

Experimental Climate Monitoring and Prediction

by: Shashini Rathnayake, Ruchira Lokuhetti, Prabodha Agalawatte, Zeenas Yahiya,
Lareef Zubair and Michael Bell (FECT and IRI¹)

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Highlights

Mostly dry weather conditions prevailed in the previous week for the period from 3rd-6th while considerable rainfall was experienced by Badulla district in the last two days. Up to 30 mm of rainfall was recorded in Badulla district close to Arawa on 8th while on 9th considerable rainfall was recorded in several districts in the central region of the country. The lowest temperature was recorded in Nuwara Eliya to be between 15-20 °C while the maximum temperature was recorded in the eastern coastal belt to be between 35-40 °C. Up to 54 km/h westerly and north westerly wind was recorded all over the island. For the week from 11th-17th August rainy weather is expected in the western province and the adjoining sea. Up to 55 km/h north westerly and westerly wind is expected in the southern half of the country.

Monitoring

Rainfall

Weekly Monitoring: No rainfall was observed in any part of the island on 3rd of August. On 4th less than 5 mm rainfall was observed in Moratuwa and nearby south western sea region. Dry weather conditions prevailed throughout the island on 5th and 6th with only Monaragala and neighboring areas receiving less than 5 mm rainfalls on the 7th. On 8th Rainfall up to 30 mm was observed in the regions of Bible and Migahakiula while Badulla and Badalkumbura received rainfall up to 20 mm. On 9th areas near the border of Baulla, Monaragala and Ampara districts received rainfall between 15-20 mm with Beligalla and Padiyathalawa receiving up to 20 mm. For the past week, the RFE 2.0 tool shows rainfall between 10-25 mm in Badulla, Monaragala, Buttala and Padiyathalawa areas. It also shows 10-25 mm below average rainfall in adjacent areas of Colombo, Kalutara, Bentota, Ratnapura and south western and southern sea near the island. Above average rainfall of 10-25 mm is shown in Badulla and Ella areas.

Monthly Monitoring: Considering the dry weather condition that prevailed in the month of June, the rainfall for the month of July was comparatively high. The RFE 2.0 tool shows a total rainfall of ~150 mm in Badulla district and close to Ratnapura and Vavuniya towns and ~100 mm in Kalutara, Nuwara Eliya districts and close to Avissawella, Ellegoda, Wellawaya, Bibila areas and in the south western sea close to Galle and Matara. Rest of the north central, central, western and Sabaragamuwa provinces received up to ~75 mm of total rainfall.

Temperature

For the period from 31st July-6th August, the lowest temperature was recorded in Nuwara Eliya to be between 15-20 °C. The maximum temperature was recorded from the Eastern coastal belt to be between 35-40 °C. The maximum temperature of Kandy, Colombo, Kurunegala, Galle and Matara areas were 30-35 °C.

Wind

Both at 850 mb and 700 mb levels north westerly winds with speed between 36-55 km/h was experienced all over the island and the surrounding sea.

Ocean State

Pacific seas state: July 21, 2016

During mid-July 2016 the tropical Pacific SST anomaly was slightly below zero, indicating ENSO-neutral conditions. The key atmospheric variables also indicate neutral ENSO conditions. This includes near-average upper and lower level tropical Pacific winds, as well as mainly near-normal cloudiness and rainfall patterns in the central and eastern equatorial Pacific. Most ENSO prediction models indicate neutral ENSO conditions during July, with likely development of La Niña during August or September, lasting through fall and into winter. Most likely strength is weak. (Text Courtesy IRI)

Indian Ocean State

Neutral sea surface temperature was observed around Sri Lanka.

Predictions

Rainfall

14-day prediction: NOAA NCEP models predicts 15-25 mm rainfall in the Northern Province and Trincomalee and close to Horana for the period from 10th-16th August. During the same period rest of the country except eastern province and Hambanthota district may experience slight rainfall. For the period from 17th-23rd August, between 35-45 mm of rainfall is expected close to Trincomalee, between 25-35 mm of rainfall is expected in Colombo, Ratnapura, Matara, Eastern side of Kilinochchi, Mullaitivu districts and adjacent sea and close to Talgaswela and Udugama areas in Galle district while the rest of the country except Puttalam and Mannar shall experience 15-25 mm of rainfall.

Weekly prediction: IMD GFS model predicts wet weather conditions in the western province for the week from 11th-17th August. No rainfall is predicted on any part of the island on 11th while on 12th up to 20 mm of rainfall is predicted in the coastal regions of Kalutara district, Bentota area and the surrounding sea. On 13th coastal regions of Colombo and Kalutara, Bentota, Balapitiya and the western sea may experience up to 40 mm of rainfall while the rest of the western province, Gampaha and Galle districts may experience between 10-20 mm of rainfall. On 14th coastal areas of Kalutara, Galle and western side of Matara and sea adjacent to these areas may experience up to 40 mm of rainfall while the rest of the western province, Galle and Matara, Gampaha districts and the adjacent sea may experience 10-20 mm of rainfall. On 15th the intensity of the rainfall is seen to be reduced and only up to 20 mm of rainfall is predicted in the coastal region close to Dehiwala and Moratuwa areas. On 16th Colombo, the western region of Kalutara and the adjacent sea may experience up to 20 mm of rainfall while on 17th up to 20 mm of rainfall is predicted in entire Western province, Galle district and the adjacent sea.

IMD WRF & IRI Model Forecast: According to the IMD WRF model, up to 35 mm of total rainfall is predicted in the western province, Kurunegala, Puttalam and Galle districts for the period from 10th-12th August. For the period from 10th-13th, up to 35 mm is predicted in the same region as well as in Kegalle, Matara and eastern side of Ratnapura district. No extreme conditions are predicted for the period from 10-15th August.

Seasonal Prediction: As per IRI Multi Model Probability Forecast for August to October, the total 3-month precipitation shall be climatological. The 3-month temperature has more than 70-80% likelihood in the entire country of being in the above-normal tercile during this period.

Temperature

NOAA CPC GFS model predicts 35-40 °C maximum temperature along the coastal belt in the Eastern side of the country, Kilinochchi, Vavunia and Mullaitivu districts. The maximum temperature of Colombo, Kalutara, Kandy and Galle areas will be between 25-30 °C while that of Kurunegala and Matale districts will be between 30-35 °C. For the same period minimum temperature is expected in Nuwara Eliya to be between 15-20°C.

Wind

The 850 mb level predicts up to 55 km/h north westerly wind in the lower half of the country including Kandy and Moneragala areas while up to 36 km/h westerly wind is predicted in the northern half of the country and Ampara and Batticaloa areas. At 700 mb level Hambantota district may experience up to 36 km/h north westerly wind while the rest of the country may experience up to 28 km/h westerly and north westerly wind.

MJO based OLR predictions

MJO will be in the western Pacific Ocean in the next seven days and shall not have an effect on the rainfall patterns of 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

1. Monitoring

- a. Daily Rainfall Monitoring
- b. Weekly Rainfall Monitoring
- c. Monthly Rainfall Monitoring
- d. Dekadal (10 Day) Satellite Derived Rainfall Estimates
- e. Weekly Temperature Monitoring
- f. Weekly Wind Monitoring
- g. Weekly Average SST Anomalies

2. Predictions

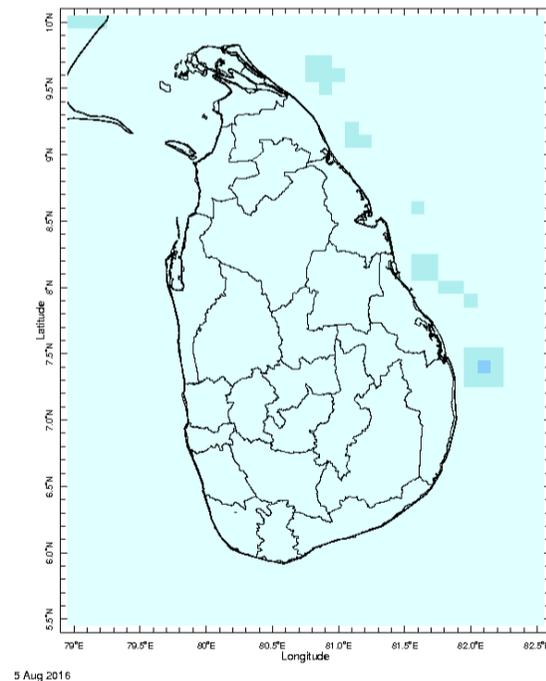
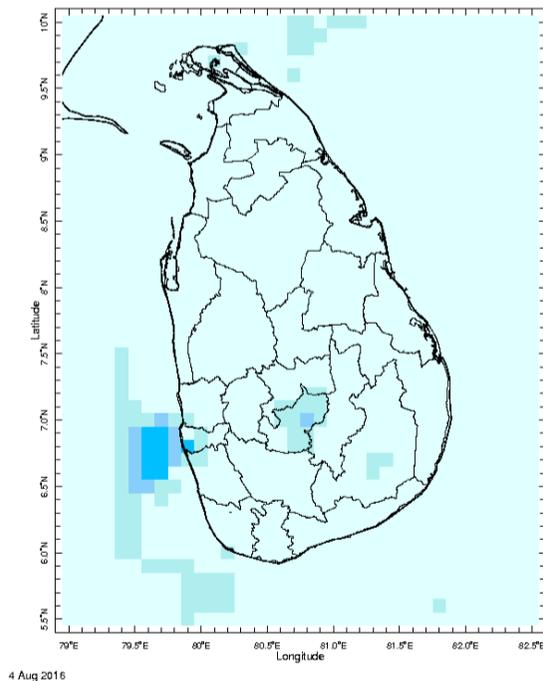
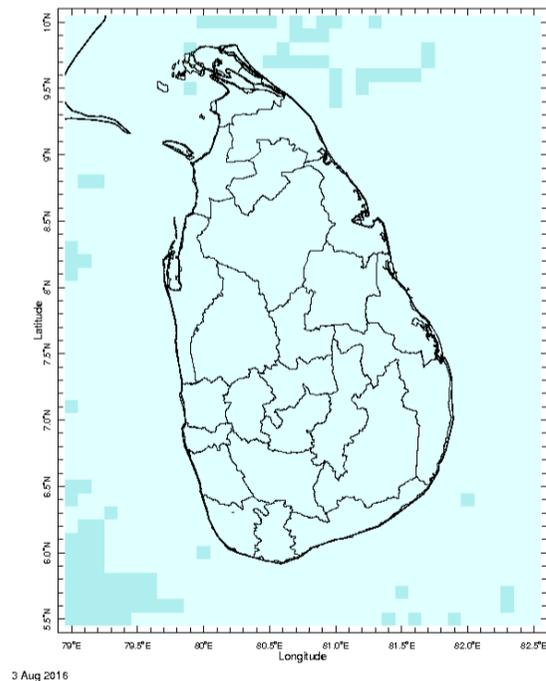
- a. NCEP GFS Ensemble 1-14 day Rainfall Predictions
- b. GFS (T574) Model Rainfall Forecast from RMSC New Delhi
- c. WRF Model Rainfall Forecast from IMD Chennai
- d. MJO Related OLR Forecast
- e. Weekly Precipitation Forecast from IRI
- f. Weekly Temperature Forecast
- g. Weekly Wind Forecast
- h. Seasonal Predictions from IRI

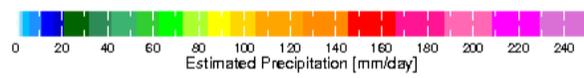
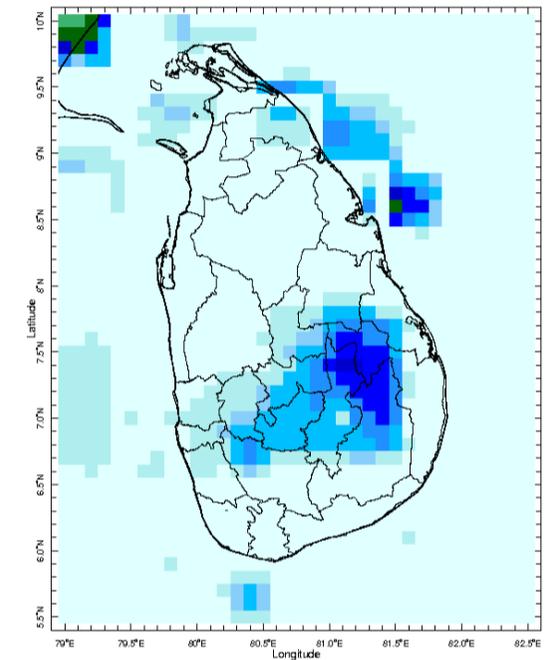
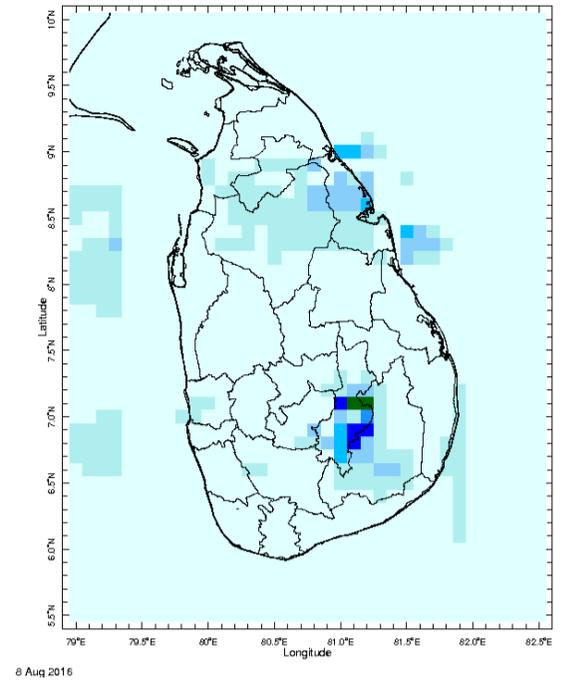
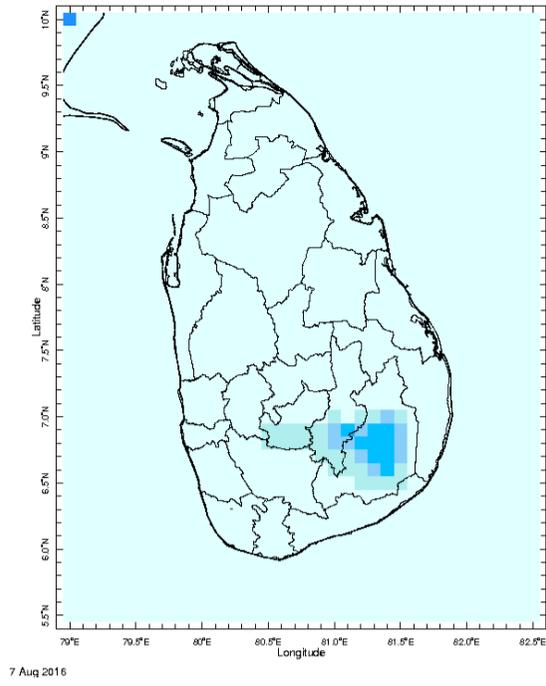
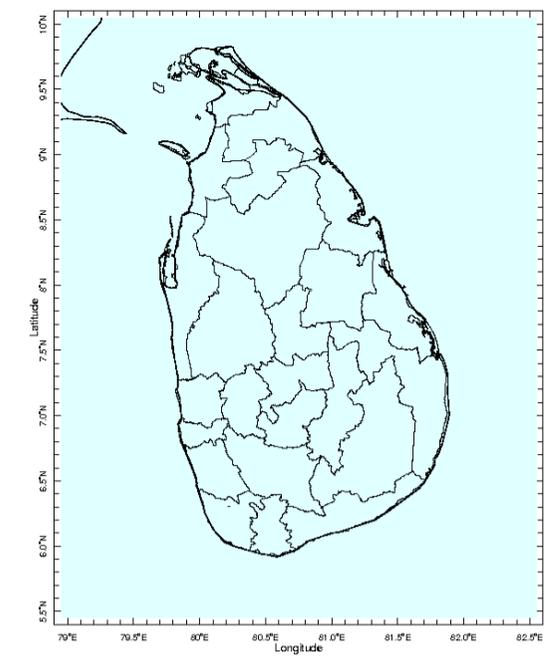


MONITORING

Daily Rainfall Monitoring

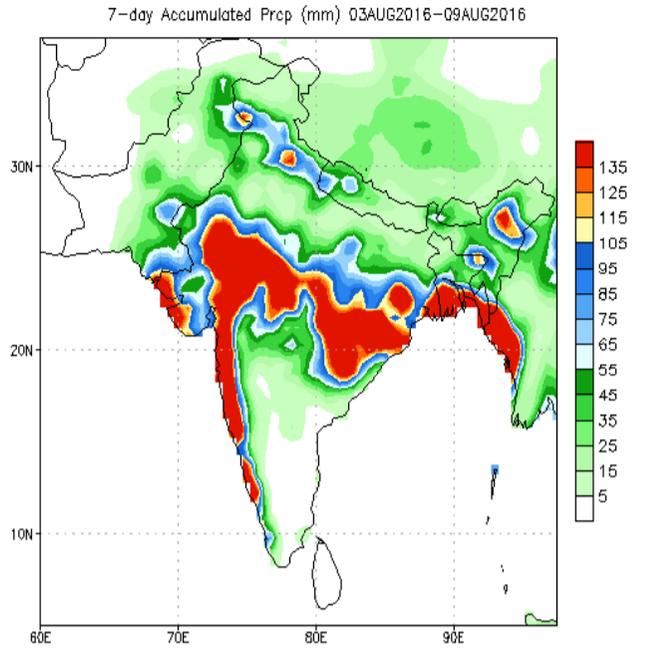
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



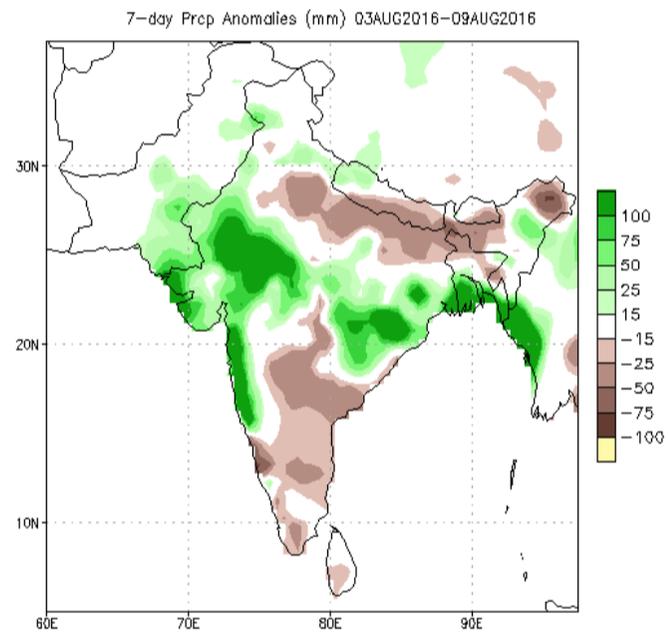
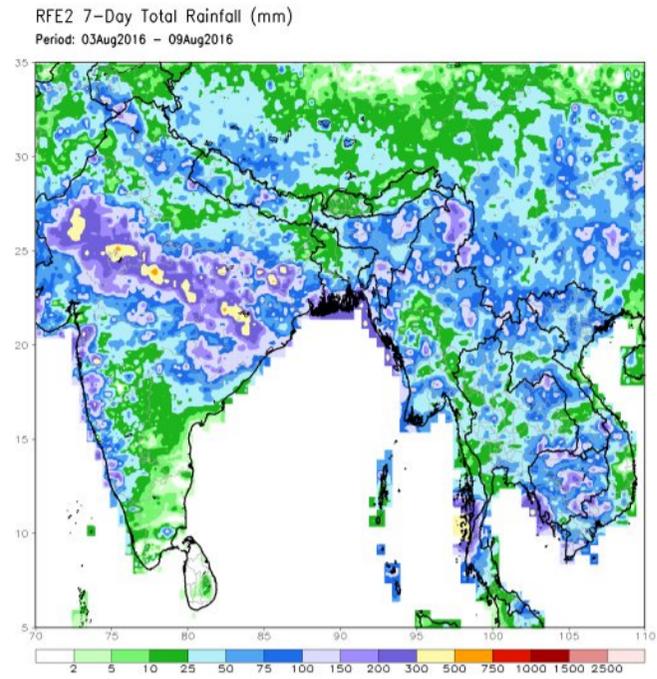


Weekly Rainfall Monitoring

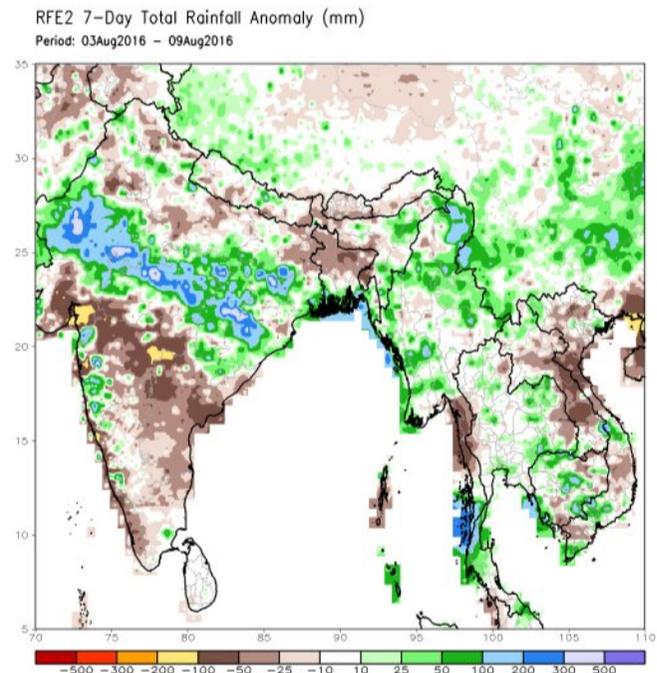
The following figures show the total satellite observed rainfall in the last week in Sri Lanka. The figure in the left is the total 7-day rainfall from NOAA Climate Prediction Center (CPC) Unified Precipitation Analysis and the figure in the right is the total 7-day rainfall from CPC RFE 2.0 Satellite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



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

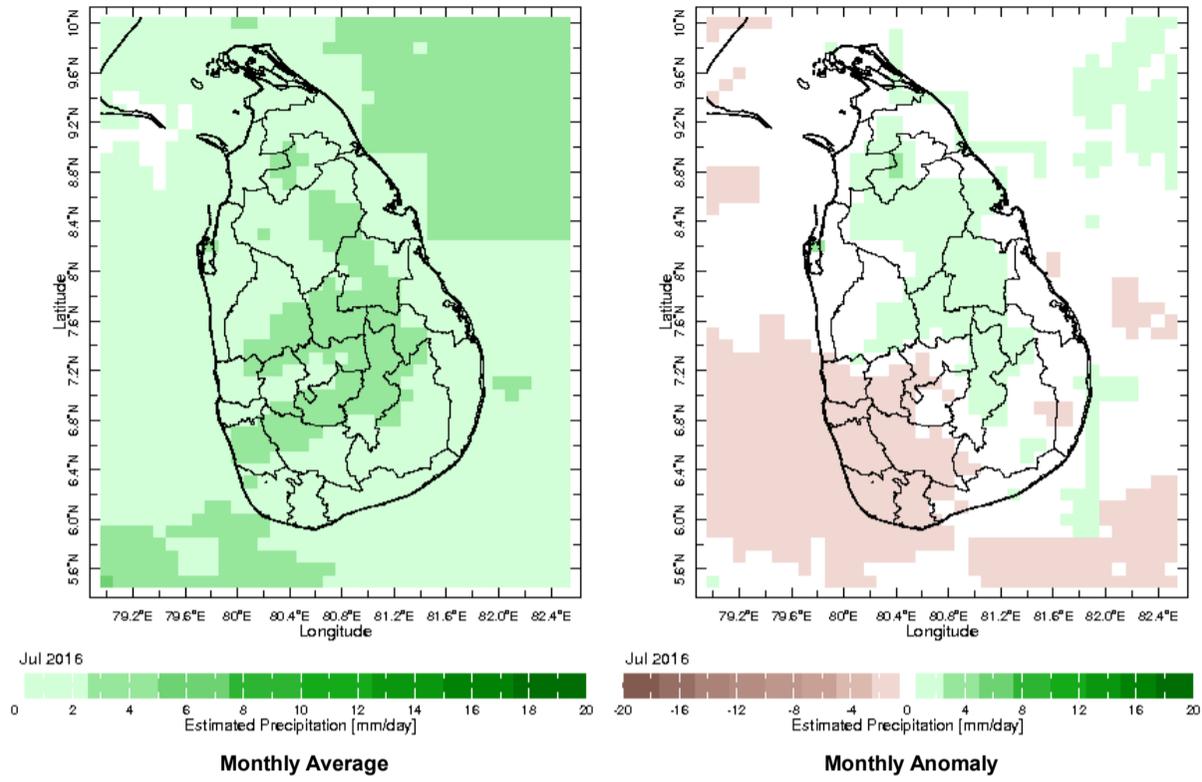


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis Climatology (1981-2010)

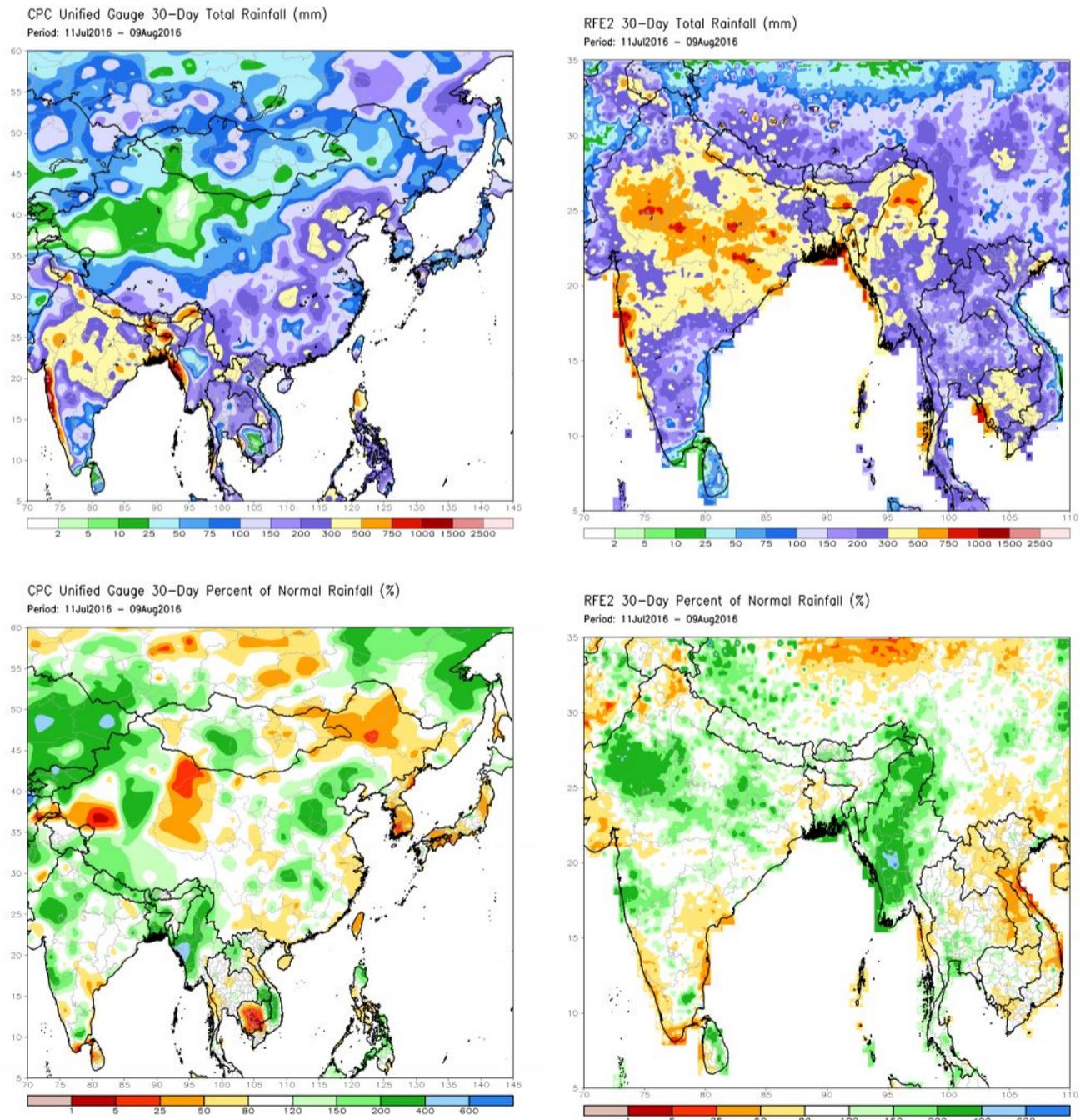


Monthly Rainfall Monitoring

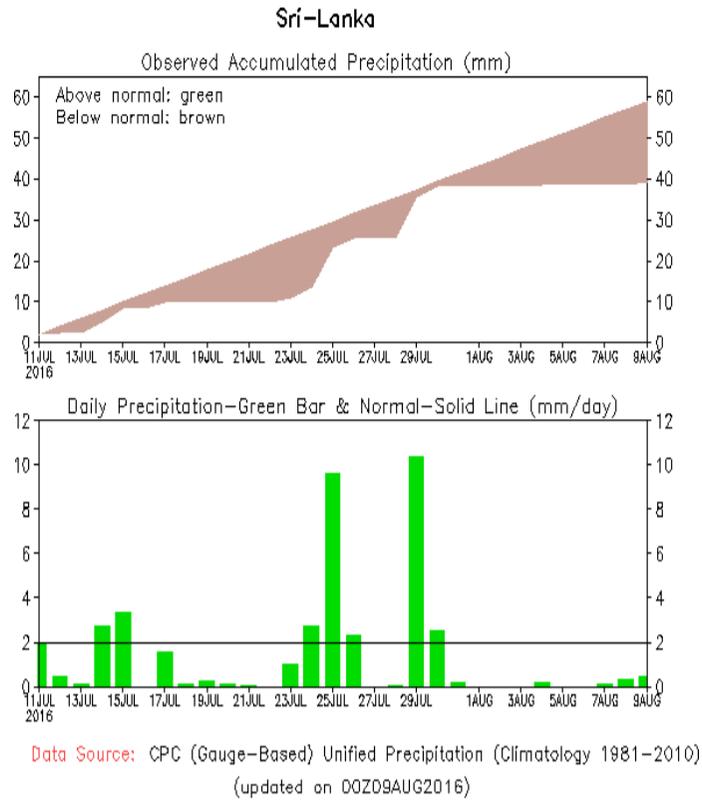
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



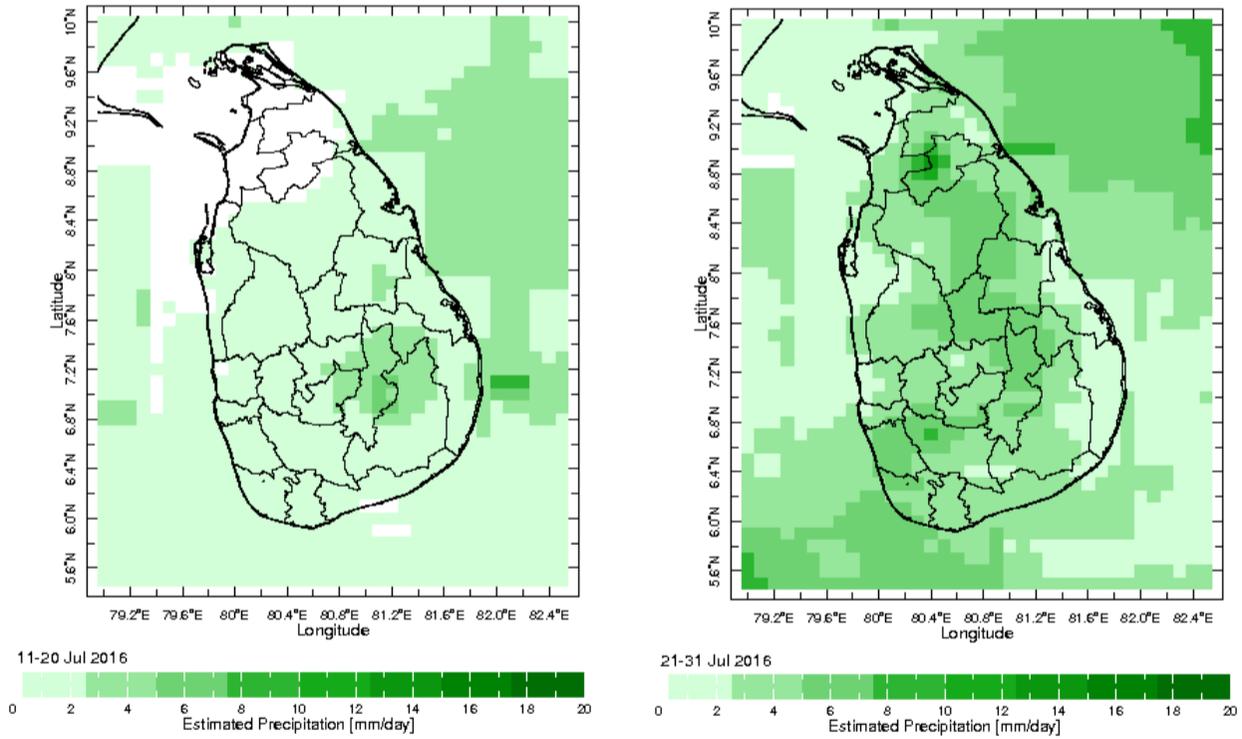
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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



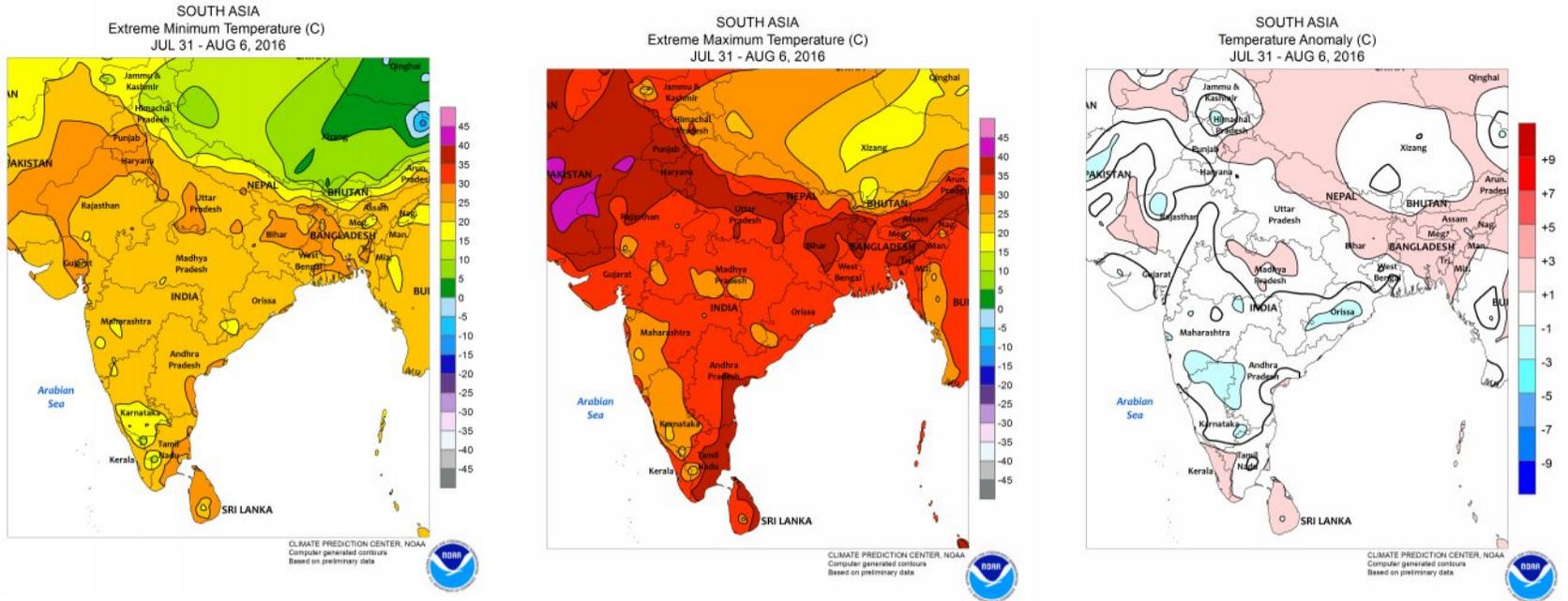
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



Dekadal (10 Day) Satellite Derived Rainfall Estimates

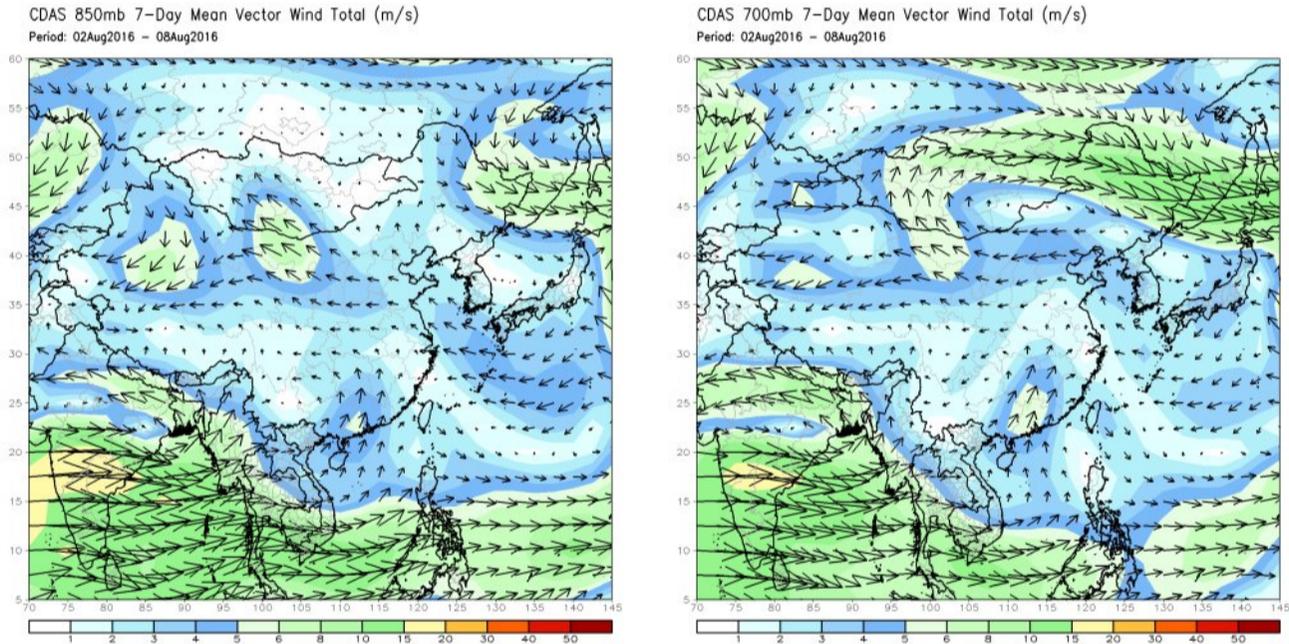


Weekly Temperature Monitoring



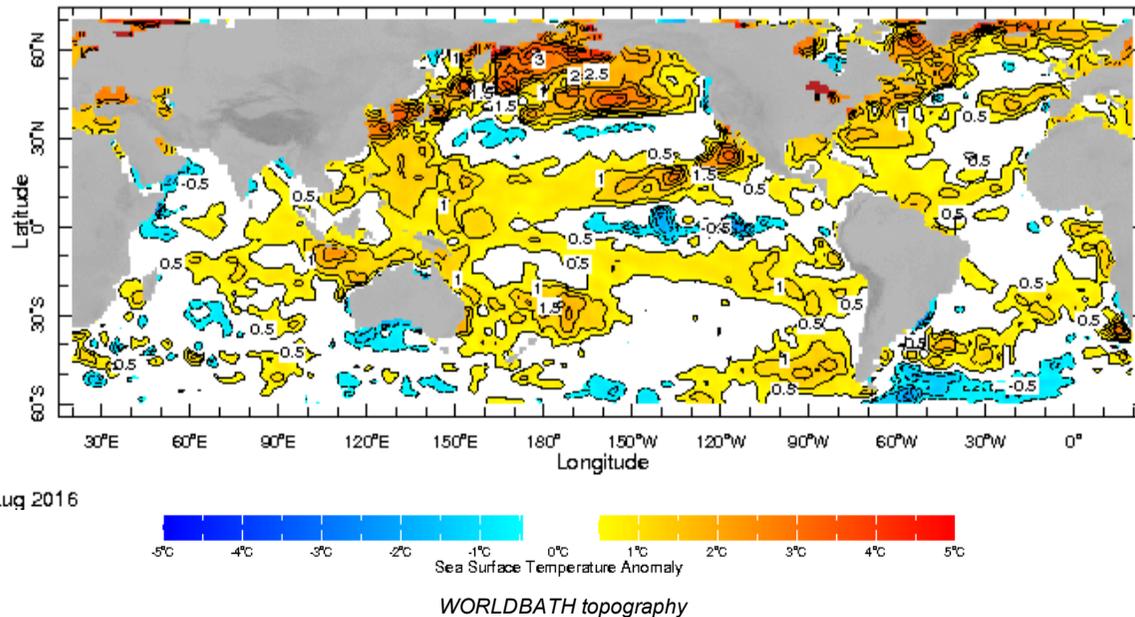
Weekly Wind Monitoring

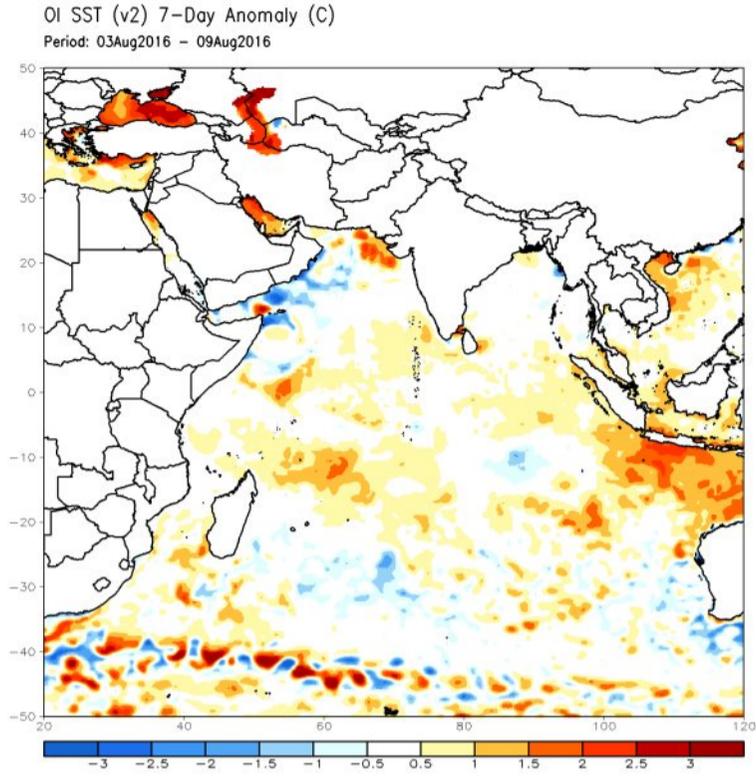
The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



Weekly Average SST Anomalies

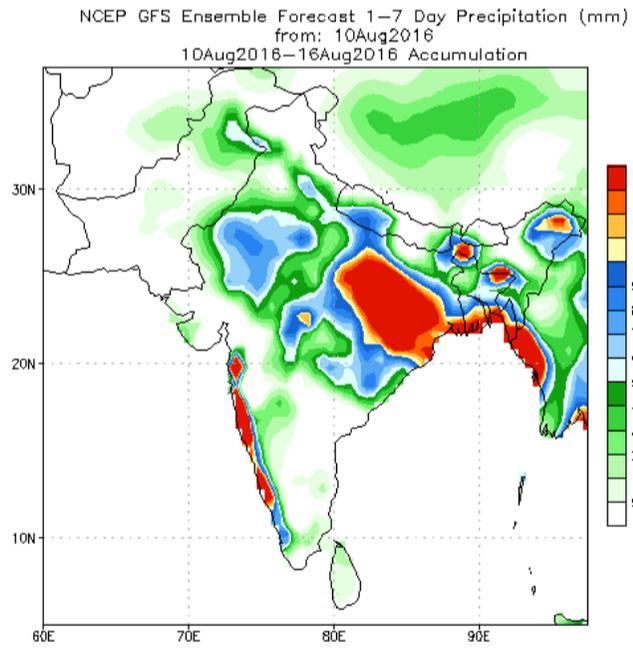
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP



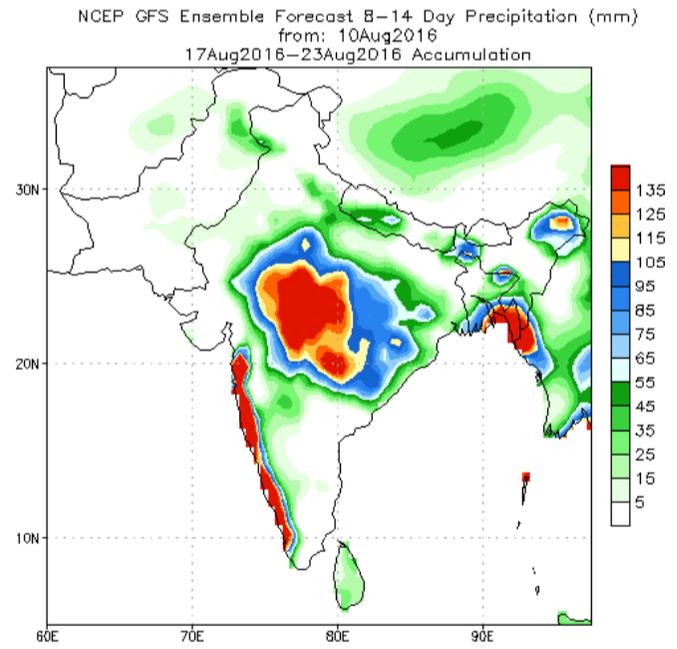


PREDICTIONS

NCEP GFS 1- 14 Day prediction

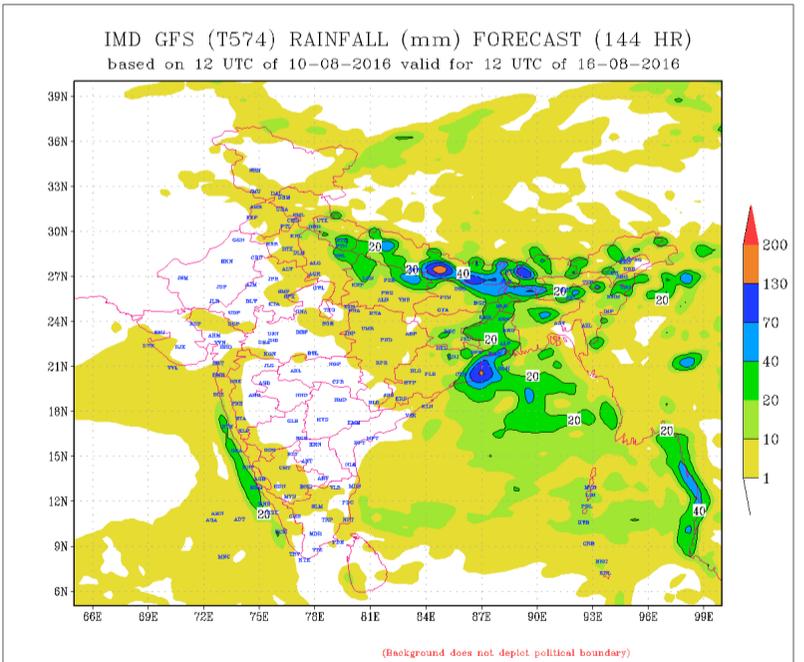
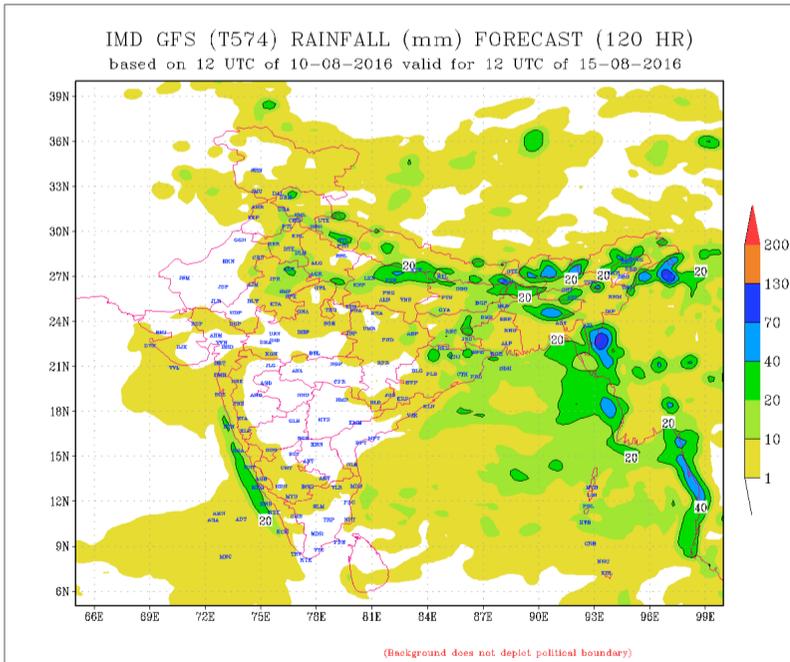
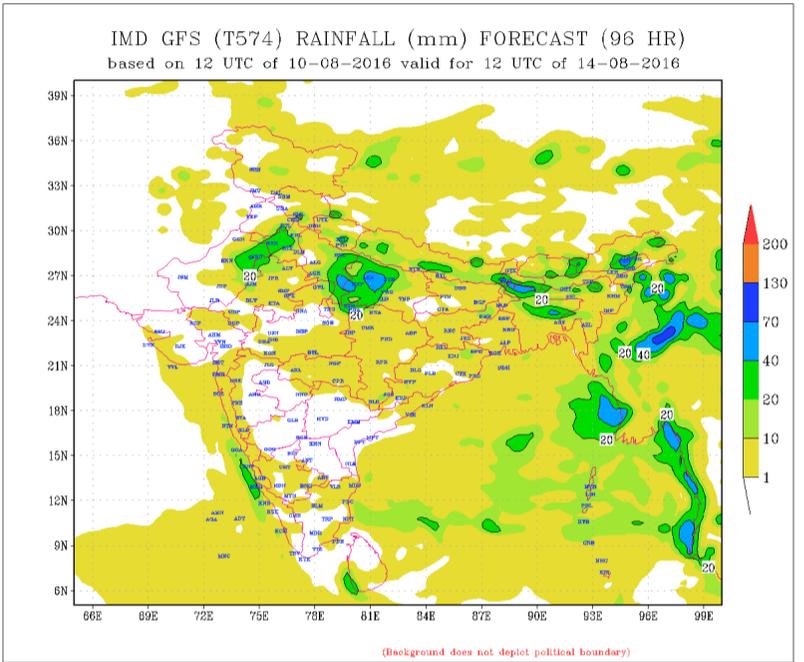
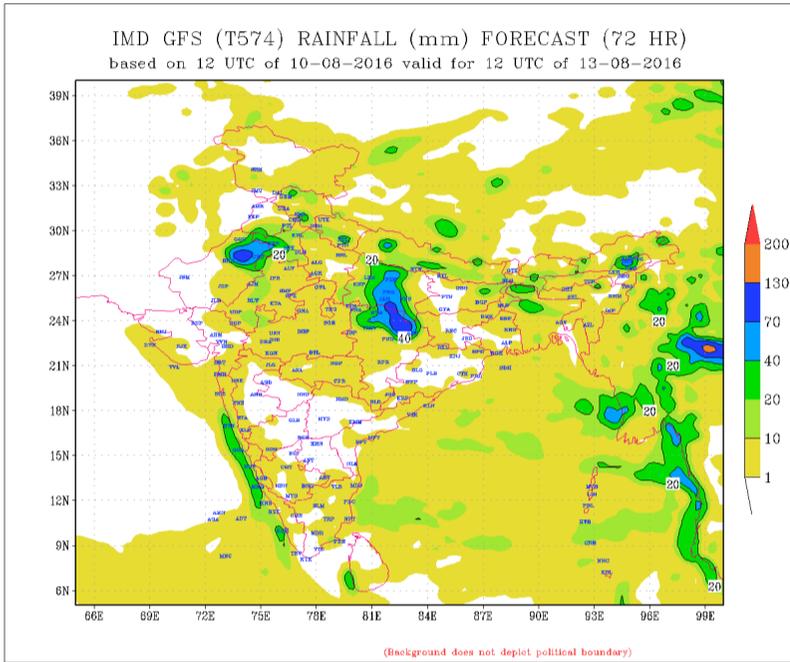
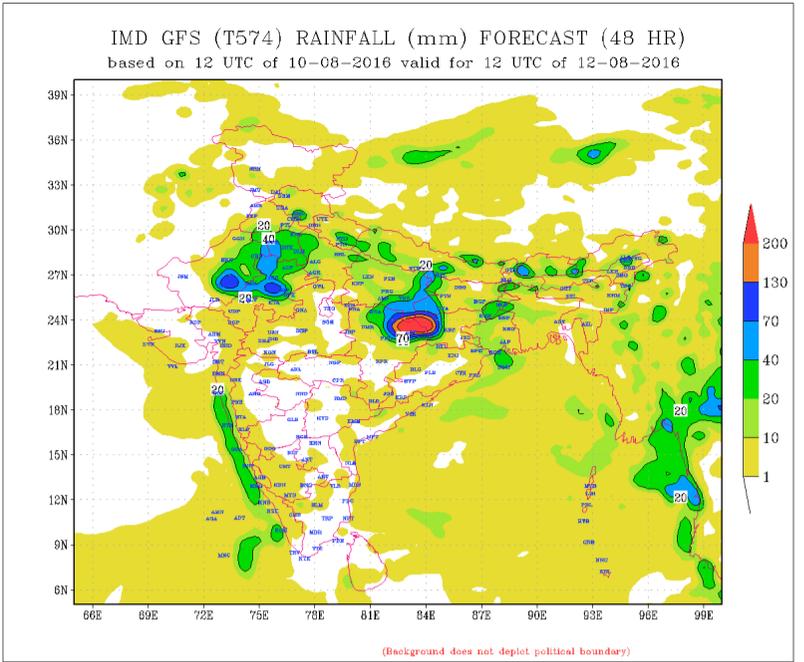
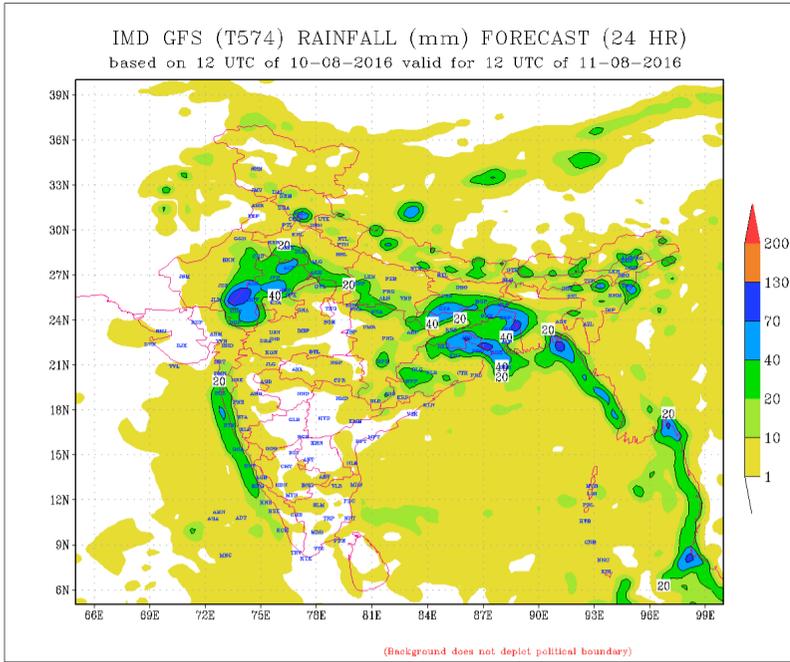


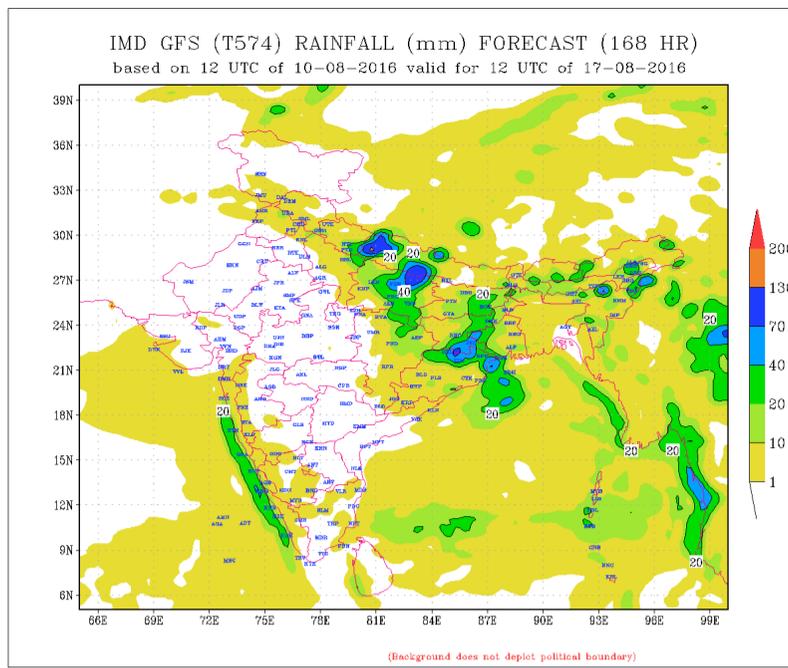
Bias correction based on last 30-day forecast error



Bias correction based on last 30-day forecast error

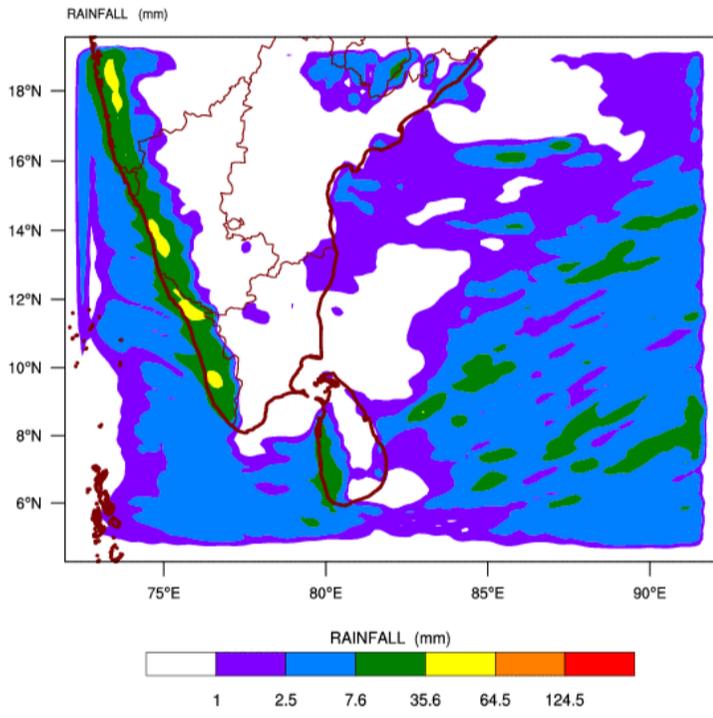
IMD GFS (T574) Model Rainfall Forecast from RMSC New Delhi, India



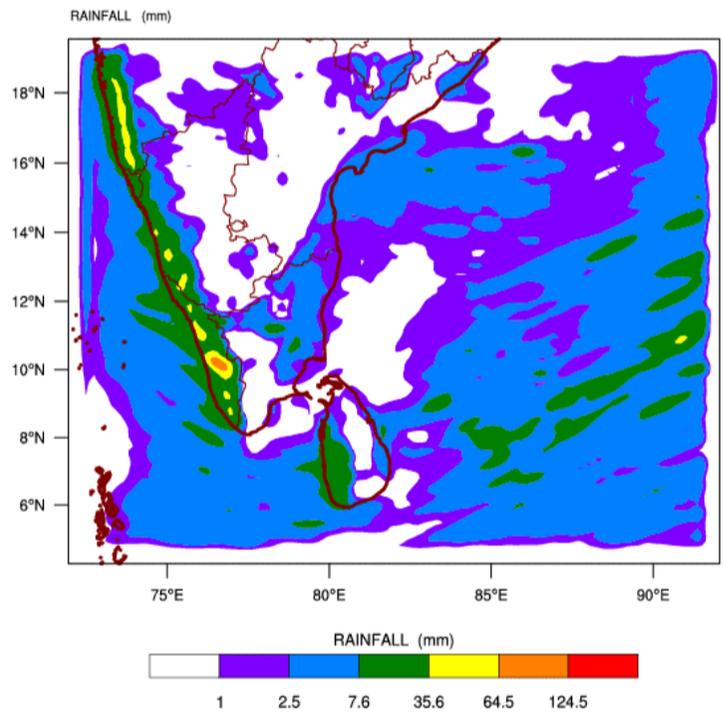


WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\
 based on 00 UTC of 10-08-2016 valid for 03 UTC of 12-08-2016

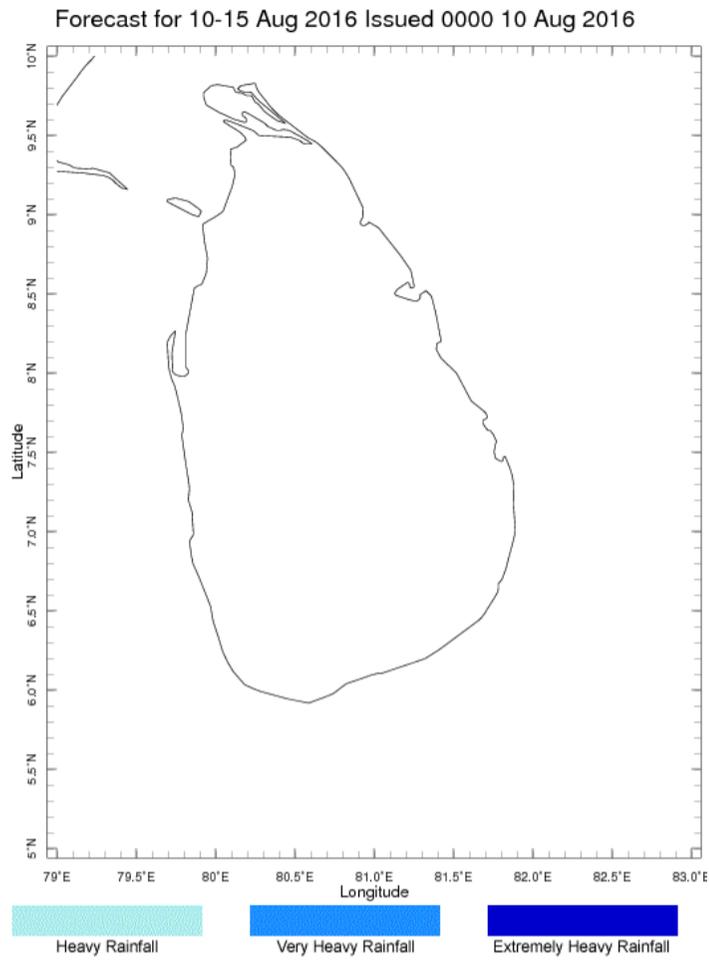


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\
 based on 00 UTC of 10-08-2016 valid for 03 UTC of 13-08-2016

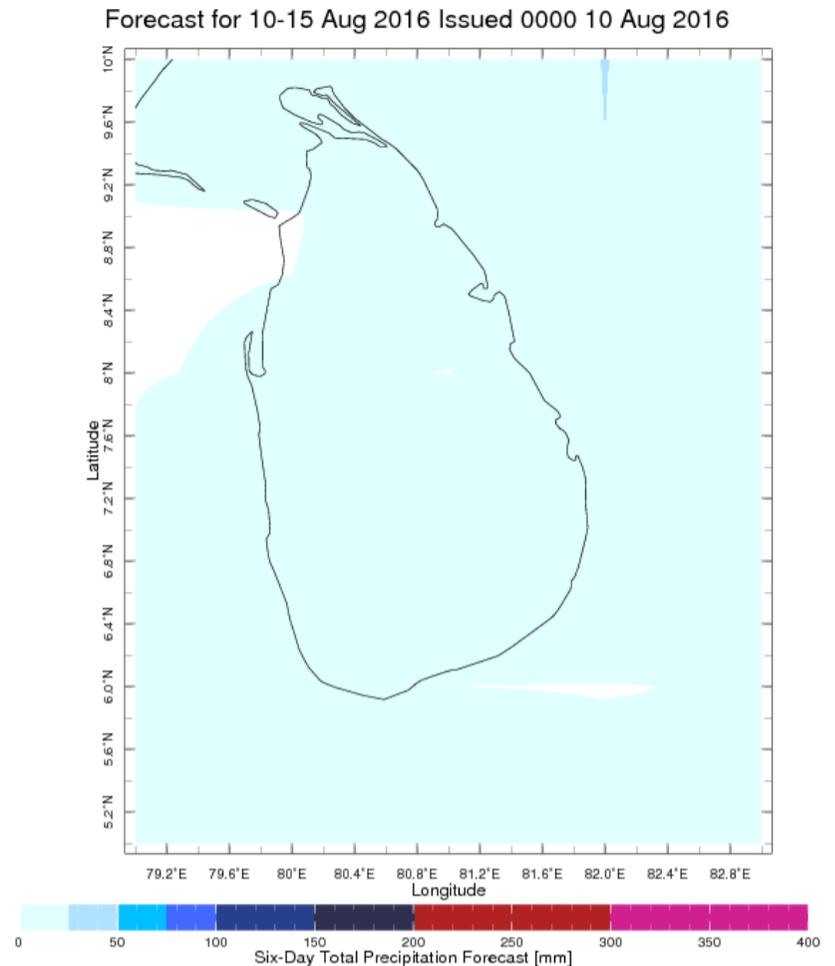


Weekly Rainfall Forecast from IRI

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.



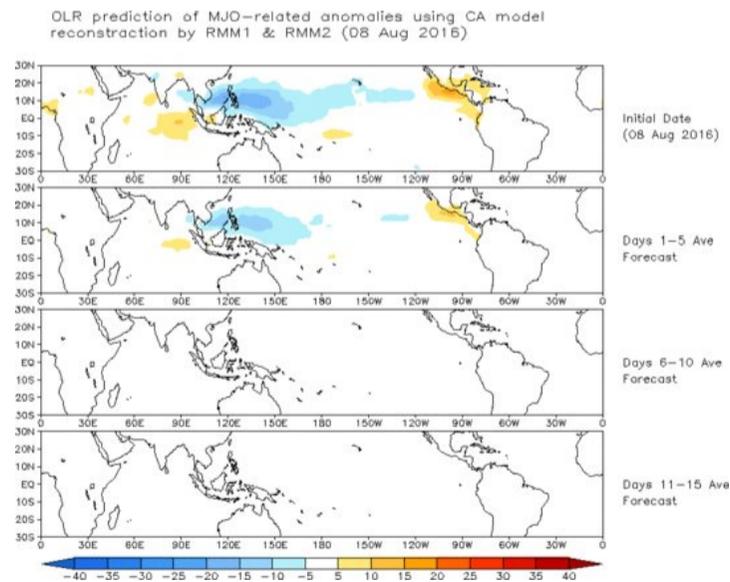
Extreme Rainfall Forecast



Total Six Day Precipitation Forecast

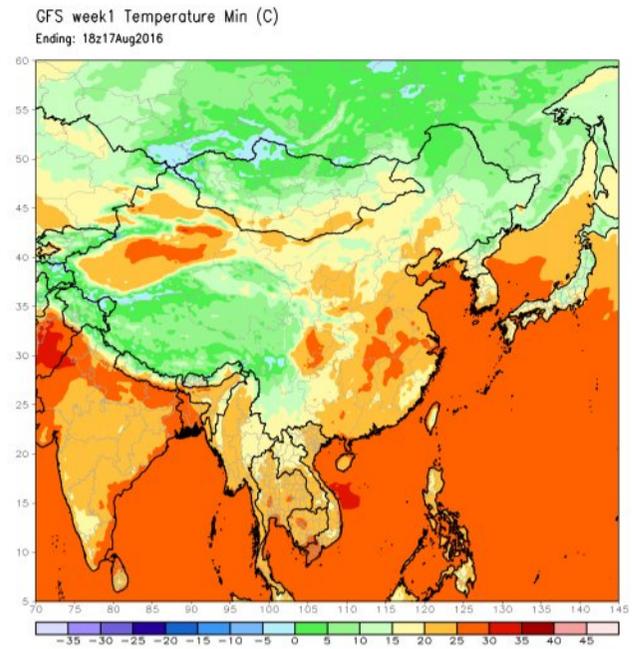
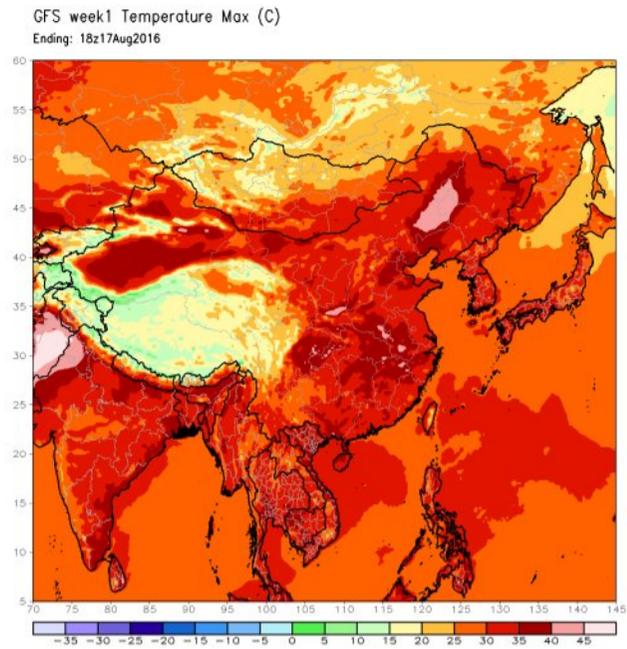
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

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.



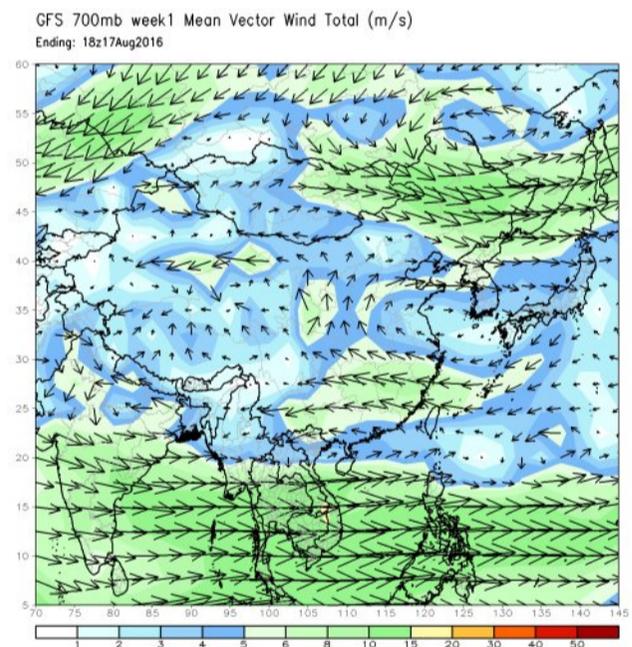
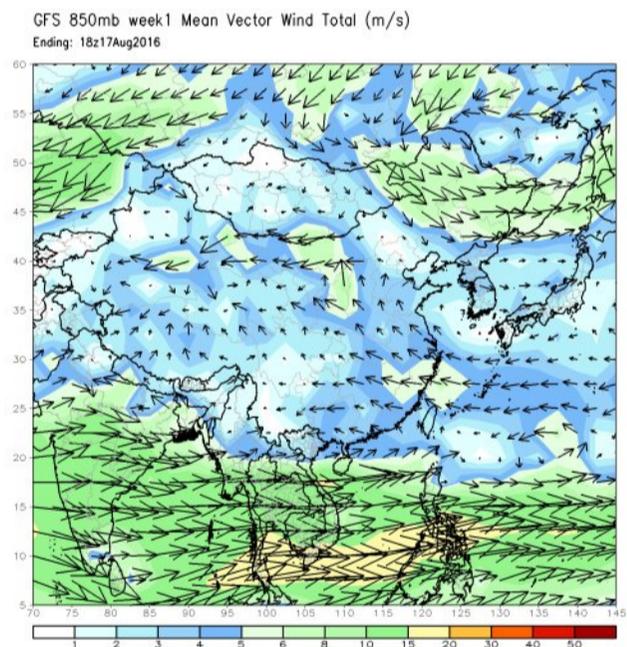
Weekly Temperature Forecast

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



Weekly Wind Forecast

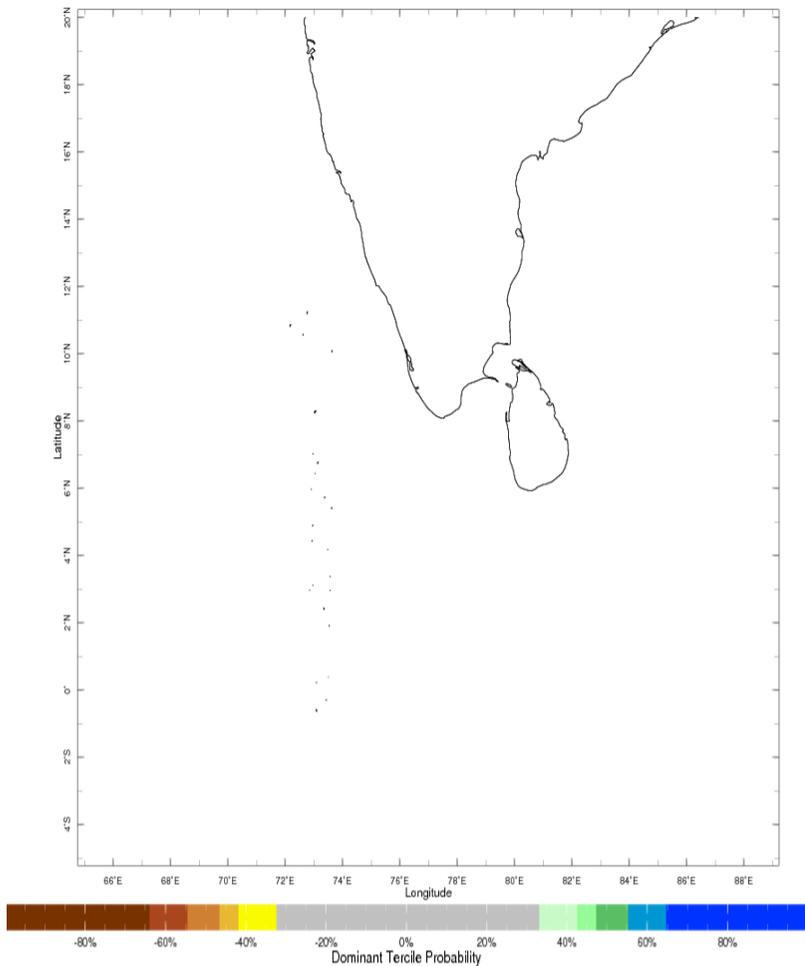
Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)



Seasonal Rainfall and Temperature Forecast

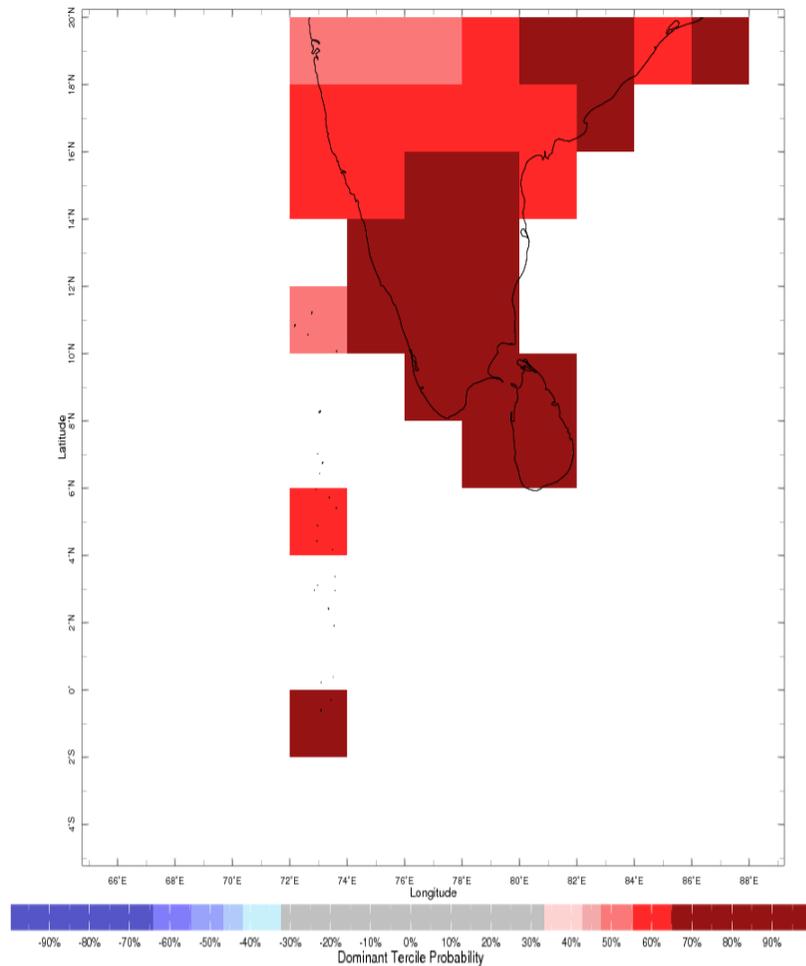
Following is the latest seasonal precipitation and temperature prediction for the next 3 months by the IRI. The color shading indicates the probability of the most dominant tercile -- that is, the tercile having the highest forecast probability. The color bar alongside the map defines these dominant 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%).

Aug-Oct 2016 IRI Seasonal Precipitation Forecast issued Jul 2016



Precipitation Forecast

Aug-Oct 2016 IRI Seasonal Temperature Forecast issued Jul 2016



Temperature Forecast

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