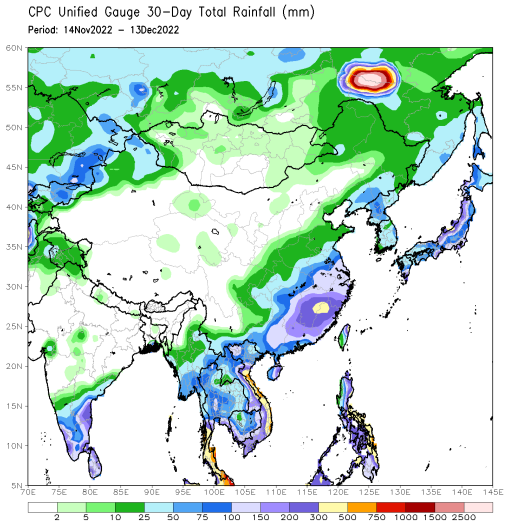
Monthly Rainfall Monitoring

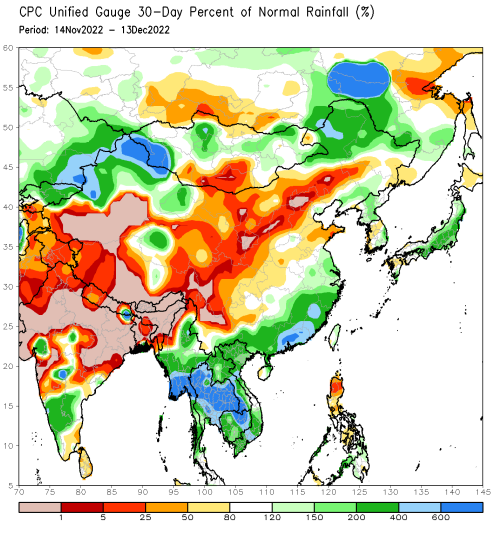
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



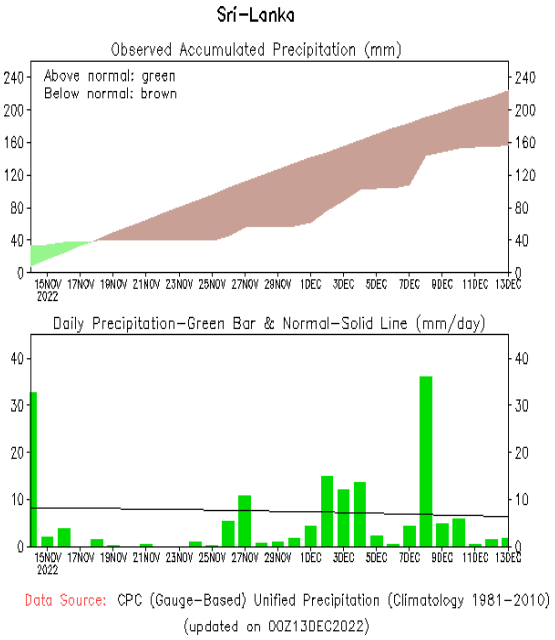
Monthly Average **Monthly Anomaly**

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.

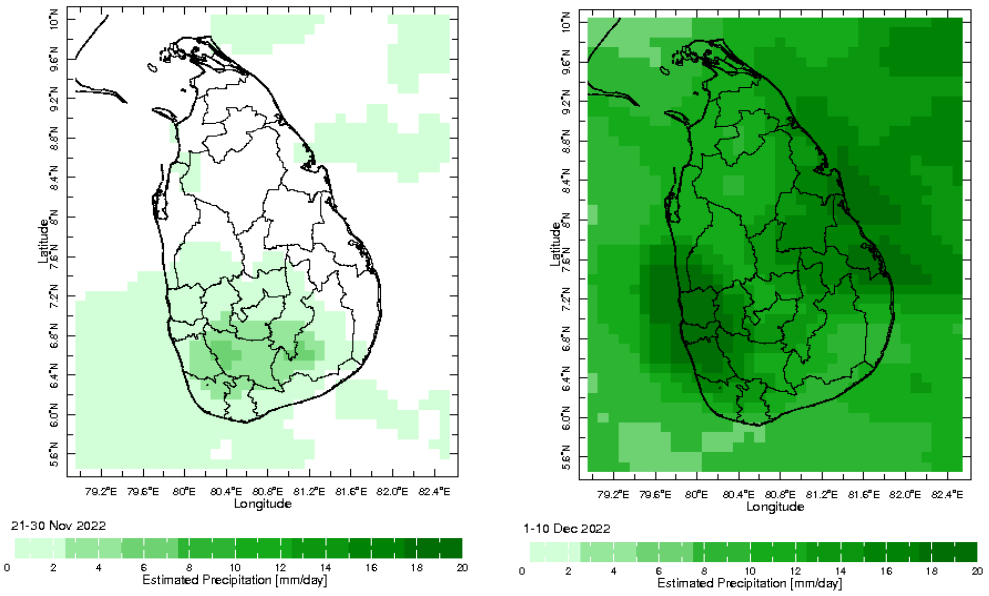




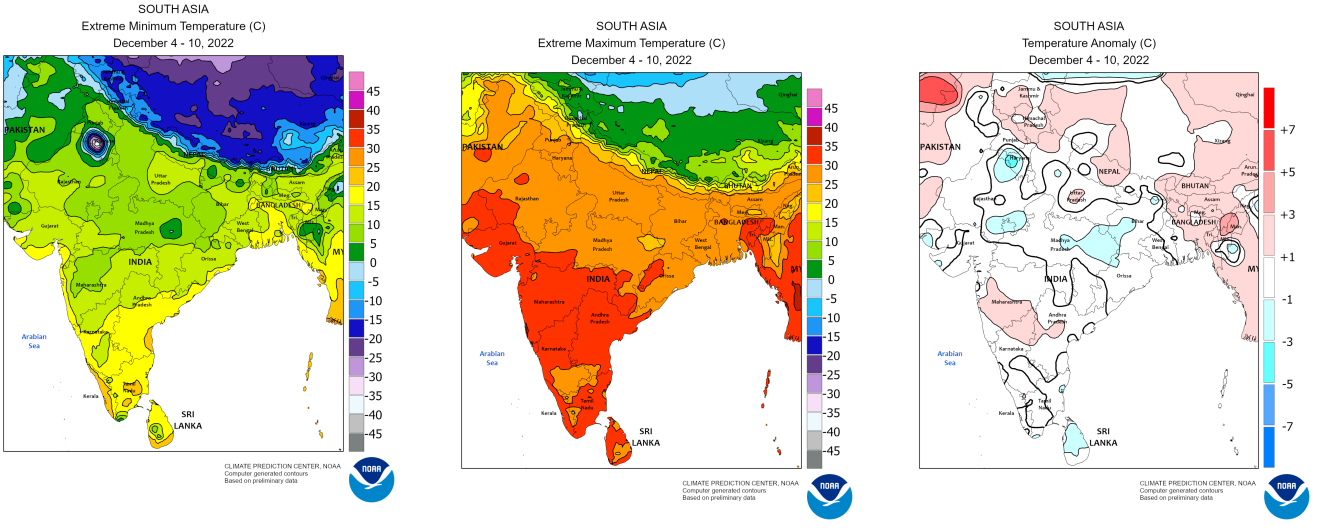
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



Dekadal (10 Day) Satellite Derived Rainfall Estimates

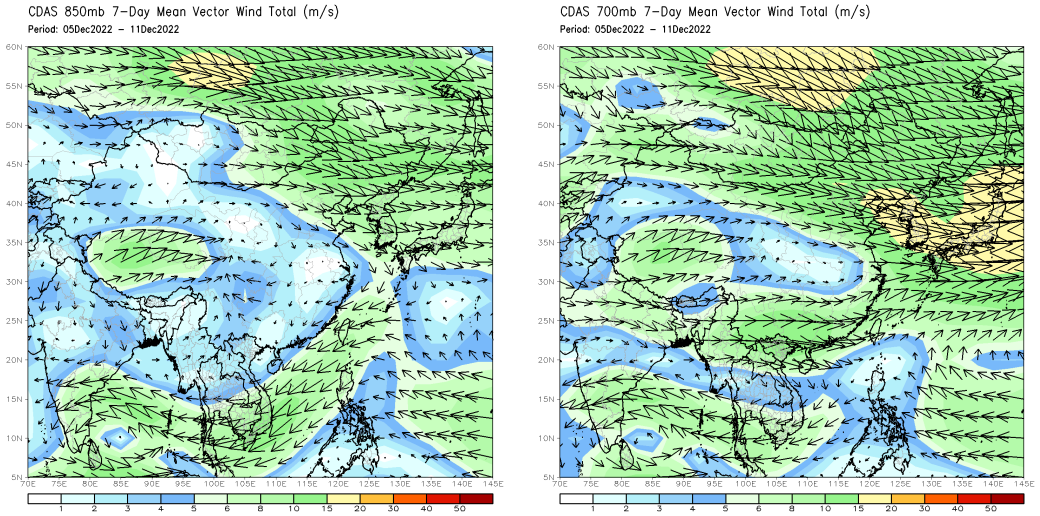


Weekly Temperature Monitoring



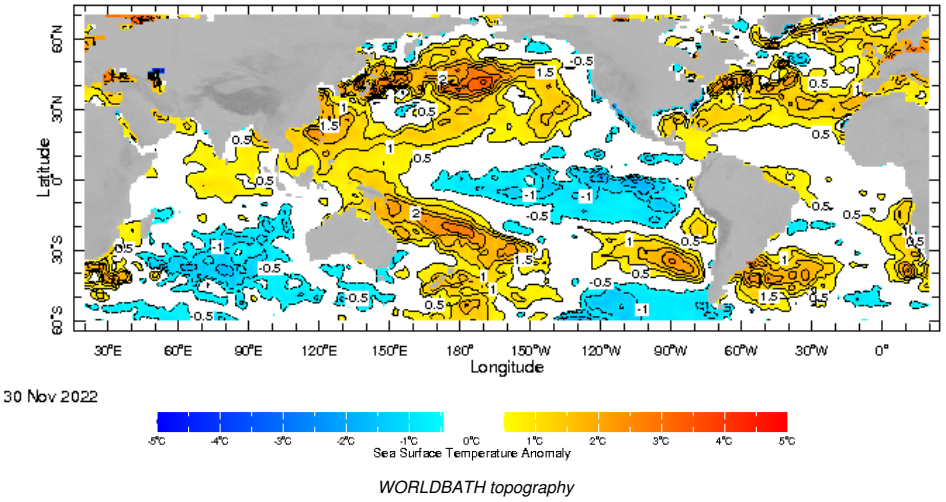
Weekly Wind Monitoring

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.



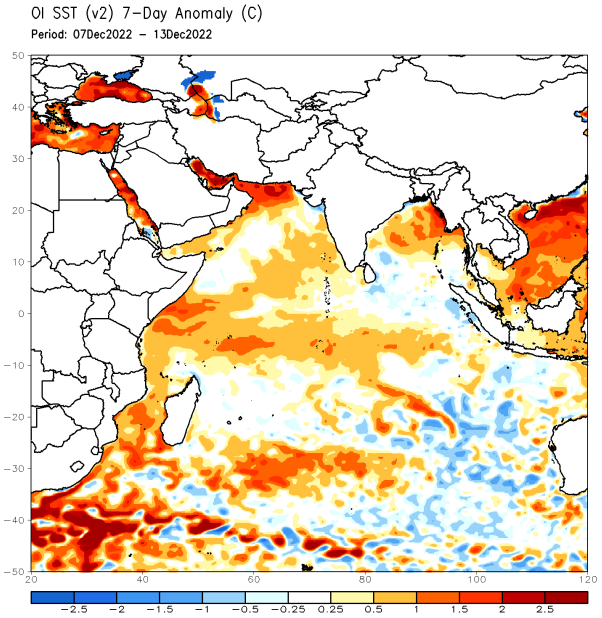
Weekly Average SST Anomalies

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



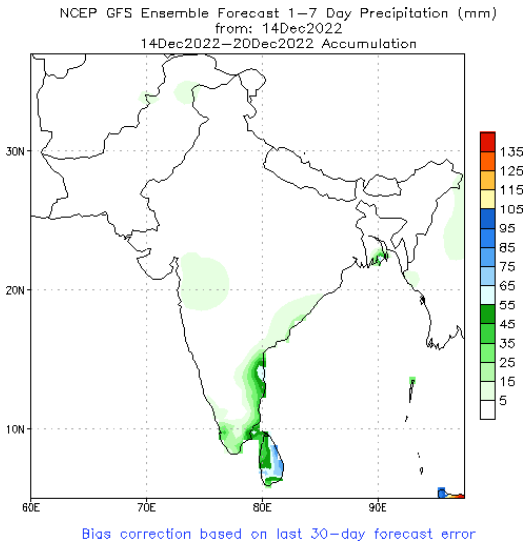
WORLDBATH topography

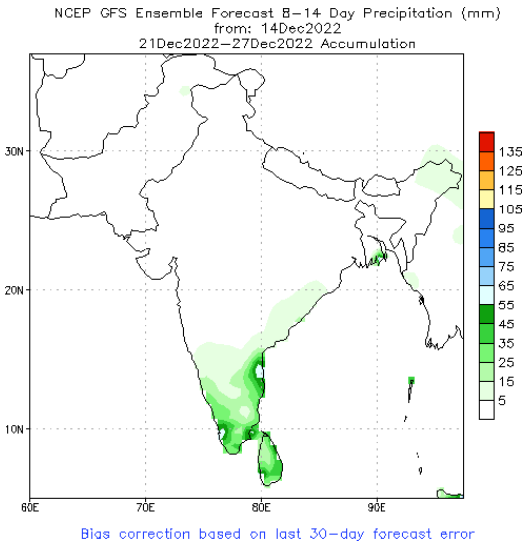
Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC



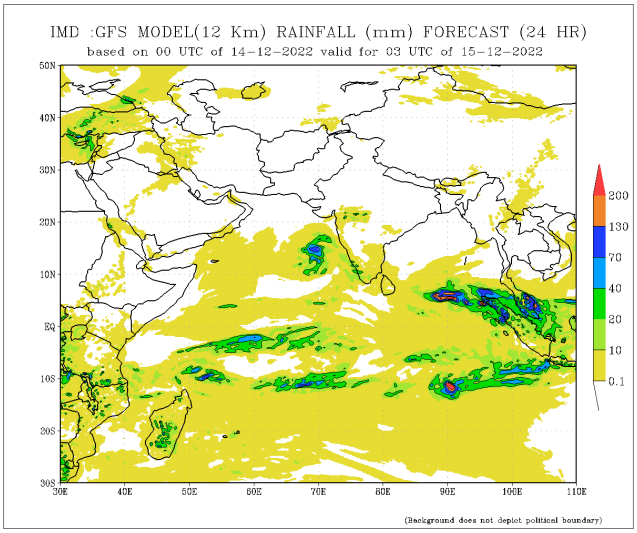
PREDICTIONS

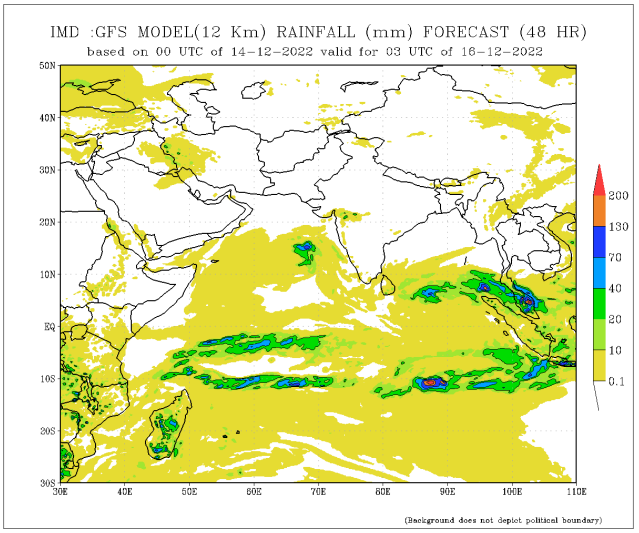
NCEP GFS 1- 14 Day prediction

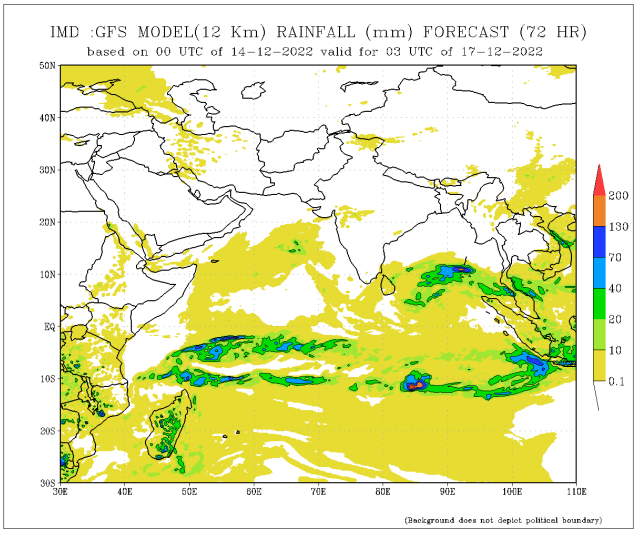


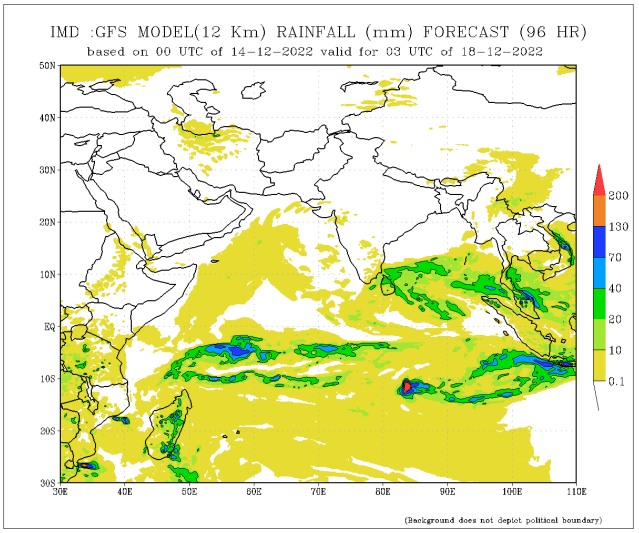


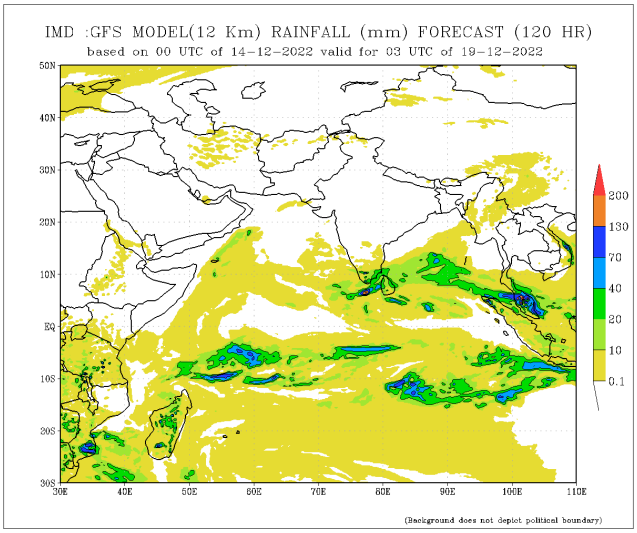
IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India

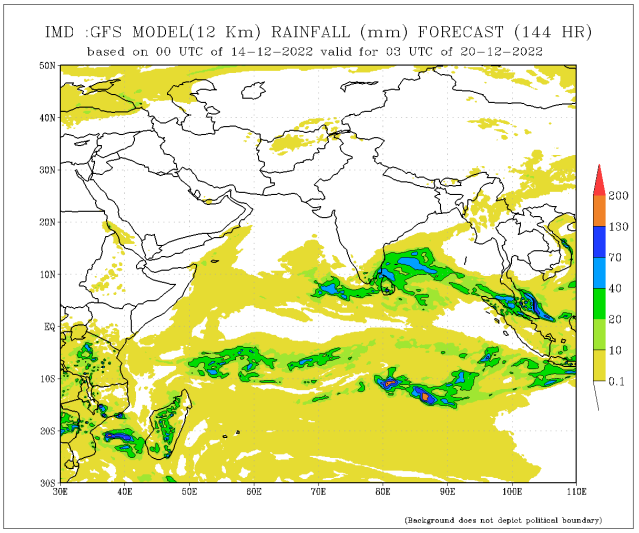


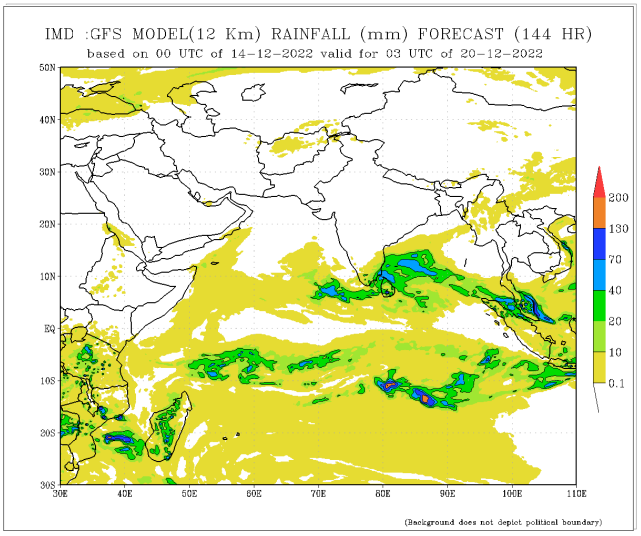






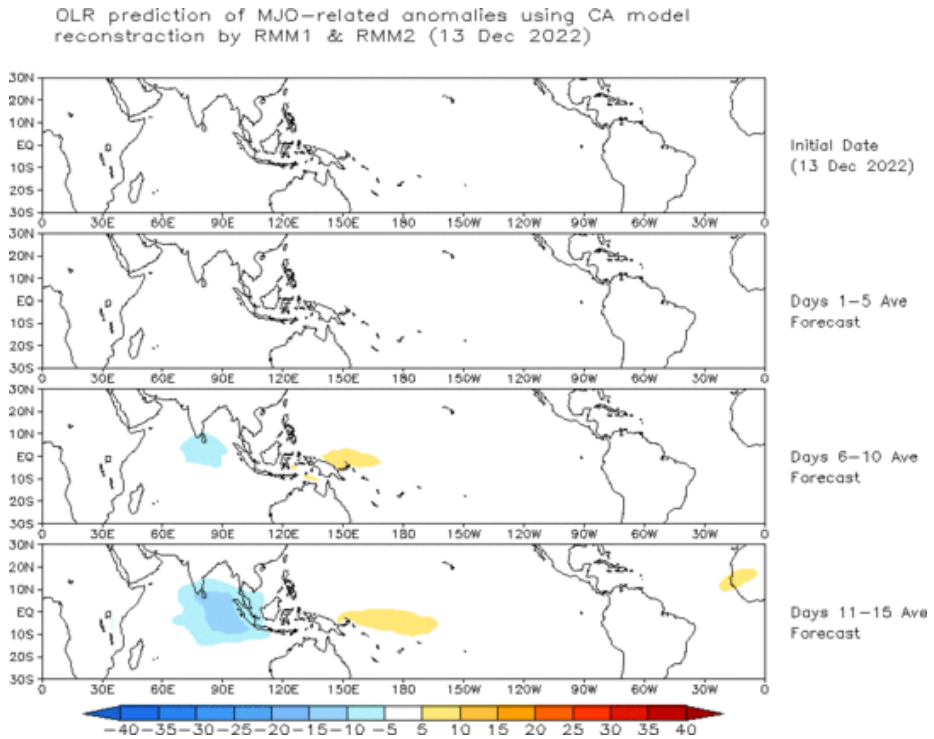






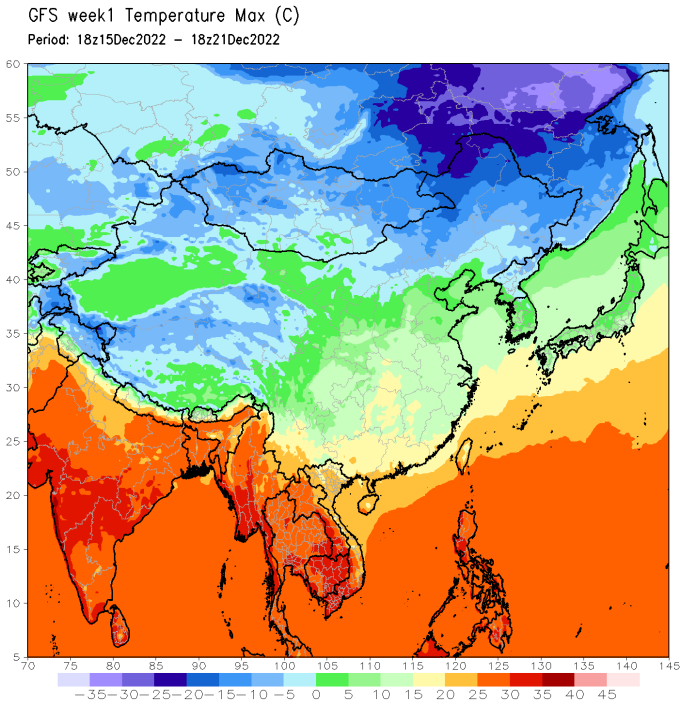
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

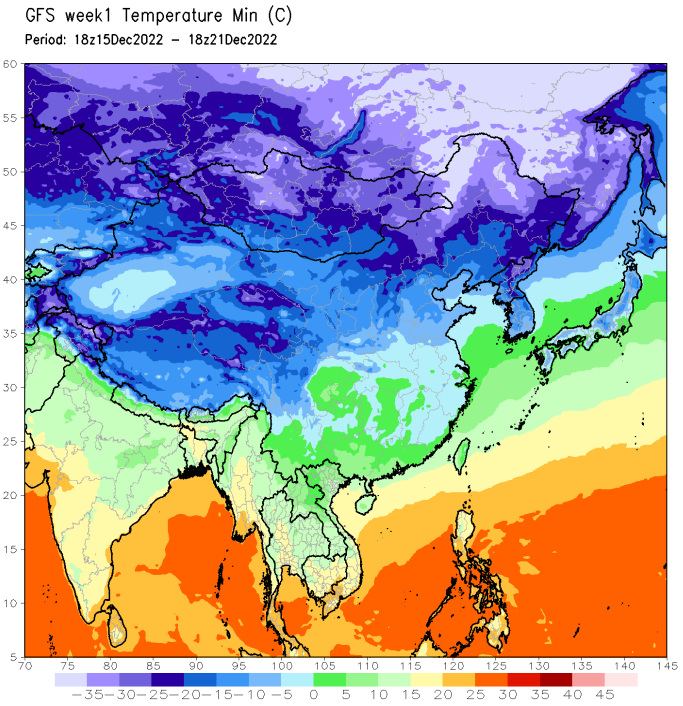
The Outgoing Longwave Radiation (OLR) is a proxy for rainfall. This can be used to identify convective rain clouds based on the MJO phase. Violet and Blue shading indicates enhanced tropical weather and Orange shading indicates suppressed conditions. The following figure shows the forecasts of MJO associated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



Weekly Temperature Forecast

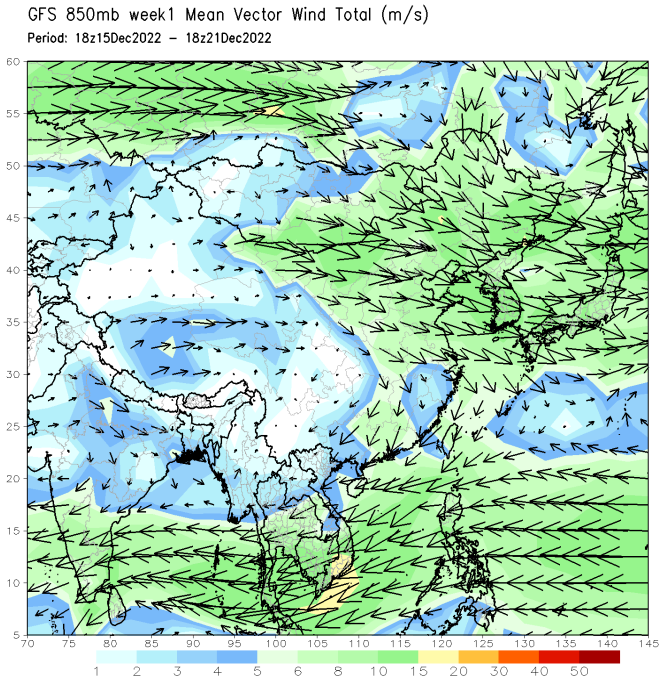
Weekly Minimum and Maximum Temperature prediction from the GFS model (from NOAA CPC)

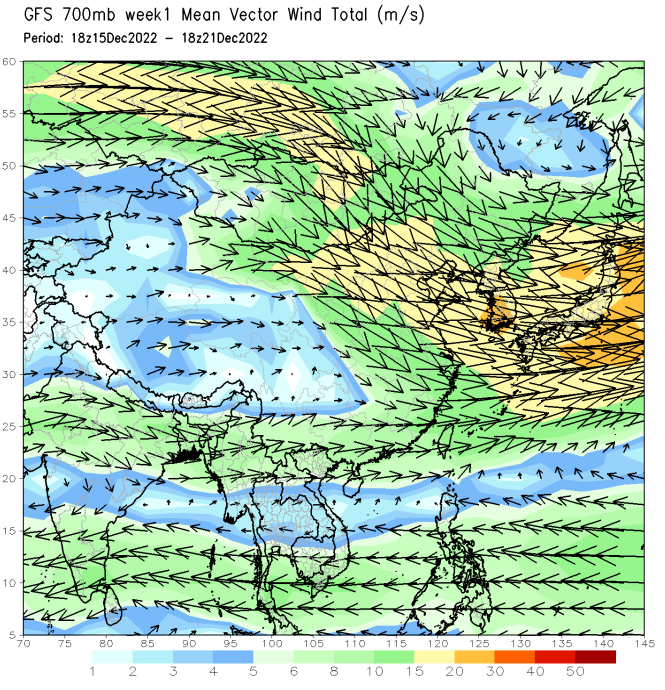




Weekly Wind Forecast

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

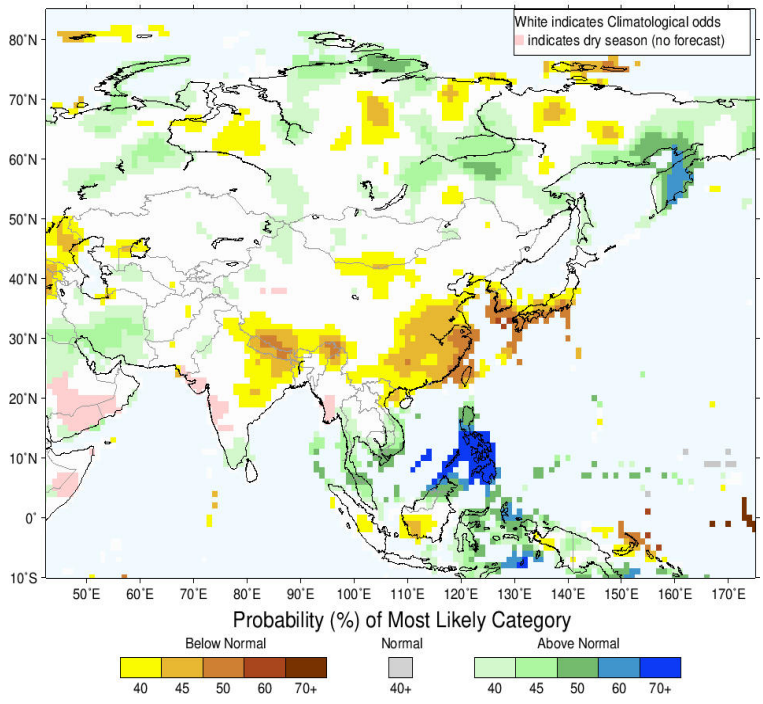




Seasonal Rainfall and Temperature Forecast

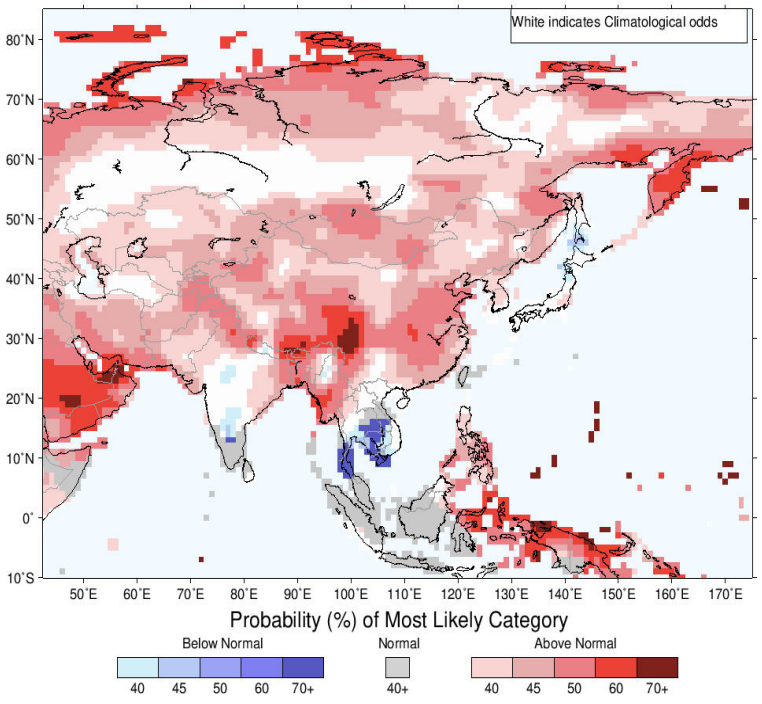
Following is the latest seasonal precipitation and temperature prediction for the next 3 months by the IRI. The color shading indicates the probability of the most dominant tercile -- that is, the tercile having the highest forecast probability. The color bar alongside the map defines these dominant 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 December–January–February 2023, Issued November 2022



Precipitation Forecast

IRI Multi-Model Probability Forecast for Temperature for December–January–February 2023, Issued November 2022



Temperature Forecast

About us

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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