**Week of
8 - 15 January
2021**

CLIMATE MONITORING AND PREDICTION FOR SRI LANKA

By: Nipuni Alahakoon, Ushan Adithya, Azra Munas, Tuan Hadgie, Lareef Zubair
and Michael Bell[1] (FECT and IRI[1])

HIGHLIGHTS

Rainfall Prediction
- Dangerously heavy rainfall of 140 mm expected in Northern and Eastern provinces during 6th – 12th Jan.

Monitored Rainfalls
- Heavy rainfall was experienced in Eastern & Western provinces. Up to 142 mm max rainfall in Batticaloa on 4th Jan.

Monitored Wind
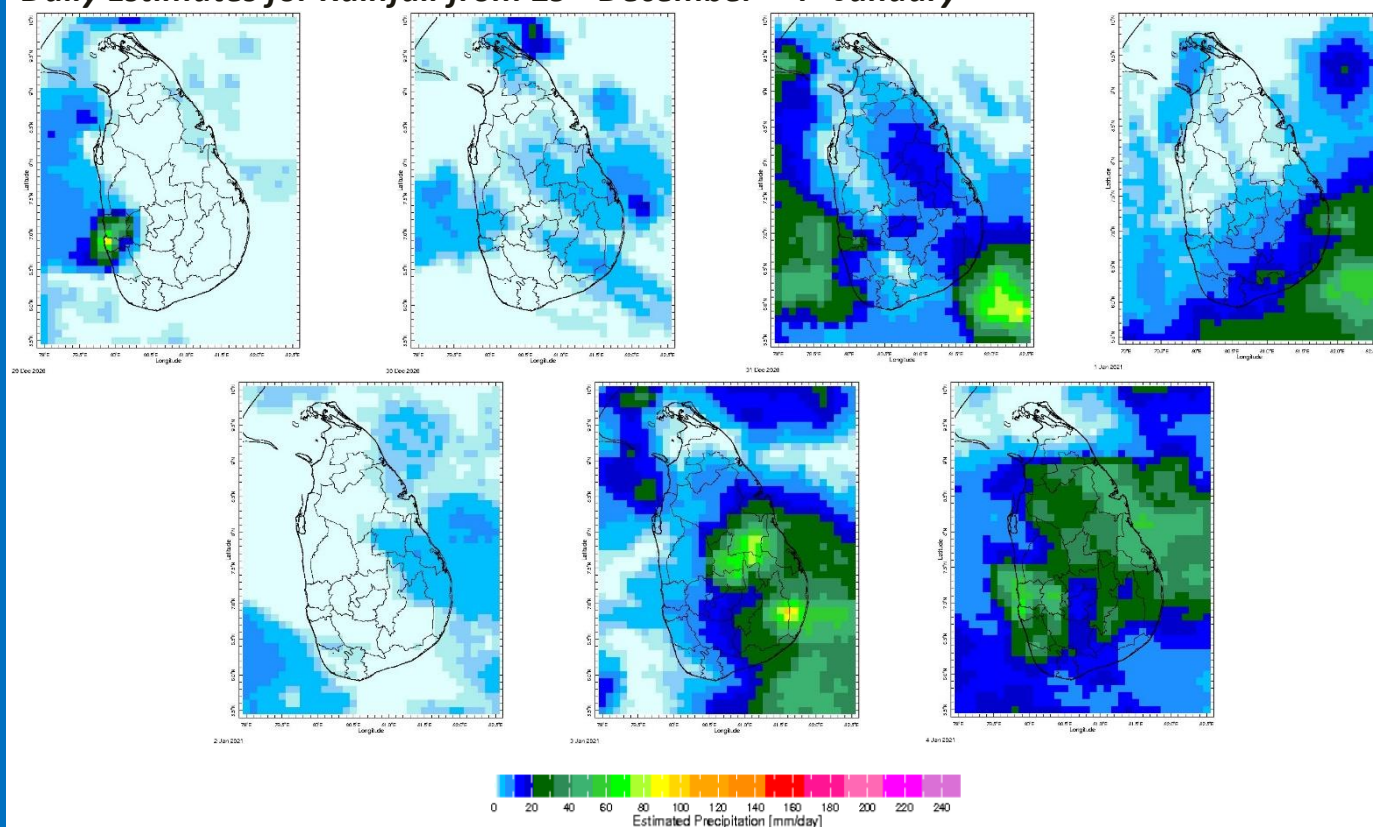- From 29th Dec - 4th Jan: up to 8 km/h Easterly winds were experienced by the entire island.

Monitored Sea Surface
- 0.5 0Cabove average sea surface temperature was observed in the seas around Sri Lanka.

Monitoring

Rainfall

Daily Estimates for Rainfall from 29th December – 4th January

Total Rainfall for the Past Week

The RFE 2.0 tool shows 7-day total Cumulative rainfall by Districts:

Rainfall	Districts
150 – 200 mm	Ampara, Moneragala
100 – 150 mm	Batticaloa, Polonnaruwa, Matale, Kandy, Badulla, Kegalle, Kurunegala, Gampaha, Colombo
75 – 100 mm	Kalutara, Puttalam, Ratnapura, Hambantota, Nuwara Eliya, Anuradhapura, Trincomalee
50 – 75 mm	Galle, Mullaitivu, Vavuniya
25 – 50 mm	Mannar, Matara
10 – 25 mm	Jaffna, Kilinochchi

Weekly Rainfall Anomalies by Districts:

Rainfall Excess

Rainfall	Districts
100 – 200 mm	Gampaha, Colombo, Ampara, Moneragala
50 – 100 mm	Kalutara, Ratnapura, Hambantota, Kegalle, Matale, Kandy, Nuwara Eliya, Kurunegala, Puttalam, Badulla, Batticaloa, Polonnaruwa, Anuradhapura, Trincomalee, Mullaitivu, Vavuniya
25 – 50 mm	Galle, Mannar
10 – 25 mm	Jaffna, Matara

Monthly Monitoring

During December, Dekadal Rainfall (mm/day) by Districts:

11th – 20th December:

Rainfall	Districts
16 mm	Polonnaruwa, Matale, Kegalle, Jaffna
14 mm	Badulla, Nuwara Eliya, Kandy, Anuradhapura, Moneragala
12 mm	Batticaloa, Trincomalee, Ampara, Ratnapura, Kalutara, Galle, Matara, Kurunegala
10 mm	Kilinichchi, Mullaitivu, Vavuniya, Mannar, Gampaha, Colombo
6 mm	Puttalam, Hambantota

21st – 31st December:

Rainfall	Districts
16 mm	Batticaloa, Trincomalee, Polonnaruwa, Colombo, Gampaha
14 mm	Ampara, Matale
12 mm	Anuradhapura, Kalutara, Badulla
10 mm	Vavuniya, Ratnapura, Galle, Matara
8 mm	Kegalle, Hambantota, Moneragala, Kandy, Kurunegala, Mannar, Mullaitivu

Ocean State *(Text Courtesy IRI)*

Pacific sea state: December 30, 2020

Equatorial Eastern Pacific SST reached La Niña threshold in late-December, and the atmospheric variables were either ENSO-neutral or indicative of weak La Niña conditions.

Indian Ocean State

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

Predictions

Rainfall

14-day prediction: NOAA NCEP models

From 6th – 12th January:

Total rainfall by Provinces:

Rainfall	Provinces
140 mm	Northern, Eastern
115 mm	North-central
105 mm	Central
85 mm	Uva, Western
75 mm	North-western, Sabaragamuwa
55 mm	Southern

From 13th – 19th January:

Total rainfall by Provinces:

Rainfall	Provinces
140 mm	Eastern
115 mm	Northern
105 mm	Uva
75 mm	North-central
65 mm	Central
55 mm	Western
45 mm	Sabaragamuwa, Southern, North-western

MJO based OLR predictions

For the next 15 days:

MJO shall significantly enhance the rainfall during 5th – 14th Jan and have neutral influence during 15th – 19th Jan.

Interpretation

Monitoring

Rainfall: During the last two weeks, there had been high rainfall over the following provinces: Western and Eastern.

Wind: As is typical for December the Northeasterly winds prevailed in the sea area and around the island.

Temperatures: Cooled from November – still the temperature anomalies were slightly above normal for the Southern half the last – driven by the warm SST's

Predictions

Rainfall: During the next week (January 8-15), extreme rainfall is predicted for the Northern & Eastern coastal regions. A drop in rainfall is predicted over the rest of the country. The amount of rainfall is extremely high and thus caution is warranted.

Temperatures: The temperature remains slightly above normal for January.

Teleconnections:
- MJO shall significantly enhance the rainfall during 5th – 14th Jan and have neutral influence during 15th – 19th Jan.
- La Nina - The SST forecast is for La Nina conditions to continue through April weakening through June. So, the La Niña is expected to be moderate to strong in coming seasons.

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http://www.climate.lk
http://www.tropicalclimate.org/

FECT Blog

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Weekly Climate Bulletin for Sri Lanka

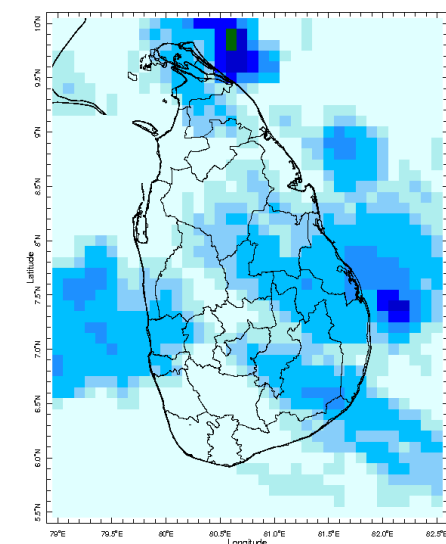### Inside This Issue

Download
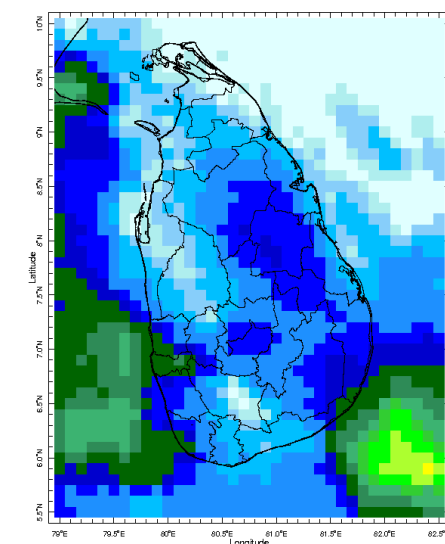
MONITORING

Daily Rainfall Monitoring

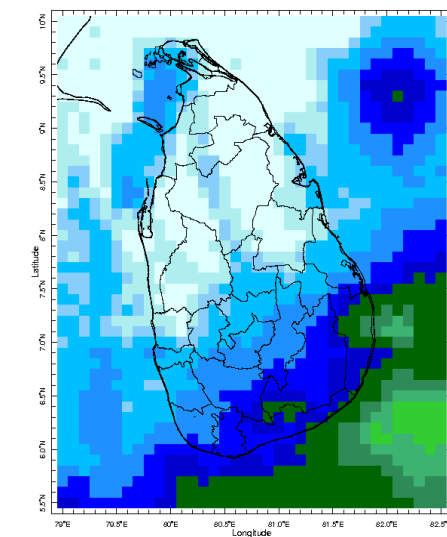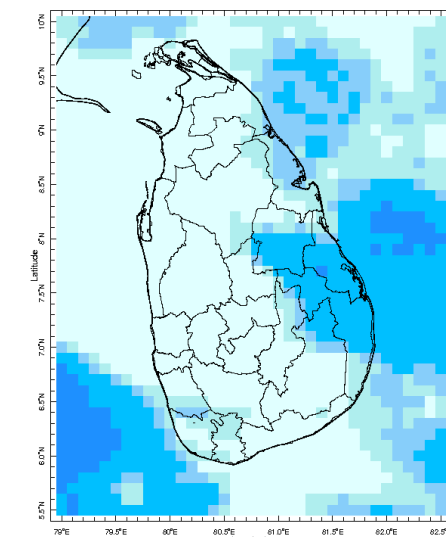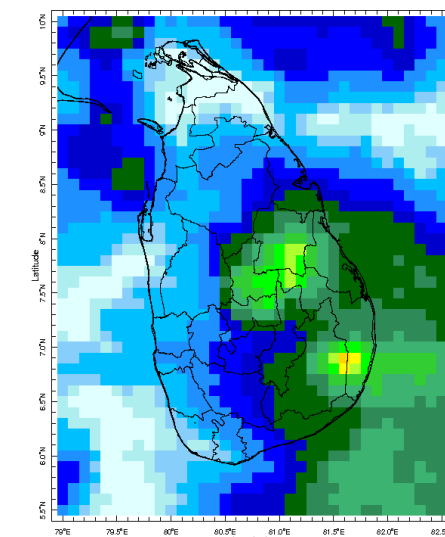The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.
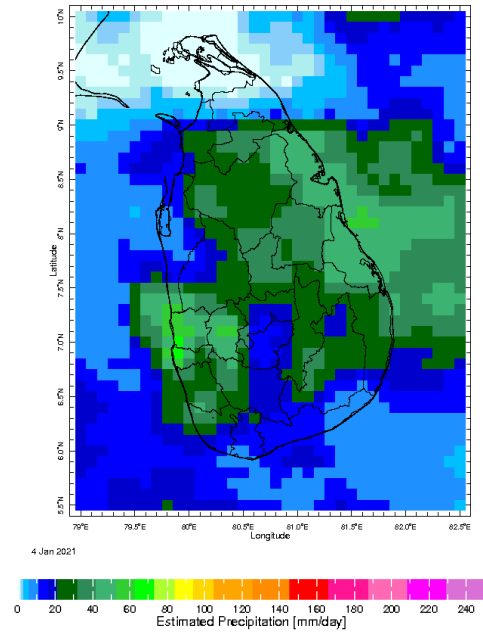

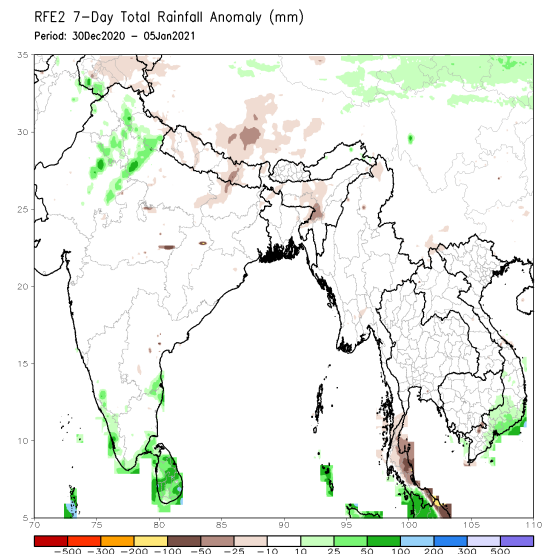
29 Dec 2020

30 Dec 2020

31 Dec 2020

1 Jan 2021

2 Jan 2021

3 Jan 2021

4 Jan 2021

Estimated Precipitation [mm/day]

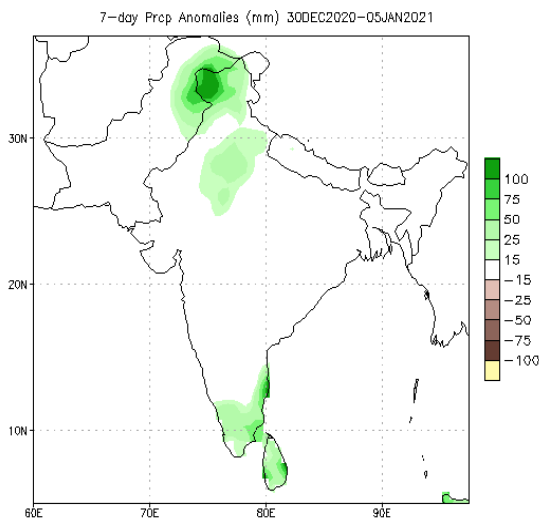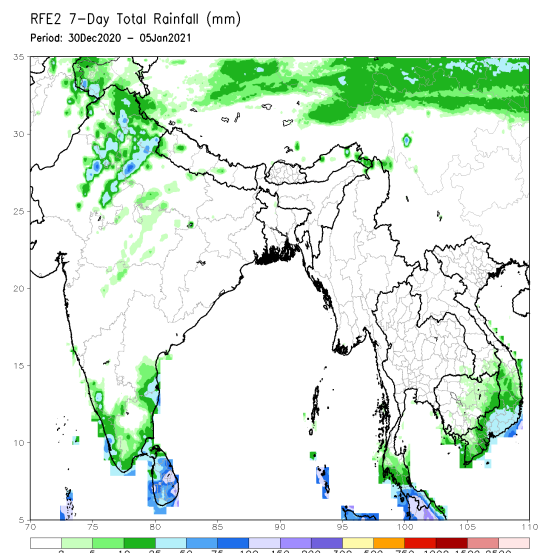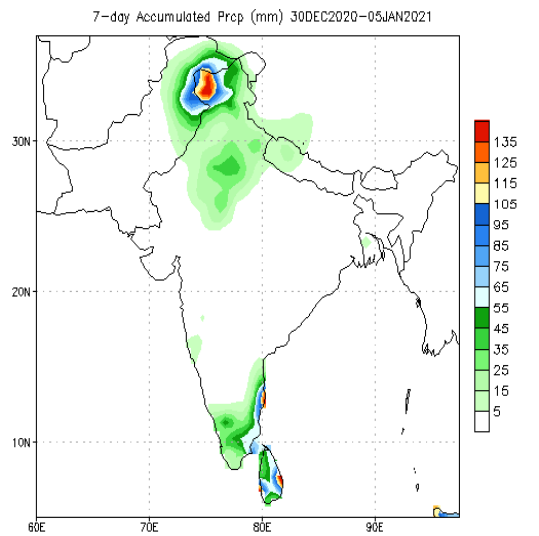## Weekly Rainfall Monitoring

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.

7-day Accumulated Prcp (mm) 30DEC2020-05JAN2021

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

RFE2 7-Day Total Rainfall (mm)
Period: 30Dec2020 - 05Jan2021

7-day Prcp Anomalies (mm) 30DEC2020-05JAN2021

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

RFE2 7-Day Total Rainfall Anomaly (mm)
Period: 30Dec2020 - 05Jan2021

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
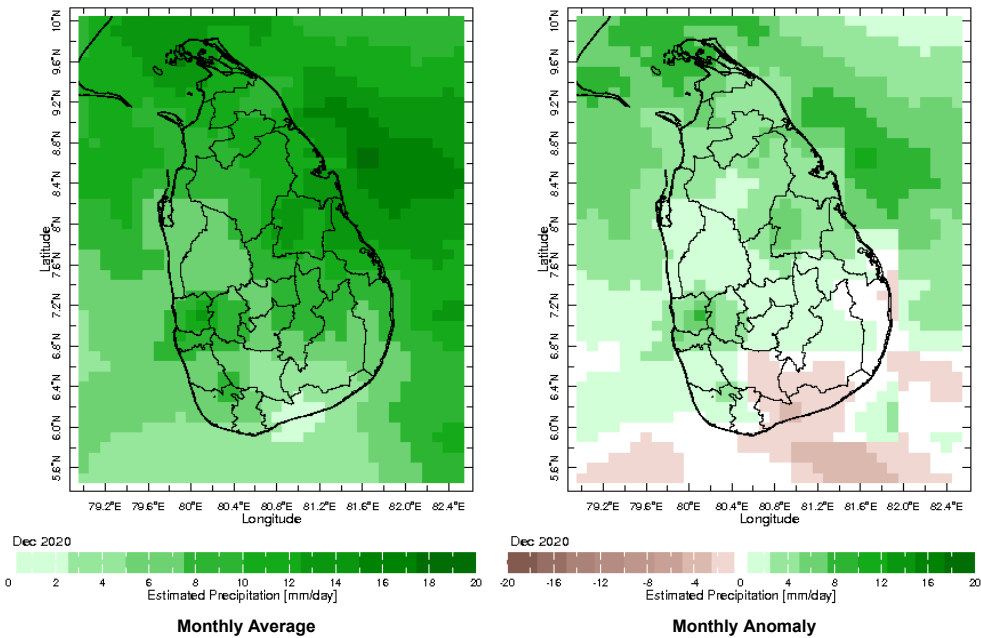
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in the past 30 days compared to normal rainfall in this period.
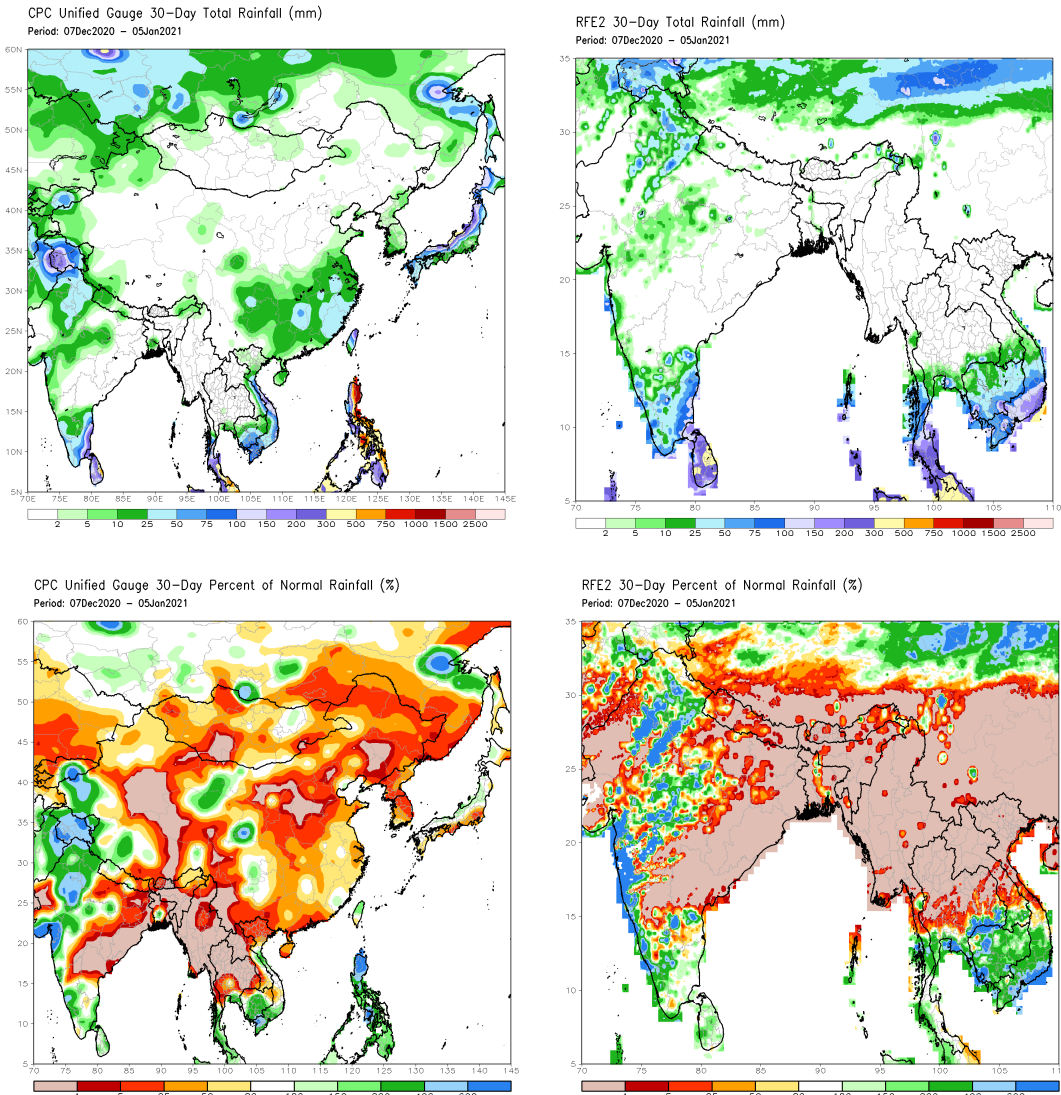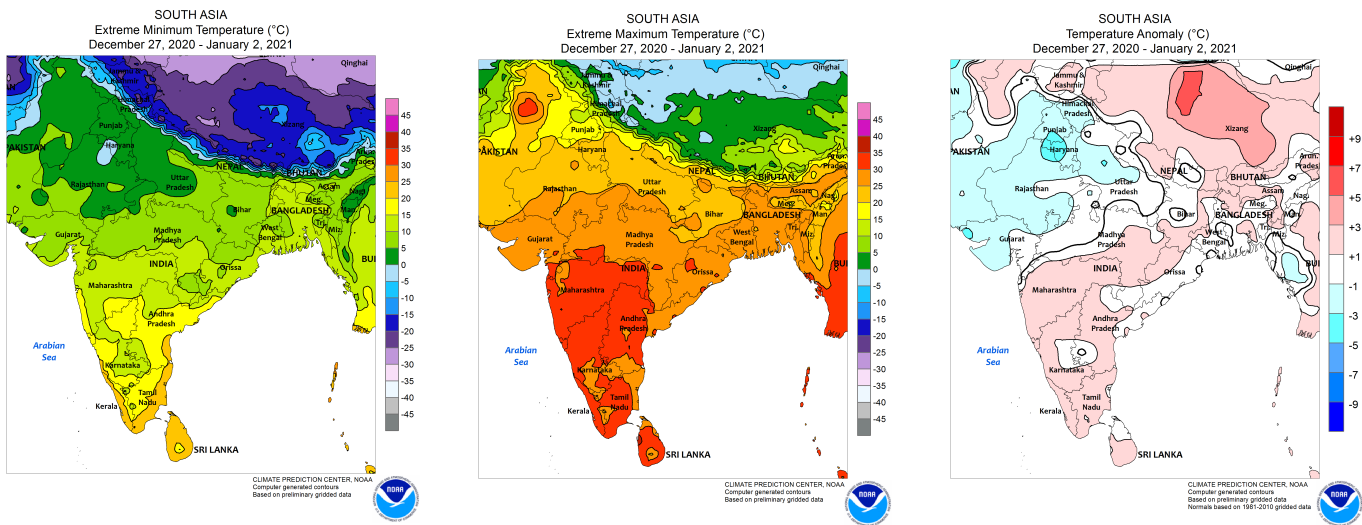
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.
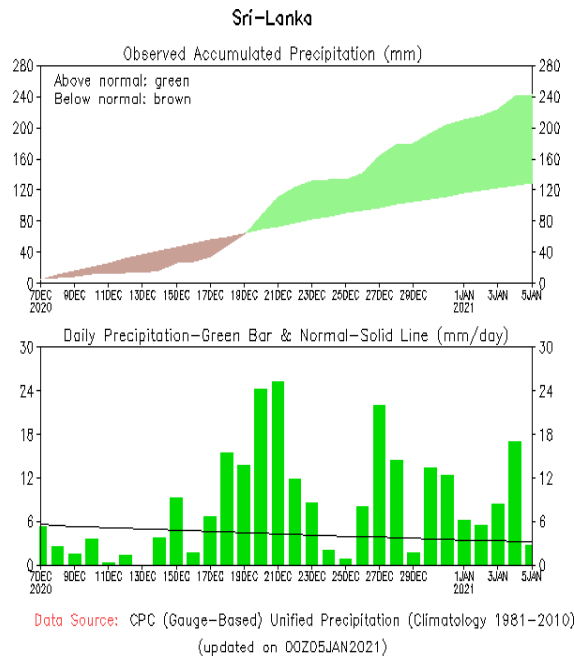
Dekadal (10 Day) Satellite Derived Rainfall Estimates
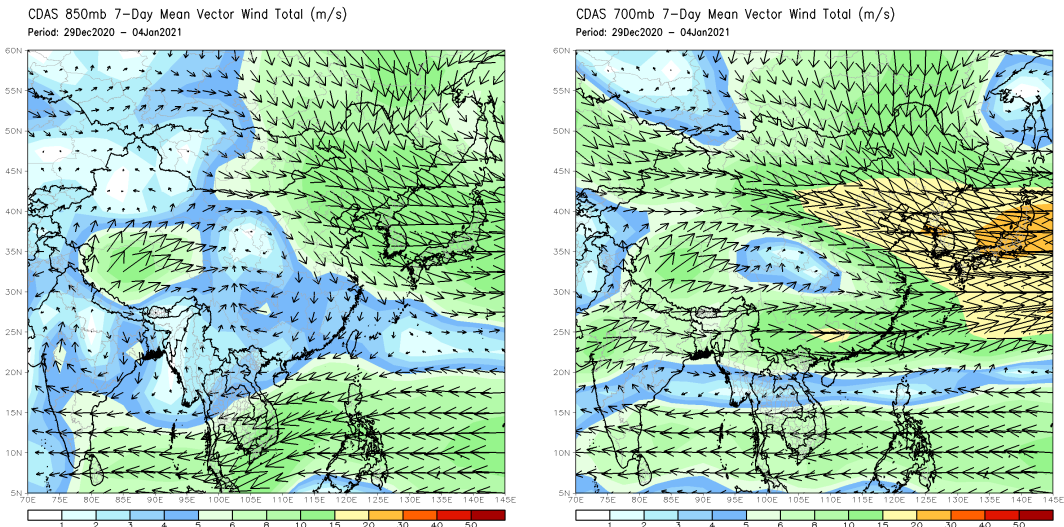

11-20 Dec 2020

21-31 Dec 2020
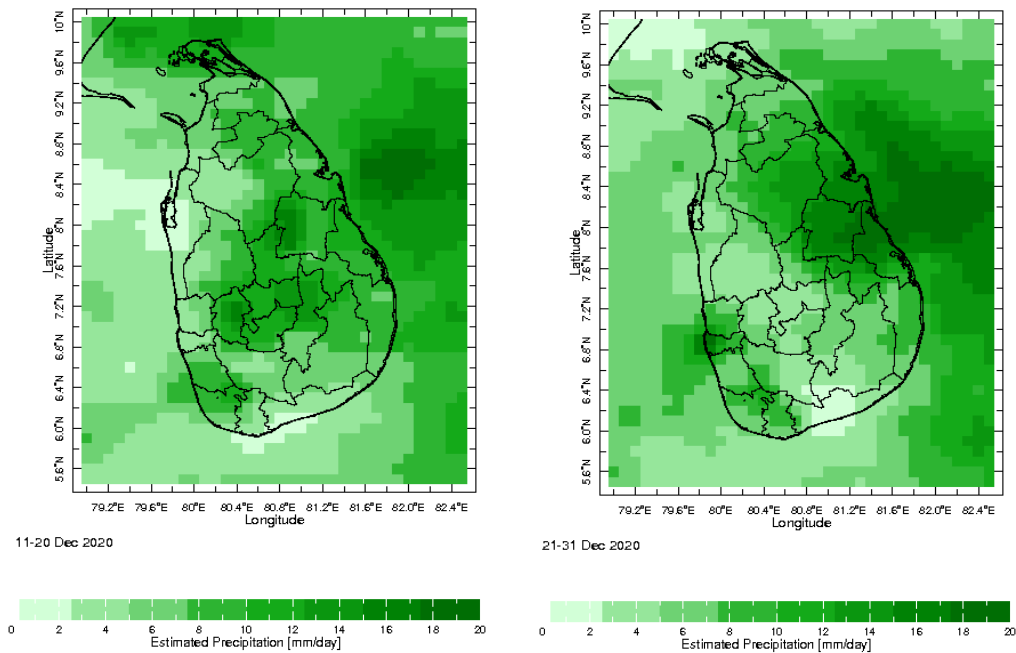
Weekly Temperature Monitoring

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.

CDAS 850mb 7-Day Mean Vector Wind Total (m/s)
Period: 29Dec2020 – 04Jan2021

CDAS 700mb 7-Day Mean Vector Wind Total (m/s)
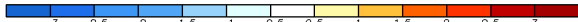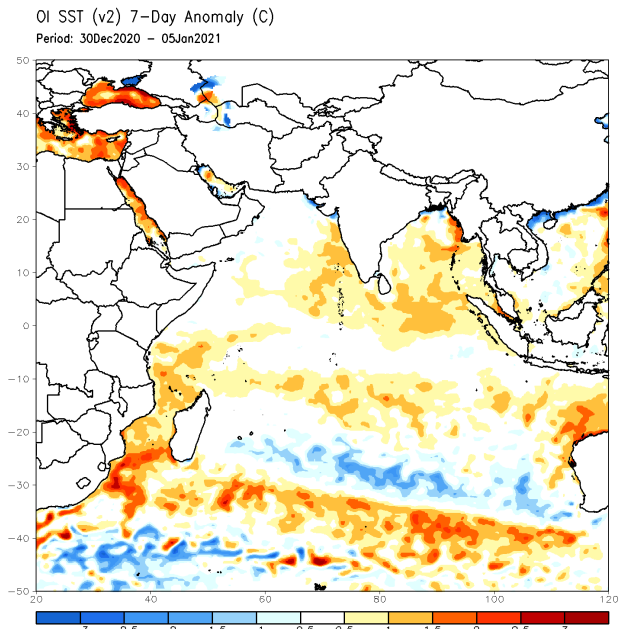Period: 29Dec2020 – 04Jan2021
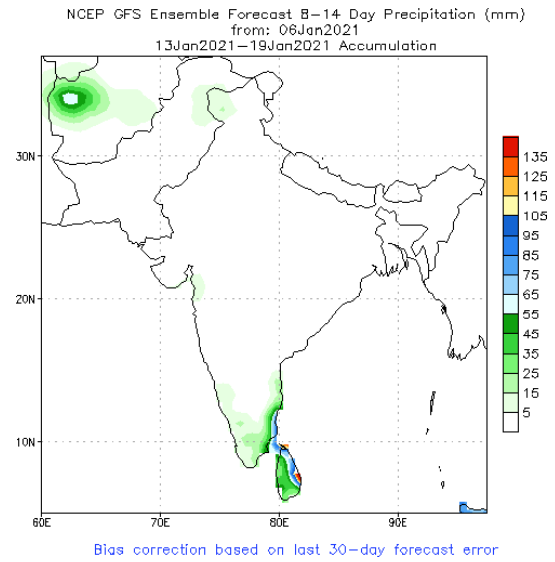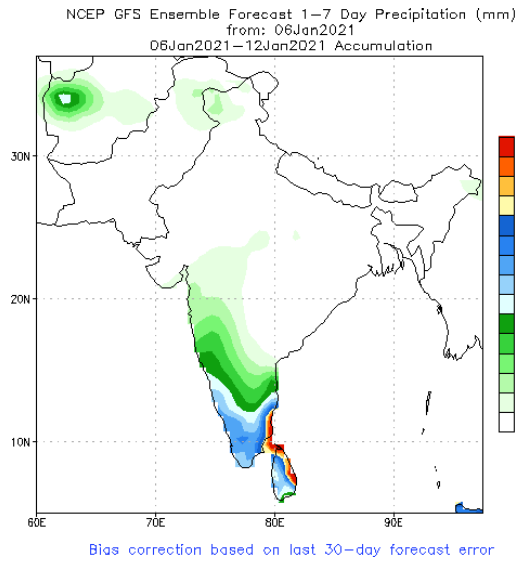
Weekly Average SST Anomalies

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

30 Dec 2020

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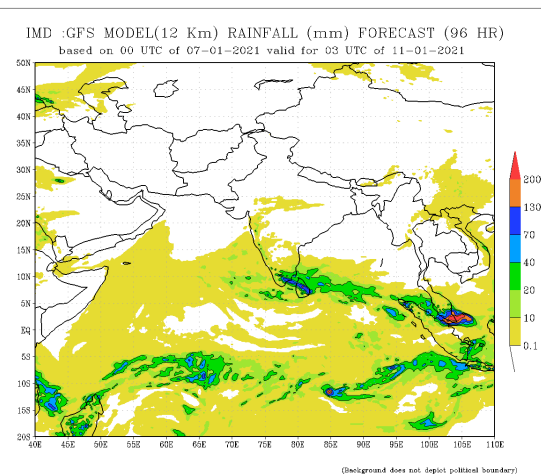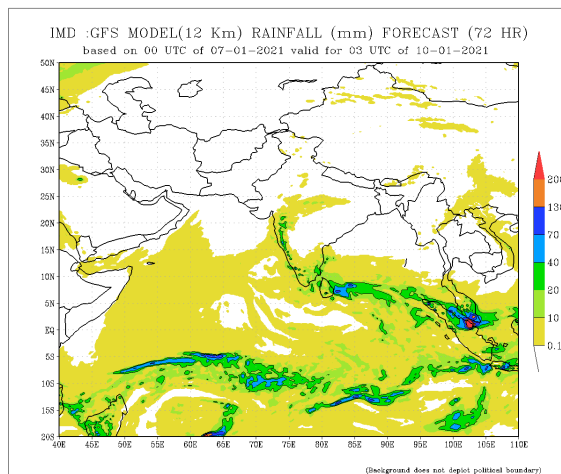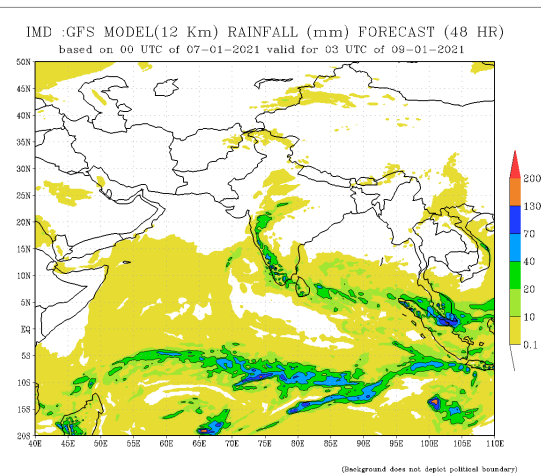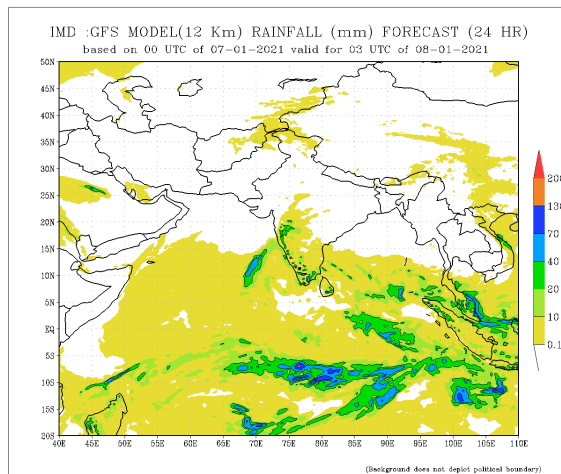
WORLDBATH topography
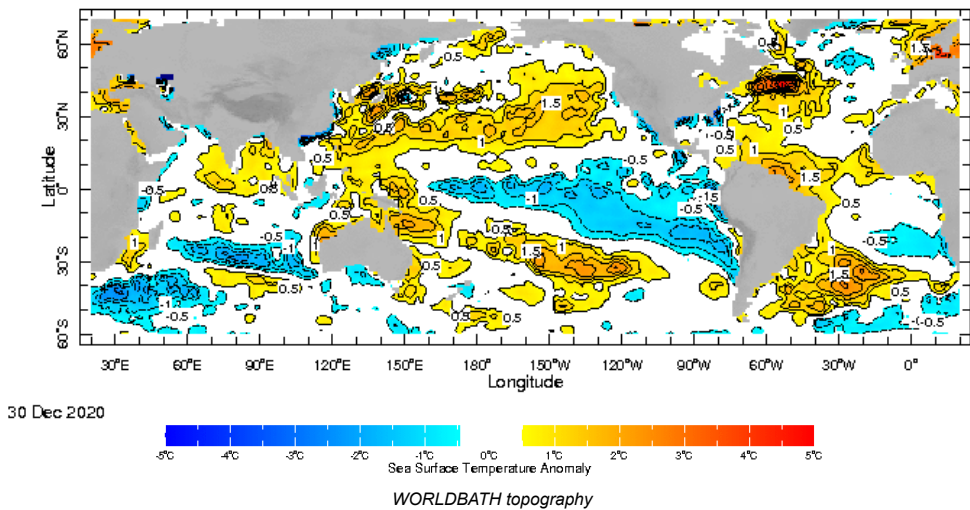
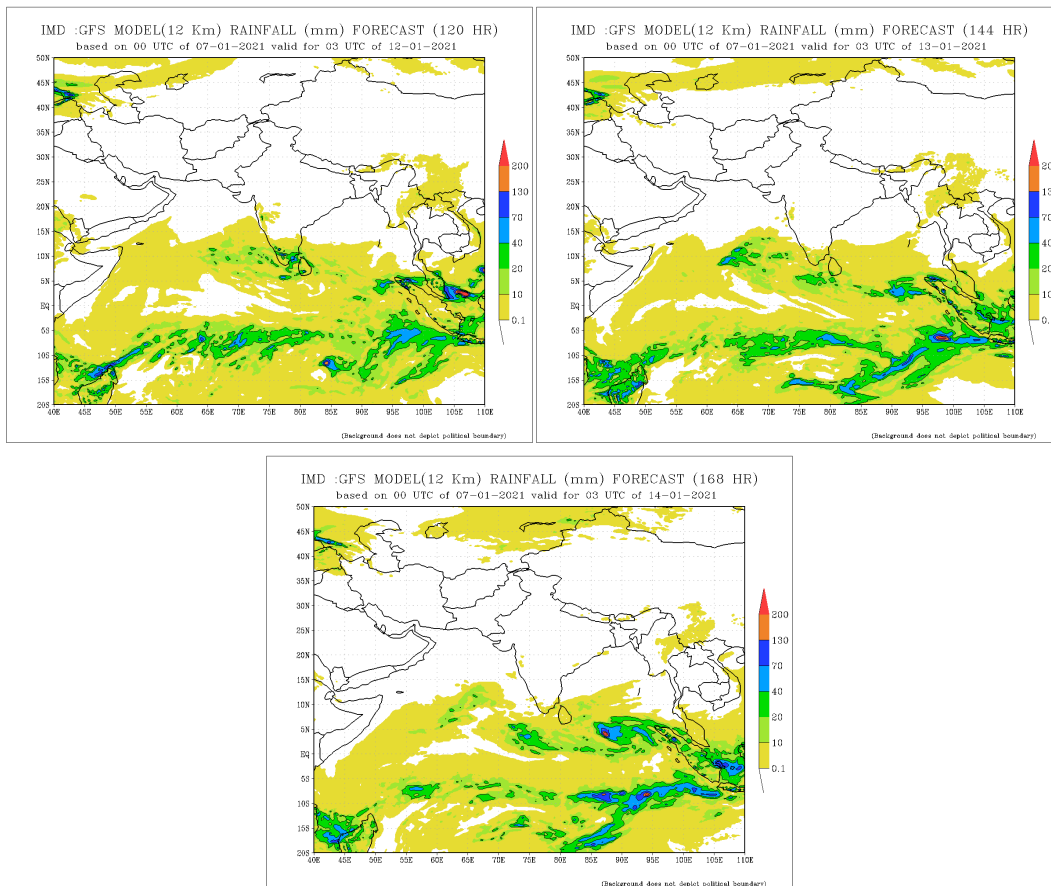Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC

OI SST (v2) 7-Day Anomaly (C)
Period: 30Dec2020 – 05Jan2021

NCEP GFS 1- 14 Day prediction

NCEP GFS Ensemble Forecast 1–7 Day Precipitation (mm)
from: 06Jan2021
06Jan2021–12Jan2021 Accumulation

Bias correction based on last 30–day forecast error

NCEP GFS Ensemble Forecast 8–14 Day Precipitation (mm)
from: 06Jan2021
13Jan2021–19Jan2021 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 07–01–2021 valid for 03 UTC of 08–01–2021

(Background does not depict political boundary)

IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (48 HR)
based on 00 UTC of 07–01–2021 valid for 03 UTC of 09–01–2021

(Background does not depict political boundary)

IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (72 HR)
based on 00 UTC of 07–01–2021 valid for 03 UTC of 10–01–2021

(Background does not depict political boundary)

IMD :GFS MODEL(12 Km) RAINFALL (mm) FORECAST (96 HR)
based on 00 UTC of 07–01–2021 valid for 03 UTC of 11–01–2021

(Background does not depict political boundary)

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.
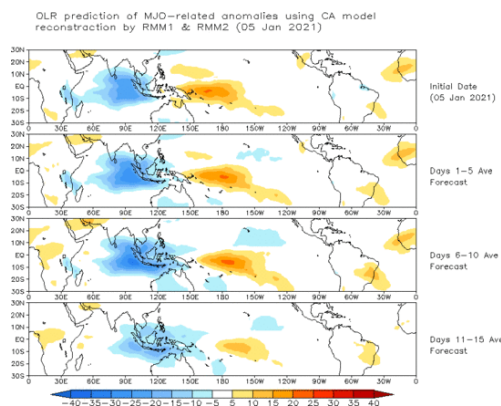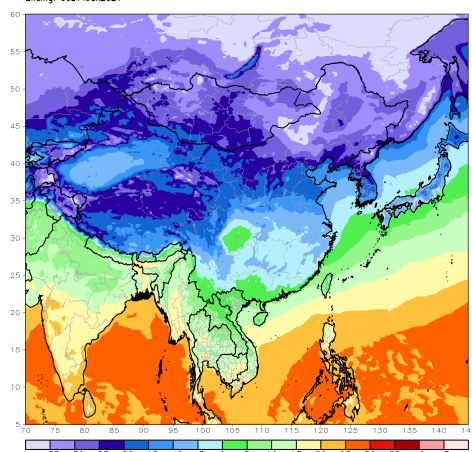

Weekly Temperature Forecast

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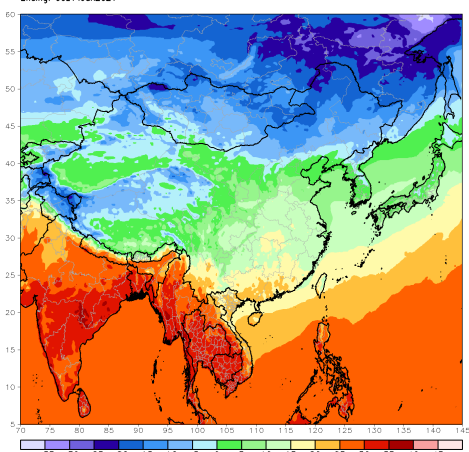
Weekly Wind Forecast

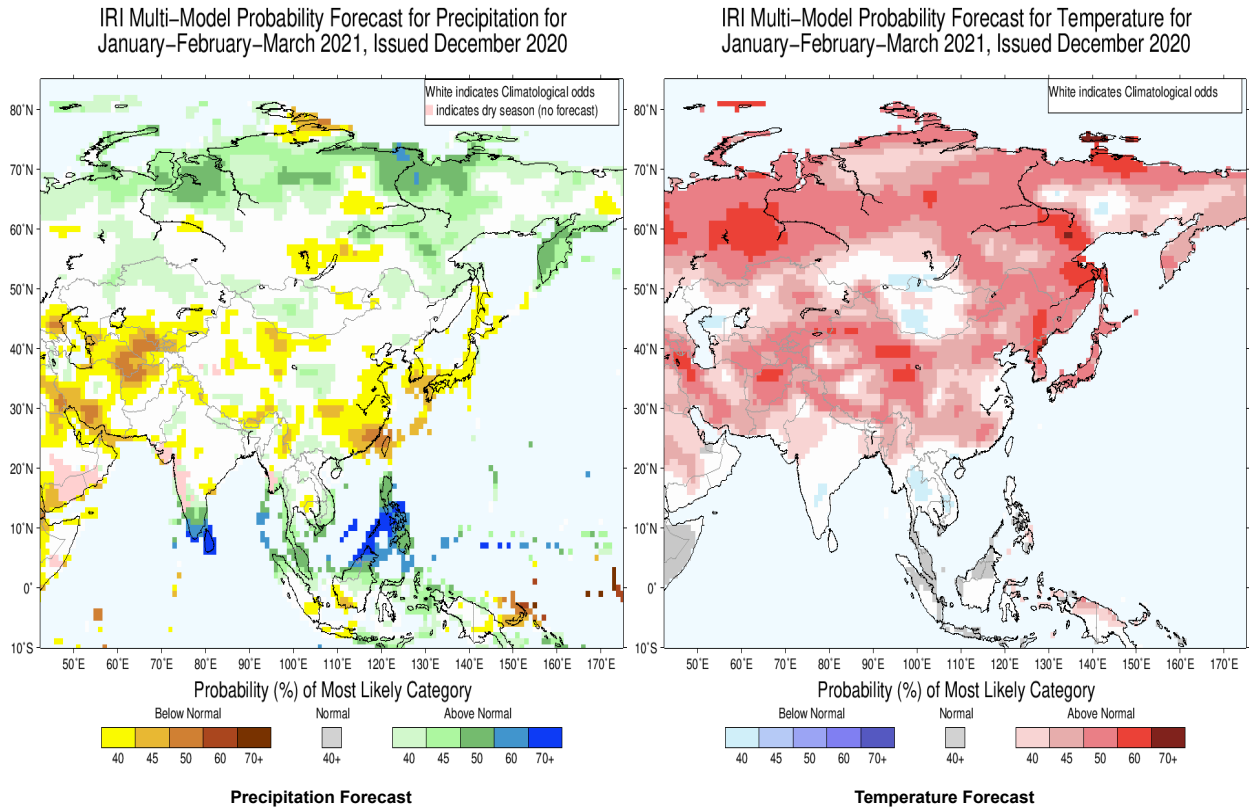Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)

GFS 850mb week1 Mean Vector Wind Total (m/s)
Ending: 00z14Jan2021

GFS 700mb week1 Mean Vector Wind Total (m/s)
Ending: 00z14Jan2021
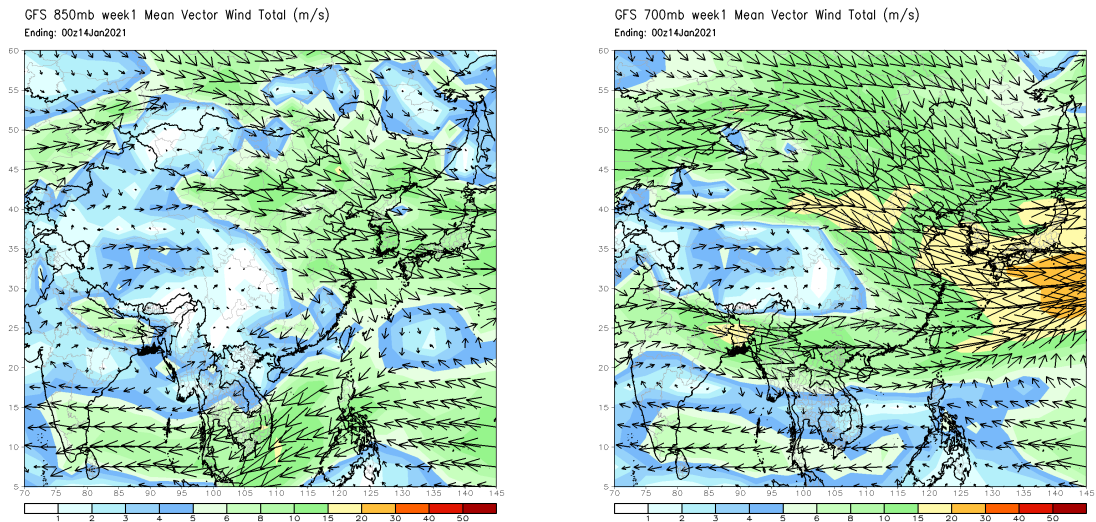
Seasonal Rainfall and Temperature Forecast

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 January–February–March 2021, Issued December 2020

White indicates Climatological odds
indicates dry season (no forecast)

Probability (%) of Most Likely Category

Precipitation Forecast

IRI Multi–Model Probability Forecast for Temperature for January–February–March 2021, Issued December 2020

White indicates Climatological odds

Probability (%) of Most Likely Category

Temperature Forecast