

Experimental Climate Monitoring and Prediction

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

1 September 2016

Highlights

During the previous week, wet weather conditions were experienced by Jaffna and Kilinochchi districts of the country. On 26th up to 35 mm of rainfall was recorded in Jaffna. As expected, the lowest temperature was recorded in Nuwara Eliya to be between 15- 20 °C. The maximum temperature of between 35-40 °C was recorded in the northern and eastern coastal belt. Up to 55 km/h north westerly wind was experienced by the Southern and Central regions of the country. No extreme weather conditions were experienced by the country in the month of August. Wet weather conditions are expected in the Northern Province in the week from 1st-7th September. Up to 55 km/h north westerly wind is expected in the southern region of the country including North Western and Uva provinces.

Monitoring

Rainfall

Weekly Monitoring: On 24th up to 20 mm of rainfall was recorded in the border of Ampara and Moneragala close to Ellegoda while up to 15 mm of rainfall was recorded in the surrounding areas and the northern region of Ampara, Badulla and Moneragala districts. Mostly dry weather conditions were experienced on 25th with only slight rainfall of less than 10 mm in a few areas. On 26th up to 35 mm of rainfall was recorded in Jaffna, Karaitivu and close by areas, while the rest of Jaffna district received up to 15 mm. On 27th up to 15 mm of rainfall was recorded in the Jaffna district and the adjacent sea. On 28th between 10-15 mm of rainfall was recorded in Mannar, Kilinochchi, Mulaitivu, Vavuniya and Trincomalee districts. On 30th up to 15 mm of rainfall was recorded in the border of Moneragala and Ampara close to Lahugala. For the past week, the RFE 2.0 tool shows rainfall between 25-50 mm in Galle and Matara districts and in some other regions surrounding Ratnapura, Mannar, Vavuniya, Trincomalee Nuwara Eliya and Monaragala. Similar amount of rainfall is shown near the border of Ampara, Badulla and Monaragala districts. A rainfall between 10-25 mm is shown in some areas of Kegalle, Hambantota, Badulla and Matale districts. An above average rainfall of 25-50 mm is shown in Karampan and Karainagar of Jaffna district. 10-25 mm above average rainfall can be seen in Mullaitivu and Kilinochchi districts and in Trincomalee. It also shows a below average rainfall of 25-50 mm in the Colombo district and in nearby Gampaha, Kalutara, Avissawella and Horana areas. A below average rainfall of 10-25 mm can be seen in the central and western regions of the island including Polonnaruwa, Ampara and Galle regions.

Monthly Monitoring: Average rainfall conditions were experienced in the month of August. The CPC Unified Precipitation analysis tool shows ~50 mm of total rainfall in Galle, Matara and Jaffna districts. The RFE 2.0 tool shows ~75 mm of total rainfall in the Jaffna district, northern region of Uva province including Radaliyadda, Beligalla and Arawa areas, ~ 50 mm of rainfall in rest of Badulla, Nuwara eliya, Kilinochchi, Trincomalee districts and Kuruwita, Ratnapura and Palmadulla areas.

Temperature

For the period from 21st-27th August the lowest temperature of 15-20 °C was recorded in Nuwara Eliya. The maximum temperature to be recorded was between 35-40 °C in the North and Eastern coastal belt. The maximum temperature of Kandy, Kegalle, Ratanapura, Badulla and Galle areas was 25-30 °C. The maximum temperature of rest of the country was between 30-35 °C. During this period an above average temperature of 0-1 °C was observed in the northern and central regions of the country including Galle while in rest of the island the temperature was 1-3 °C above average.

Wind

At 850 mb level 35-55 km/h north westerly wind was experienced by the central and southern regions of the country while the northern region including Anuradhapura, Polonnaruwa, and Trincomalee experienced 30-35 km/h wind in the same direction. At 700 mb the entire country experienced north westerly wind with 30-35 km/h speed.

Ocean State

Pacific seas state: August 18, 2016

During mid-August 2016 the tropical Pacific SST anomaly was close to -0.5C, approaching the weak La Niña threshold. However, most key atmospheric variables continue to indicate neutral ENSO conditions. Although the upper level winds in the tropical Pacific are slightly suggestive of La Niña, the lower level winds remain near average. The Southern Oscillation index and the pattern of cloudiness and rainfall in the equatorial Pacific also indicate neutral ENSO despite a mild tilt toward La Niña. The collection of ENSO prediction models indicate SSTs most likely near the borderline of cool-neutral and weak La Niña from the present through fall and into winter. (Text Courtesy IRI)

Indian Ocean State

0.5 °C above average sea surface temperature was observed in the north eastern sea of Sri Lanka.

Predictions

Rainfall

14-day prediction: NOAA NCEP models predicts between 35-45 mm of rainfall in the Jaffna Sea few kilometers away from the island for the period from 31st August – 6th September. For the same period up to 35 mm of rainfall are expected in Jaffna and Kilinochchi districts and the adjacent sea while up to 25 mm of rainfall is expected in Mullaitivu and Vavuniya districts and the Adampane, Pulmudai and surrounding areas. Slightly enhanced rainfall conditions are expected in the Northern region of the island for the period from 7th-13th September. During that period up to 75 mm of rainfall is expected in the Jaffna district and the adjacent sea, up to 65 mm of rainfall is expected in Kilinochchi district and the adjacent sea and up to 55 mm of rainfall is expected in the Mullaitivu district and the northern region of Mannar district. For the same period between 35- 45 mm of rainfall is predicted in Vavuniya and the southern region of Mannar district and between 15-35 mm of rainfall is predicted in Anuradhapura and Trincomalee districts and the surrounding areas.

Weekly prediction: IMD GFS model predicts no rainfall all over the country except on 1st and 2nd. On 1st between 20-40 mm of rainfall is expected close to Kahawa, Ahungalla, Bentota and the adjacent sea while up to 20 mm of rainfall is expected in rest of the Galle district, Kalutara and Colombo districts and the adjacent sea. On 2nd rainfall is expected to be decreased and between 10-20 mm of rainfall is expected in the western province and the adjacent sea. On 2nd, 4th-6th period, between 10-20 mm of rainfall is expected in the Jaffna sea.

IMD WRF & IRI Model Forecast: According to the IMD WRF model, for the period from 31st August-2nd September up to 36 mm of total rainfall is expected in the Western province, North Western province, Galle and Kegalle districts. The model does not predict considerable rainfall on the 3rd. The IRI model predicts no extreme conditions for the coming week.

Seasonal Prediction: As per IRI Multi Model Probability Forecast for September to November, 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 and in Polonnaruwa and Monaragala districts. The maximum temperature of Gampaha, Colombo, Kalutara, Galle, Ratnapura and Kegalle areas will be between 25-30 °C while in Kandy, Matale, Puttalam, Kurunegala, Anuradhapura, Mannar and Matara districts the temperature 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 southern part of the country including North Western, Central and Uva provinces while up to 36 km/h south westerly wind is expected in the northern and eastern regions of the country. The 700 mb level predicts westerly winds for the entire island with speeds less than 30 km/h.

MJO based OLR predictions

MJO will be weak over the next seven days but will suppress the rainfall conditions over 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.

FECT BLOG

Past reports available at <http://fectsl.blogspot.com/> and <http://fectsl.wordpress.com/>

FECT WEBSITES

<http://www.climate.lk> and <http://www.tropicalclimate.org/>



www.fb.com/fectsl



[@fectlk](https://twitter.com/fectlk)

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

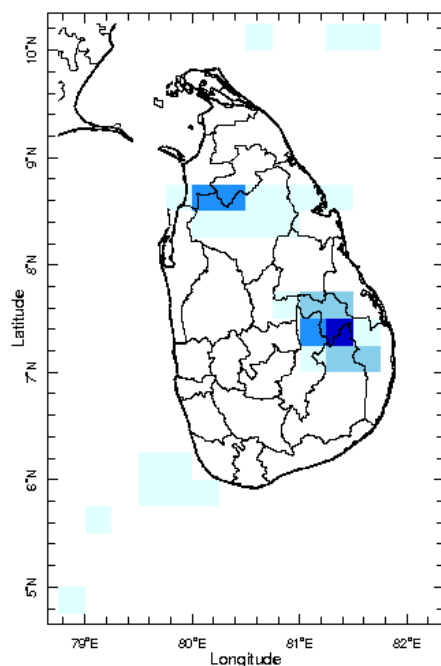
2. Predictions

- 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

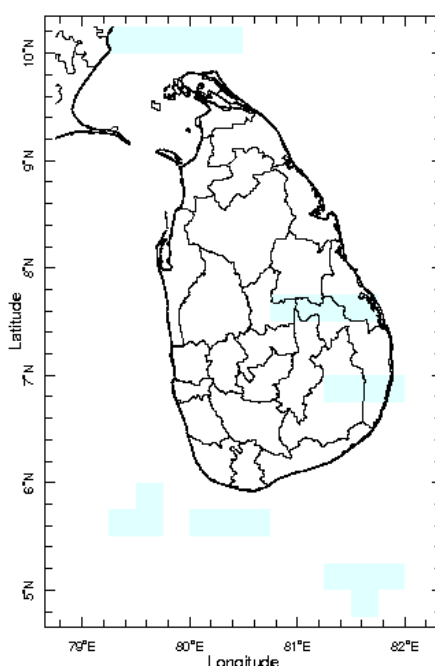
MONITORING

Daily Rainfall Monitoring

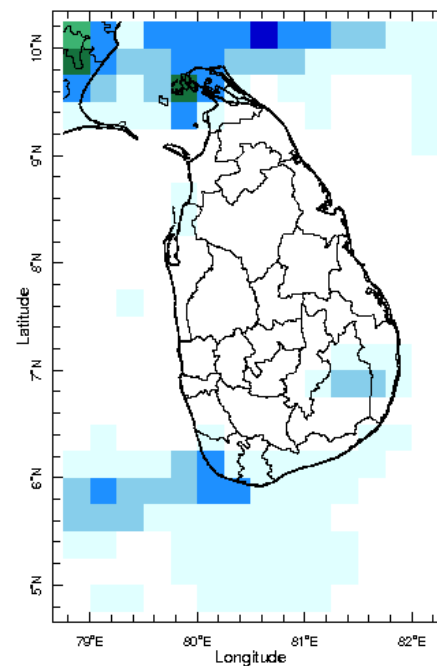
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



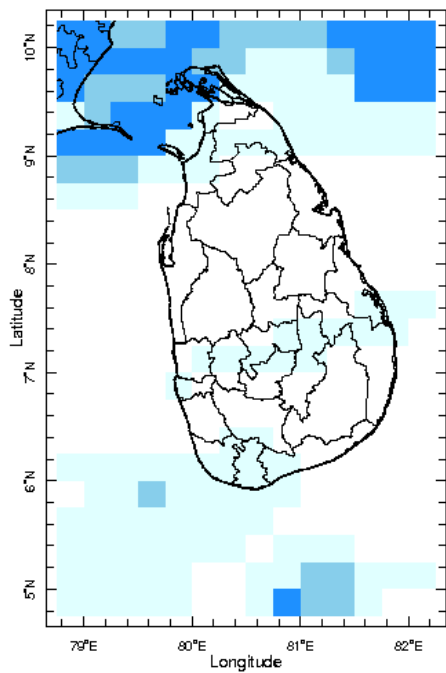
24 Aug 2016



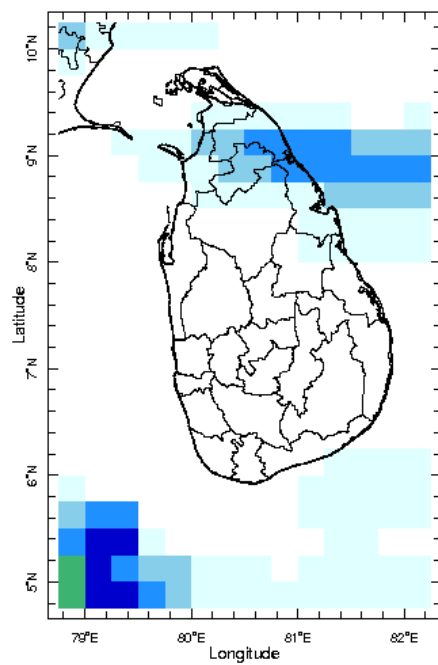
25 Aug 2016



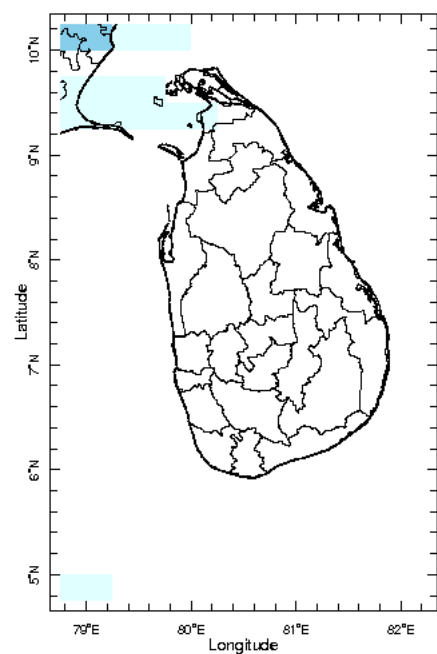
26 Aug 2016



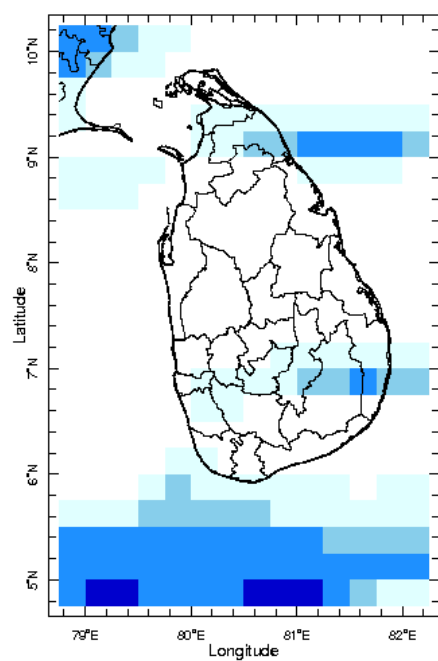
27 Aug 2016



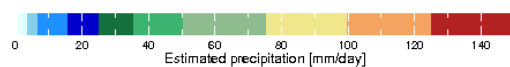
28 Aug 2016



29 Aug 2016

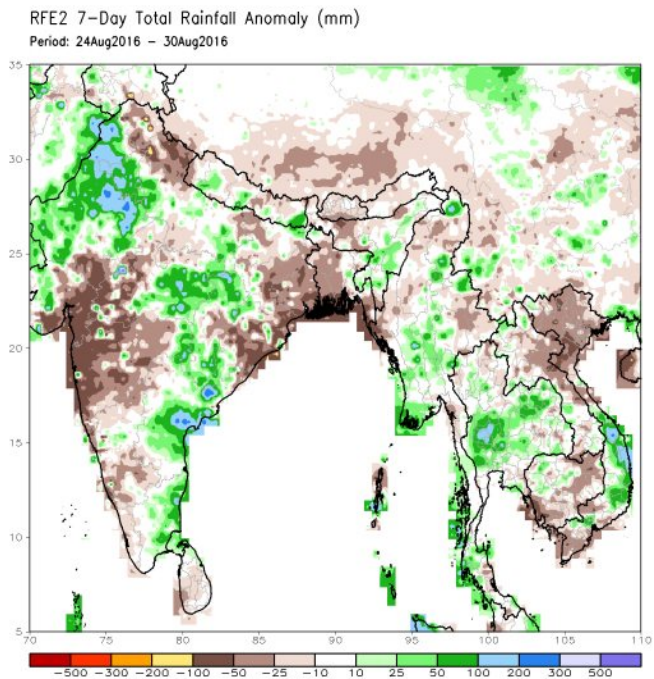
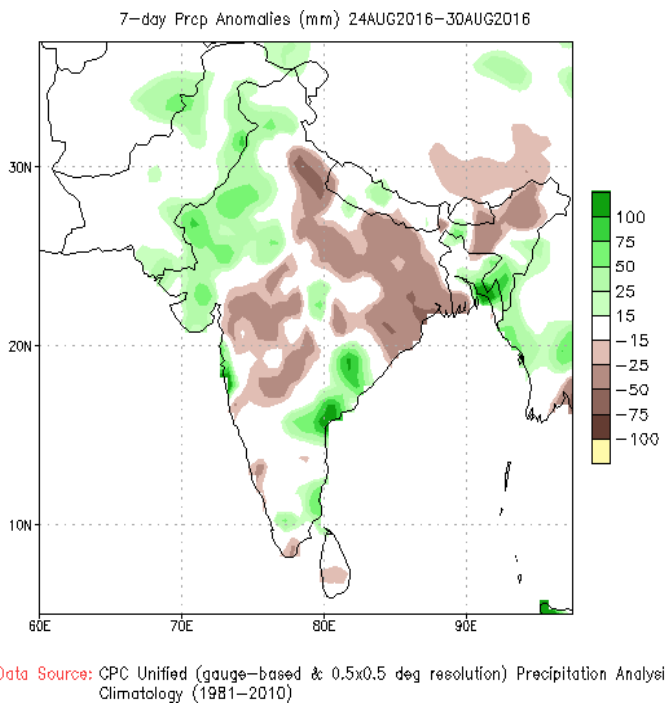
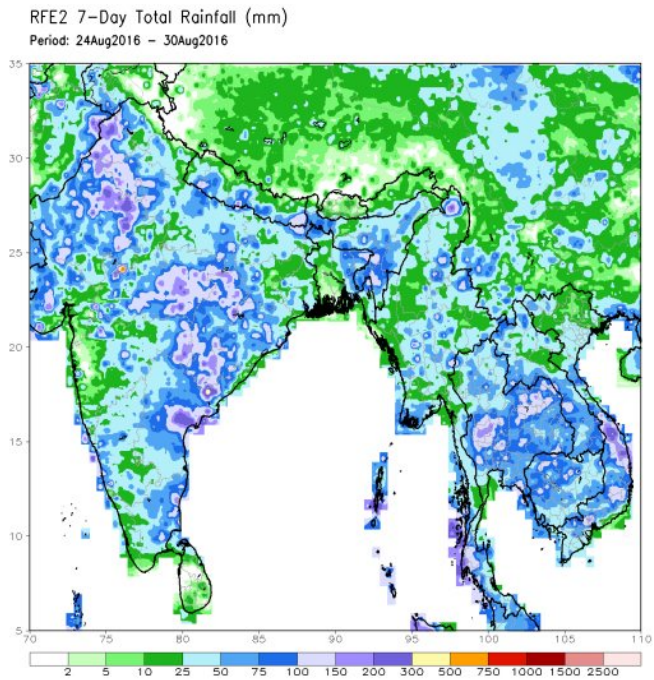
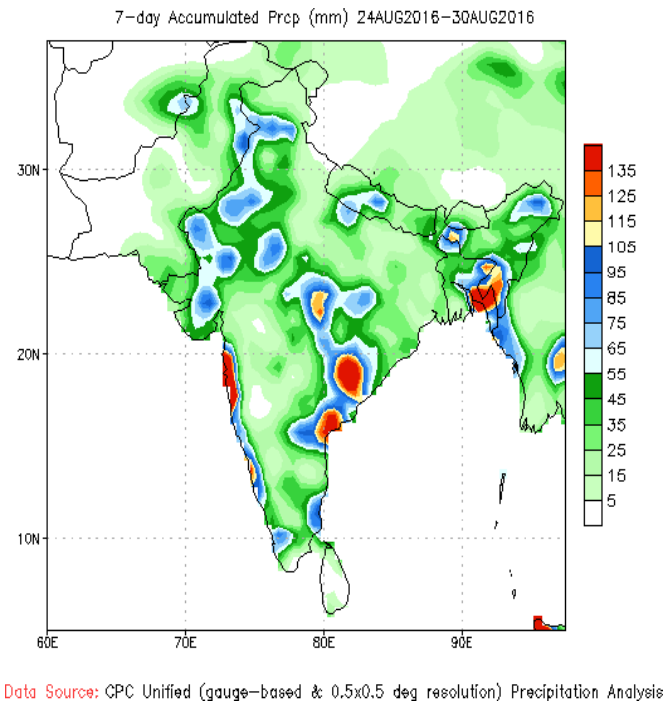


30 Aug 2016



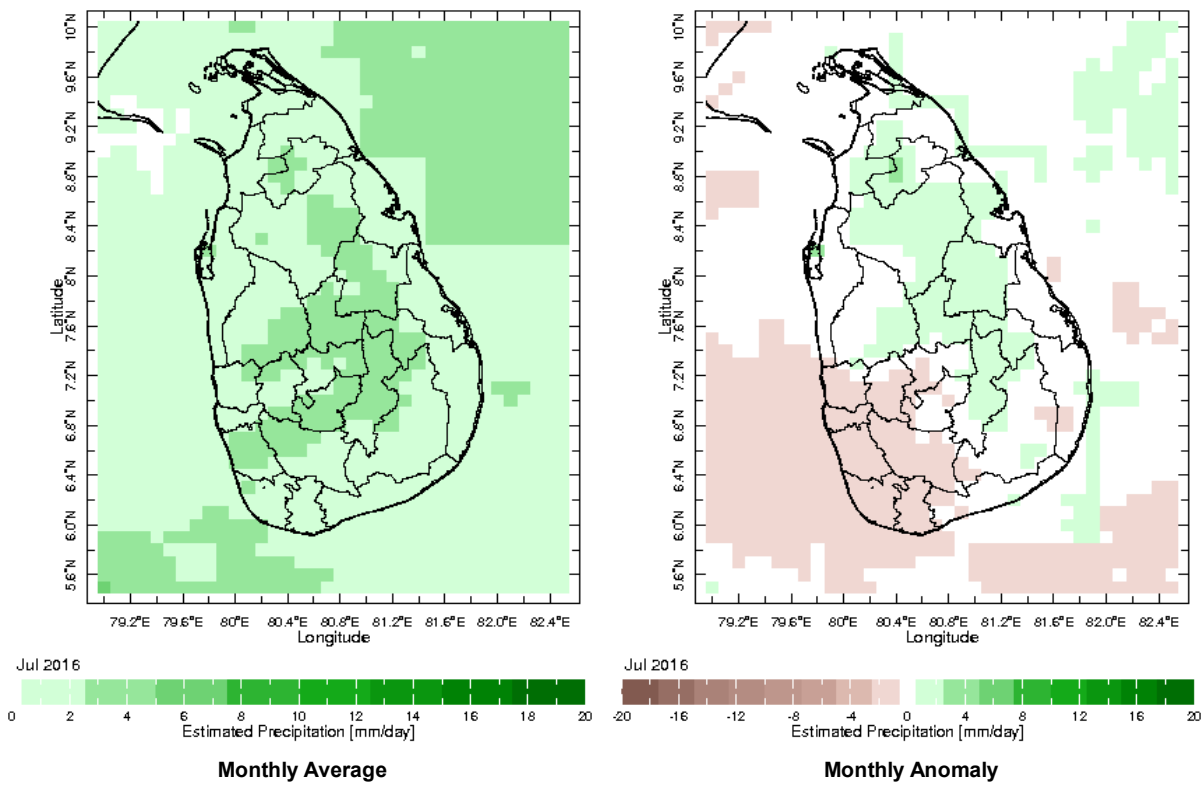
Weekly Rainfall Monitoring

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.

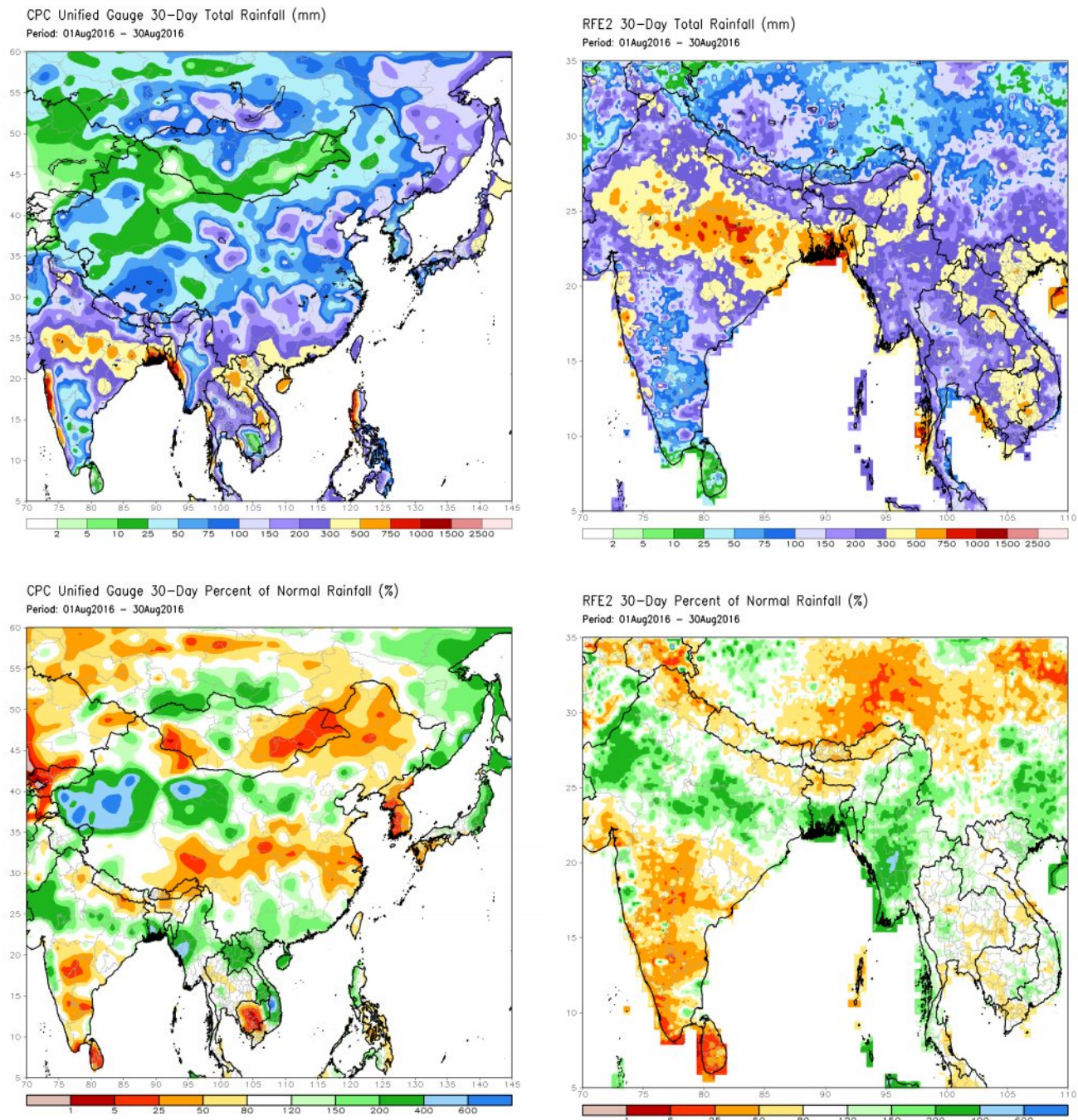


Monthly Rainfall Monitoring

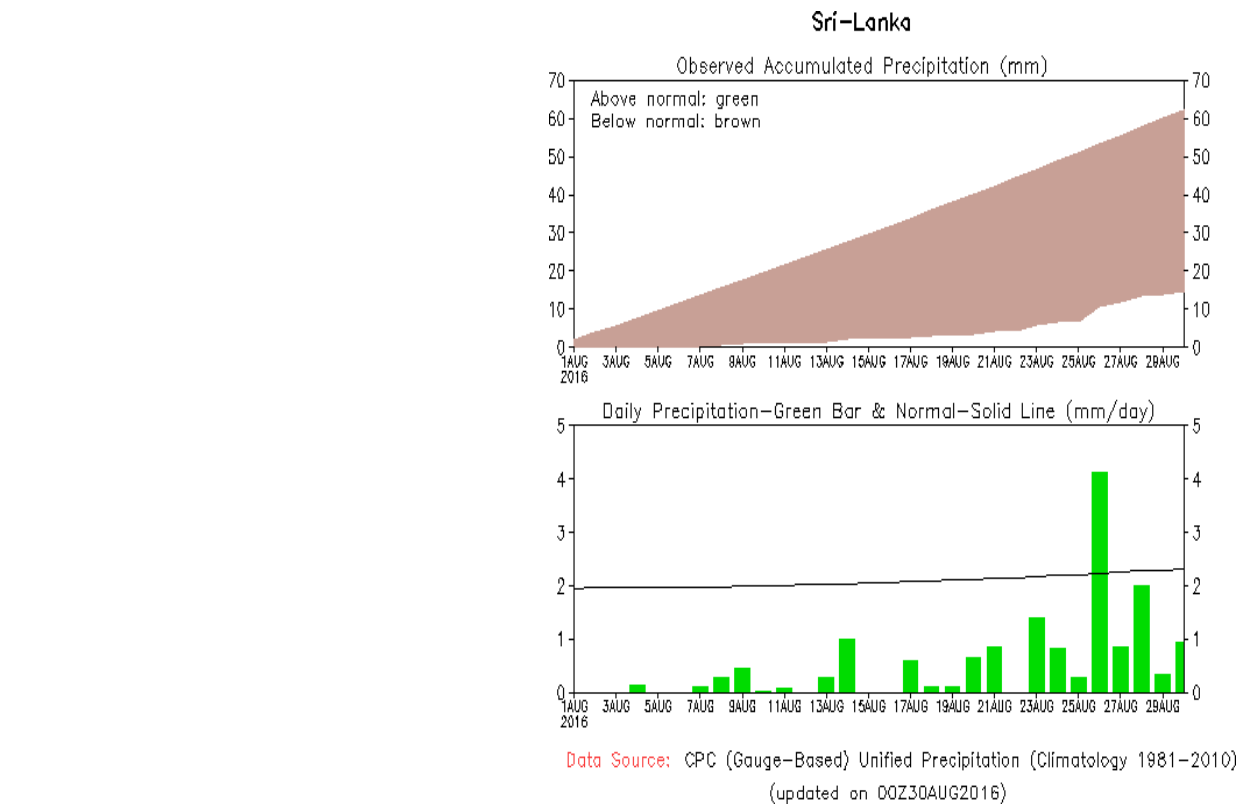
The figure in the left shows the average observed rainfall in the previous month. The rainfall anomaly in the previous month is shown in the figure to the right. The brown color in the anomaly figure shows places which received less rainfall than the historical average while the green color shows places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



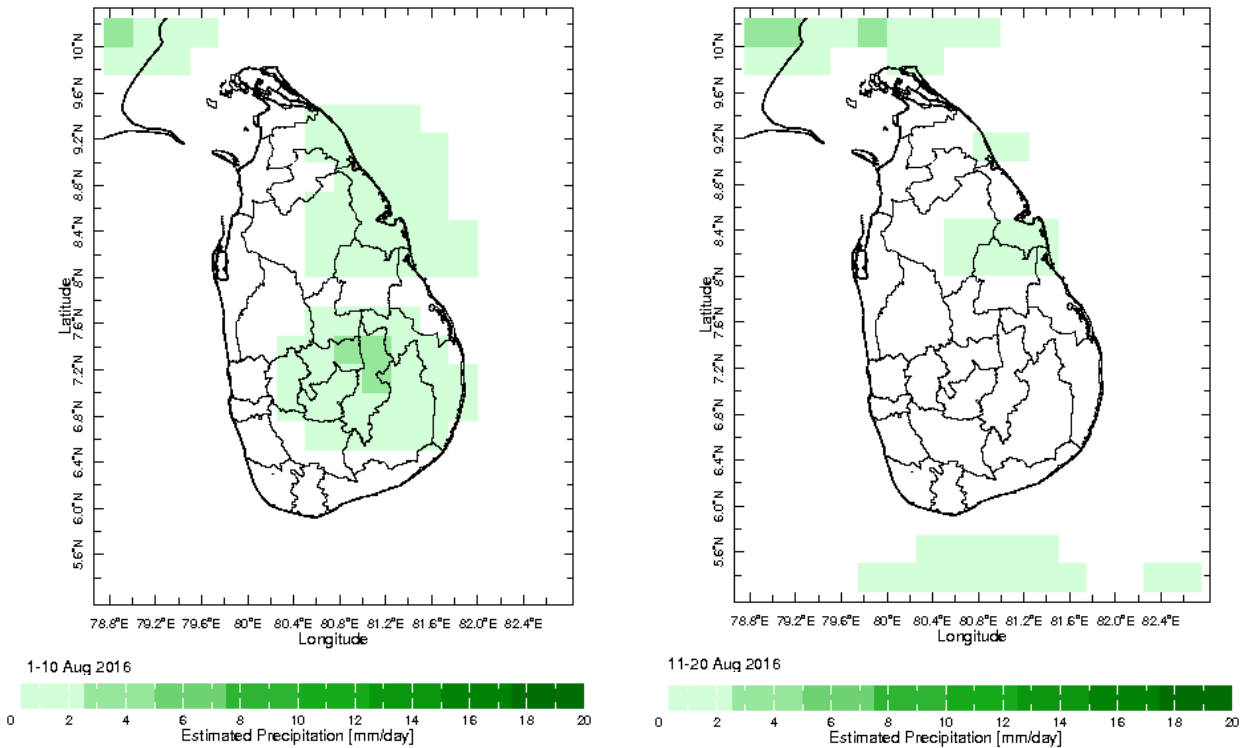
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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



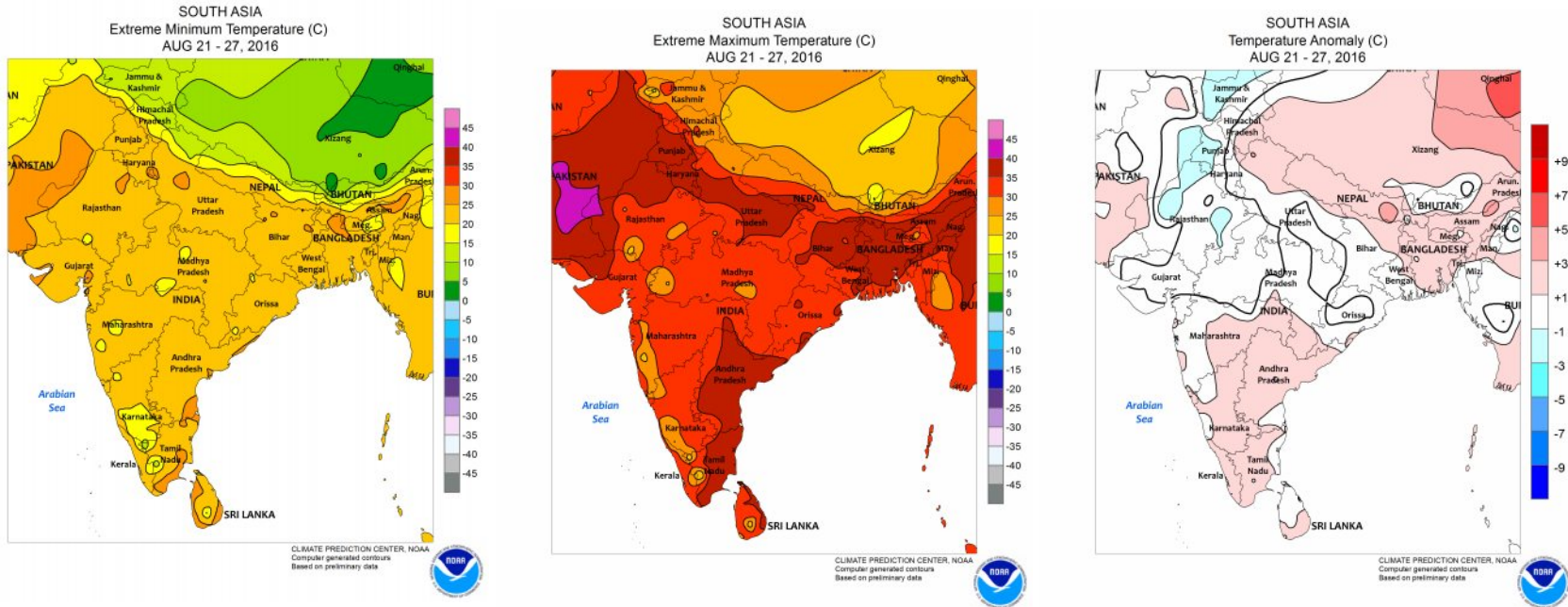
The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.



Dekadal (10 Day) Satellite Derived Rainfall Estimates

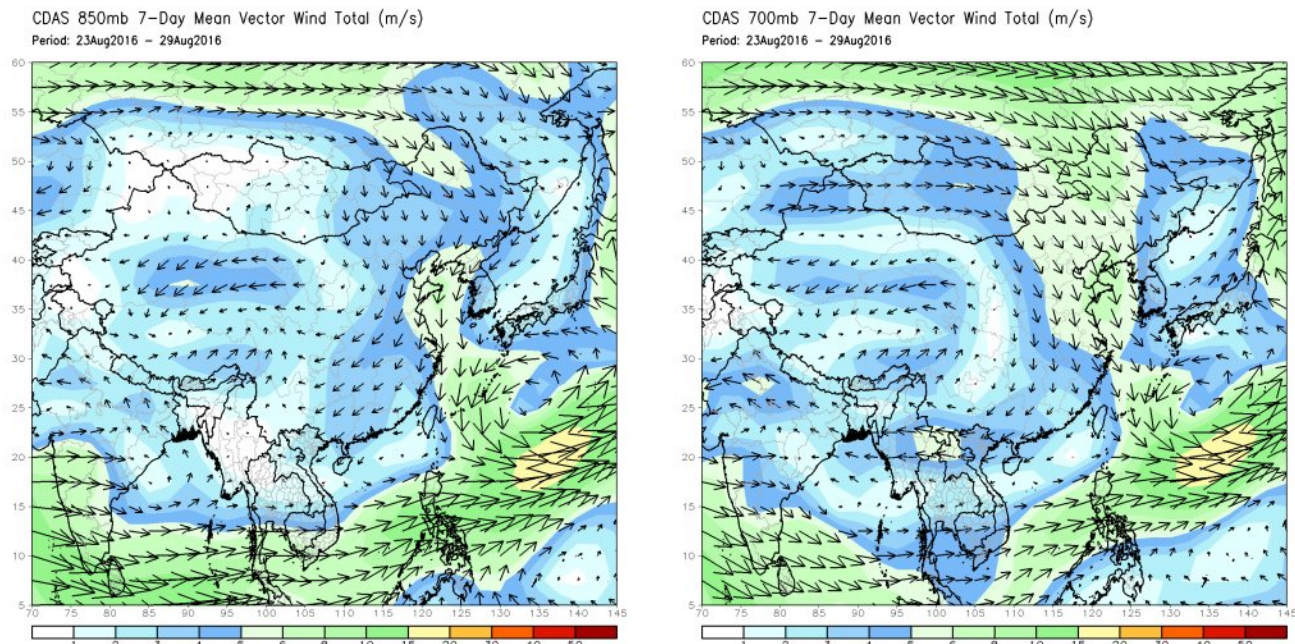


Weekly Temperature Monitoring



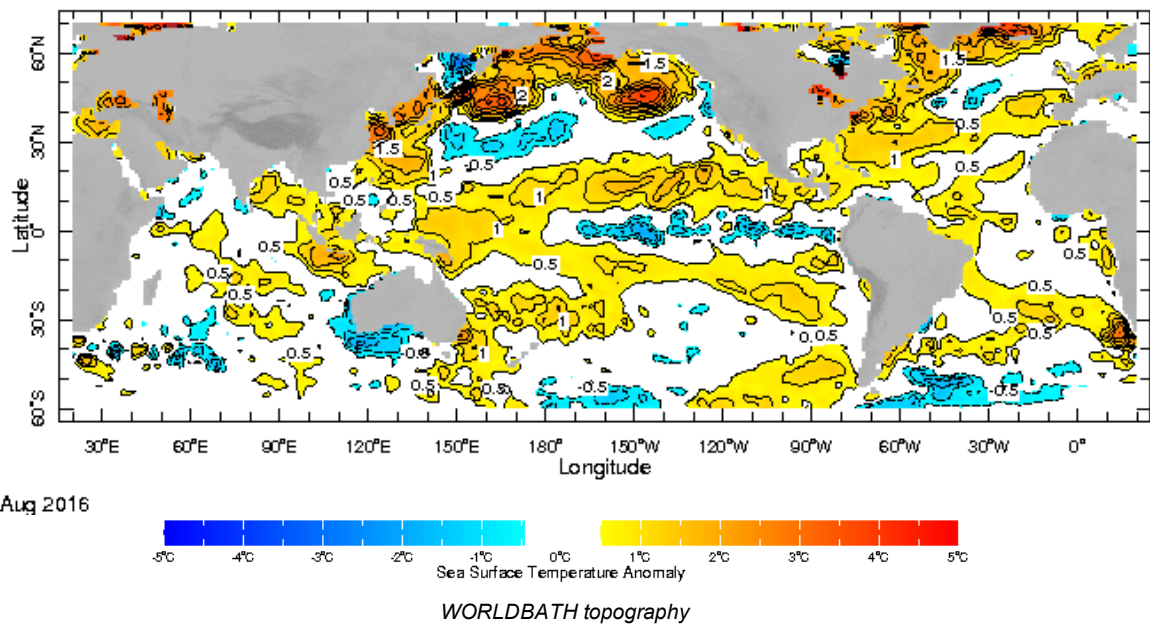
Weekly Wind Monitoring

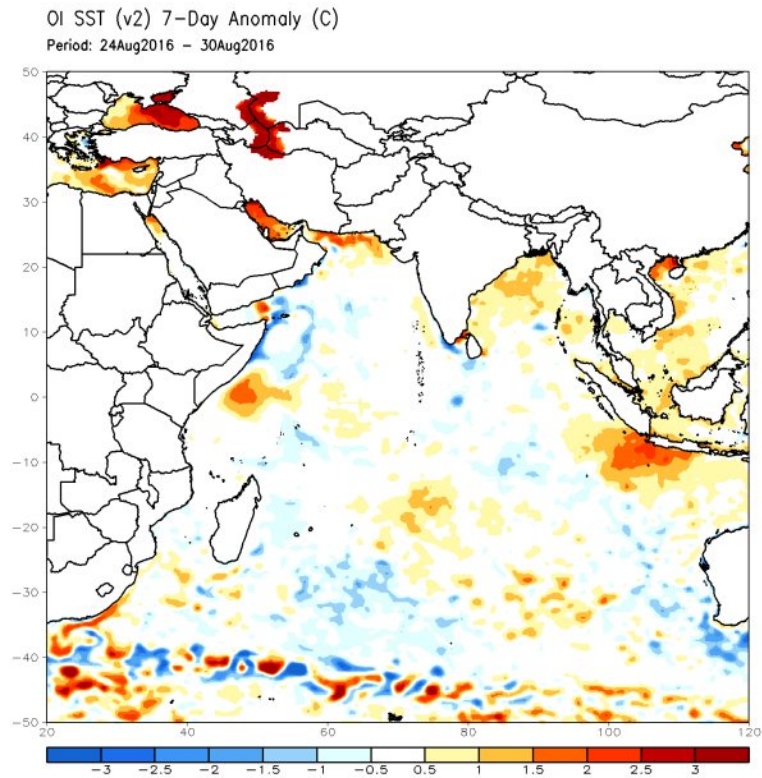
The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



Weekly Average SST Anomalies

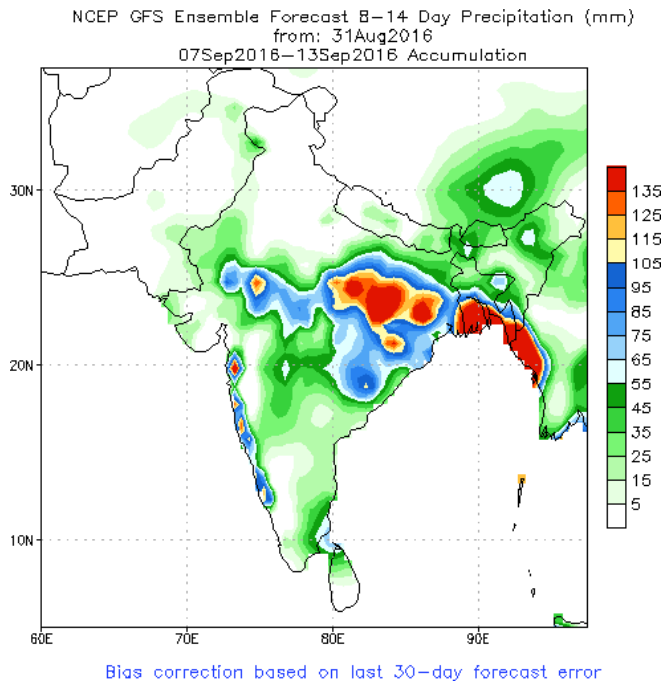
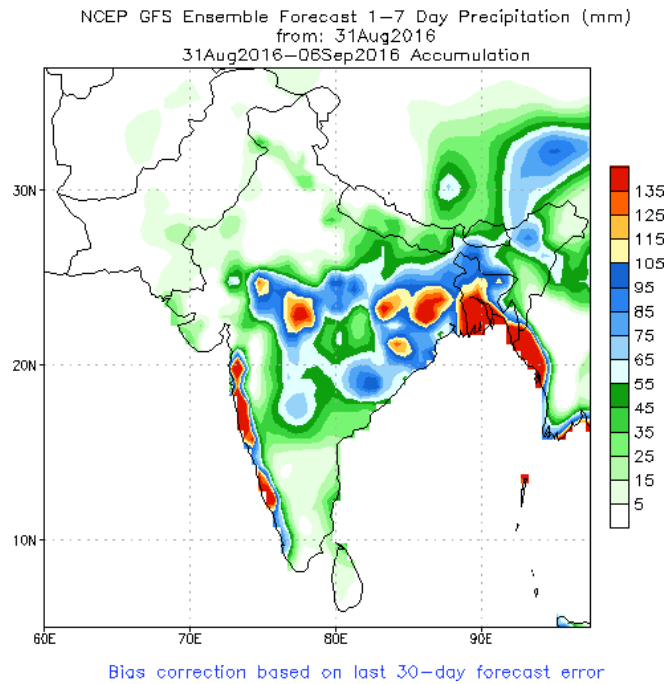
Weekly average Sea Surface Temperature (SST) anomaly in the world from NOAA NCEP

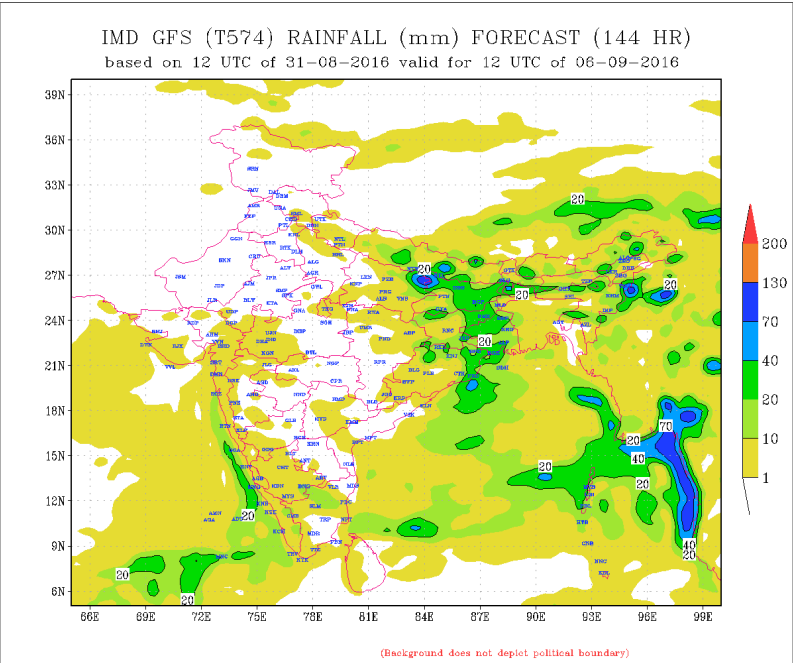
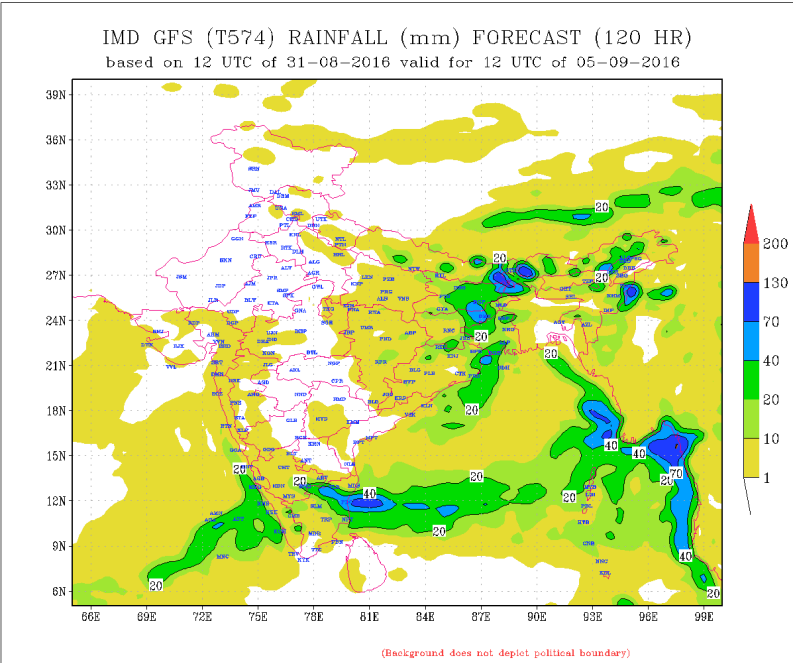
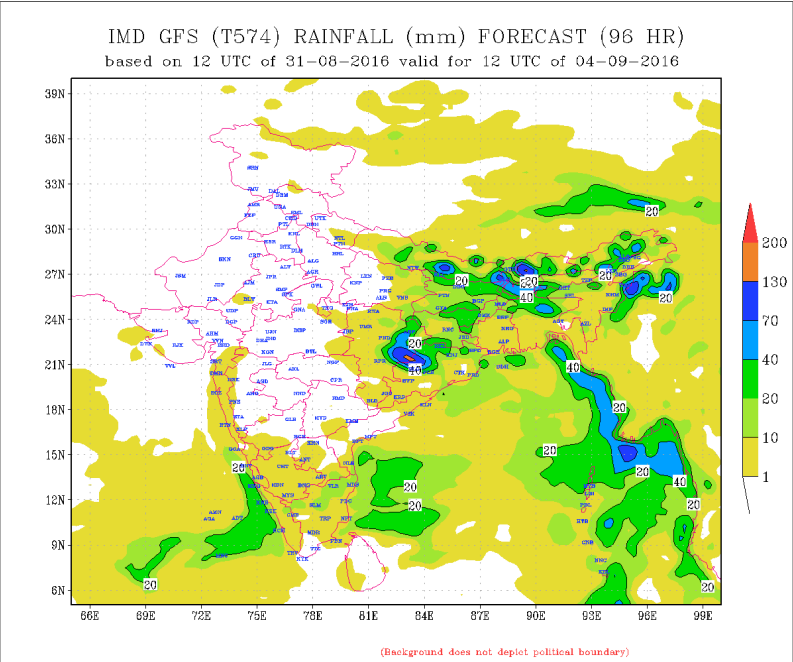
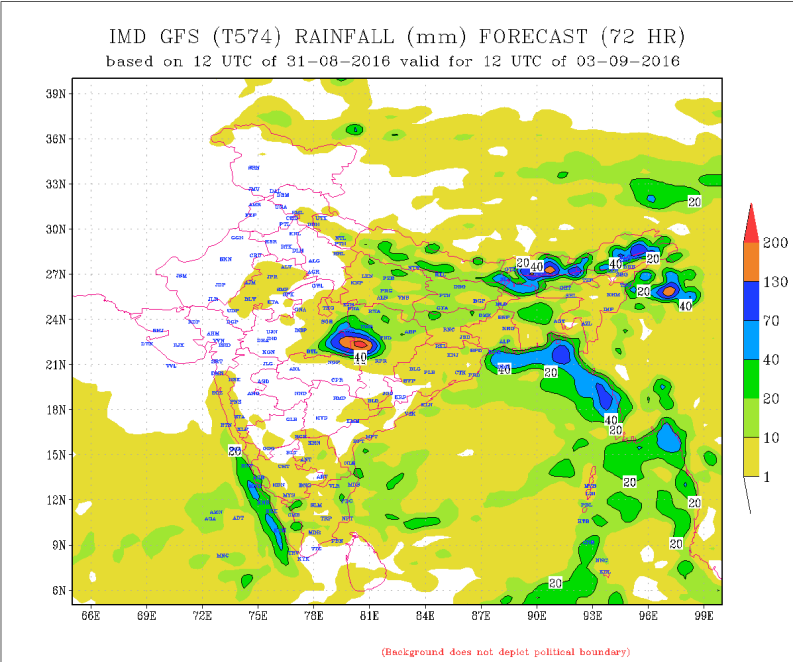
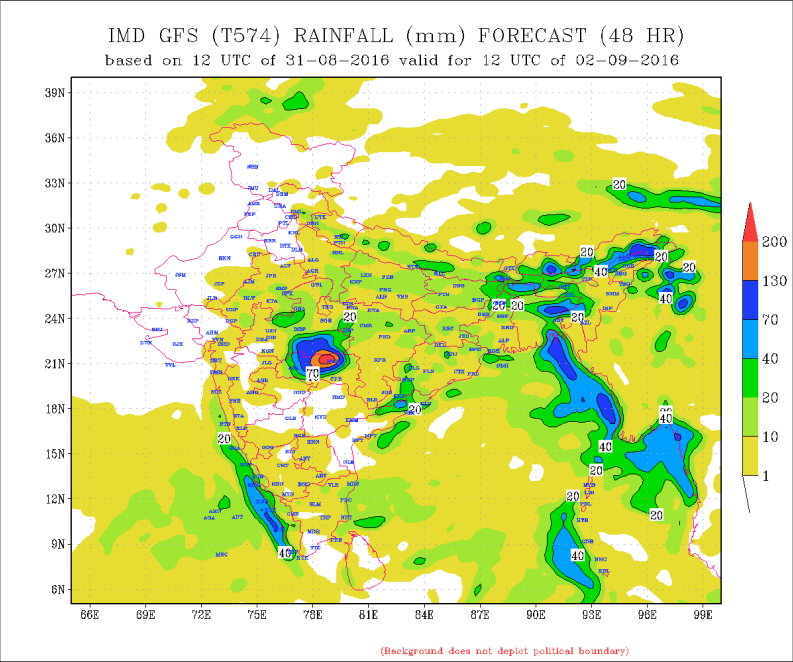
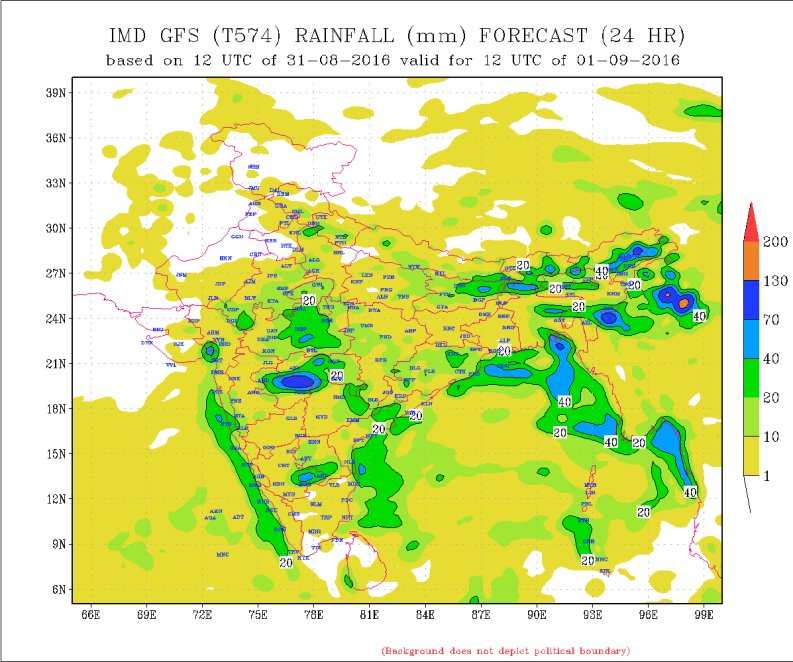


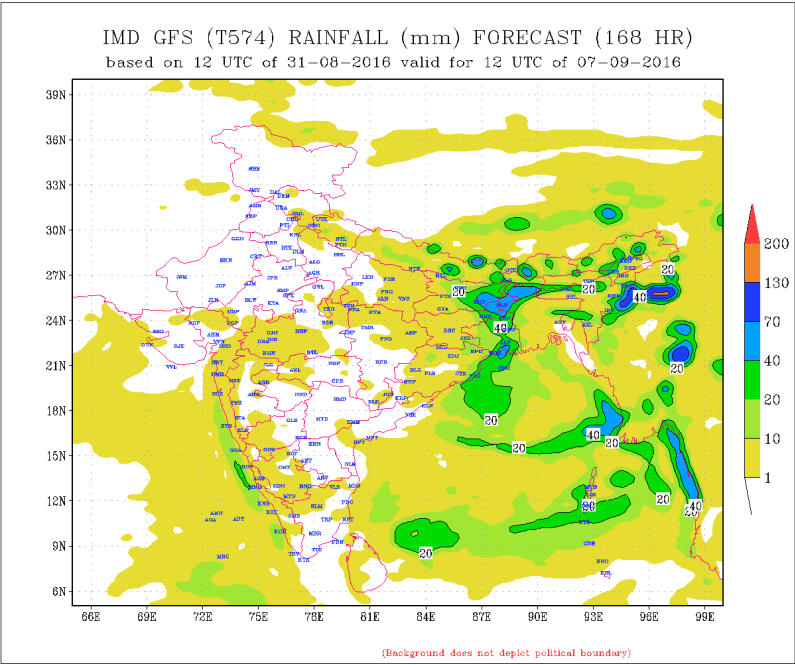


PREDICTIONS

NCEP GFS 1- 14 Day prediction

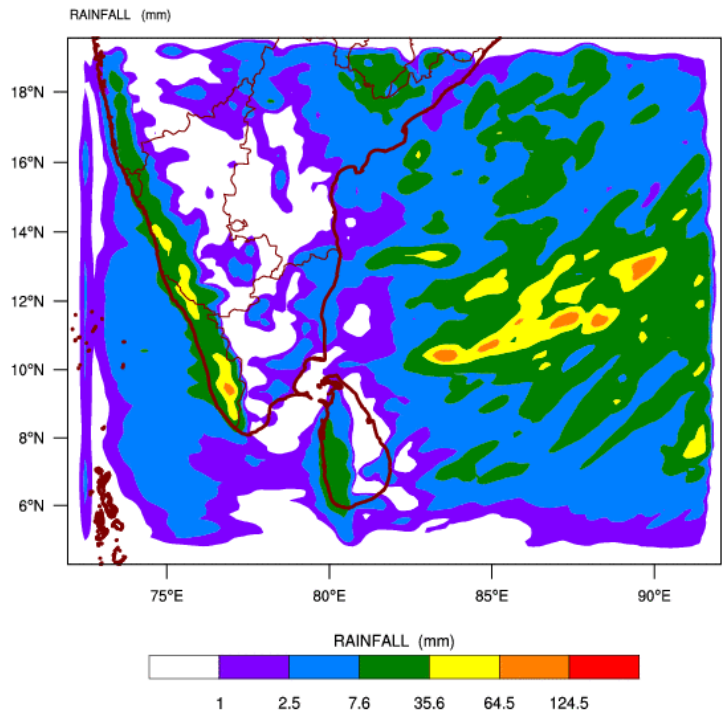




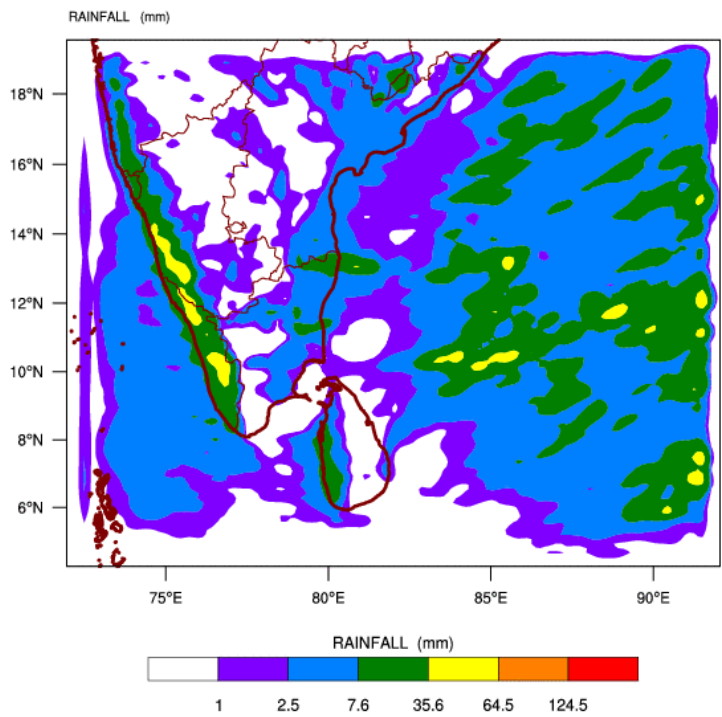


WRF Model Forecast (from IMD Chennai)

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\
based on 00 UTC of 31-08-2016 valid for 03 UTC of 02-09-2016



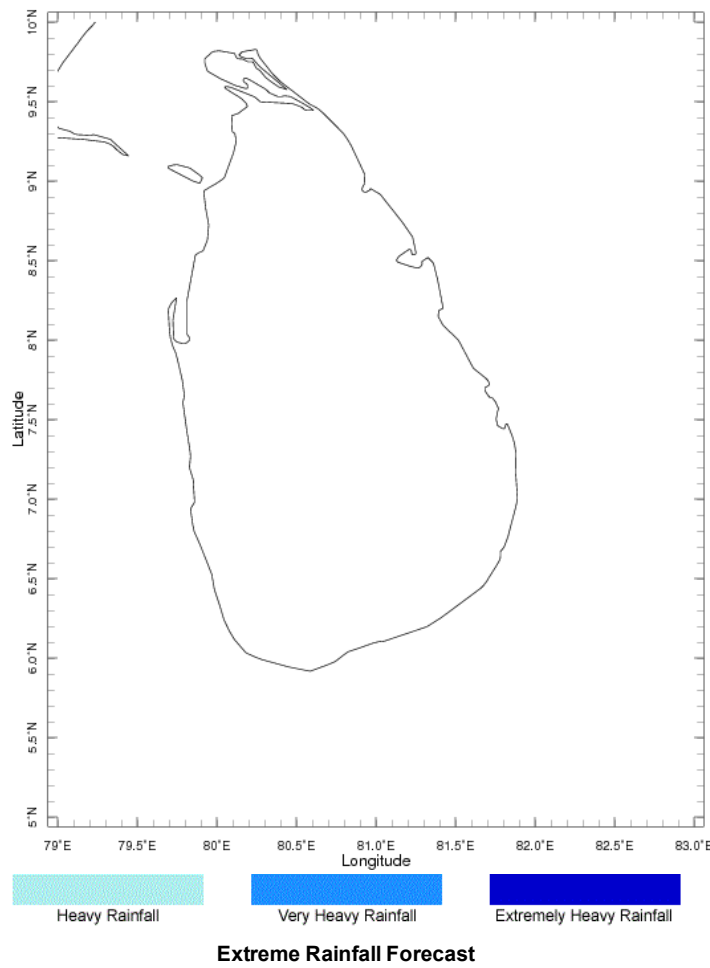
WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\
based on 00 UTC of 31-08-2016 valid for 03 UTC of 03-09-2016



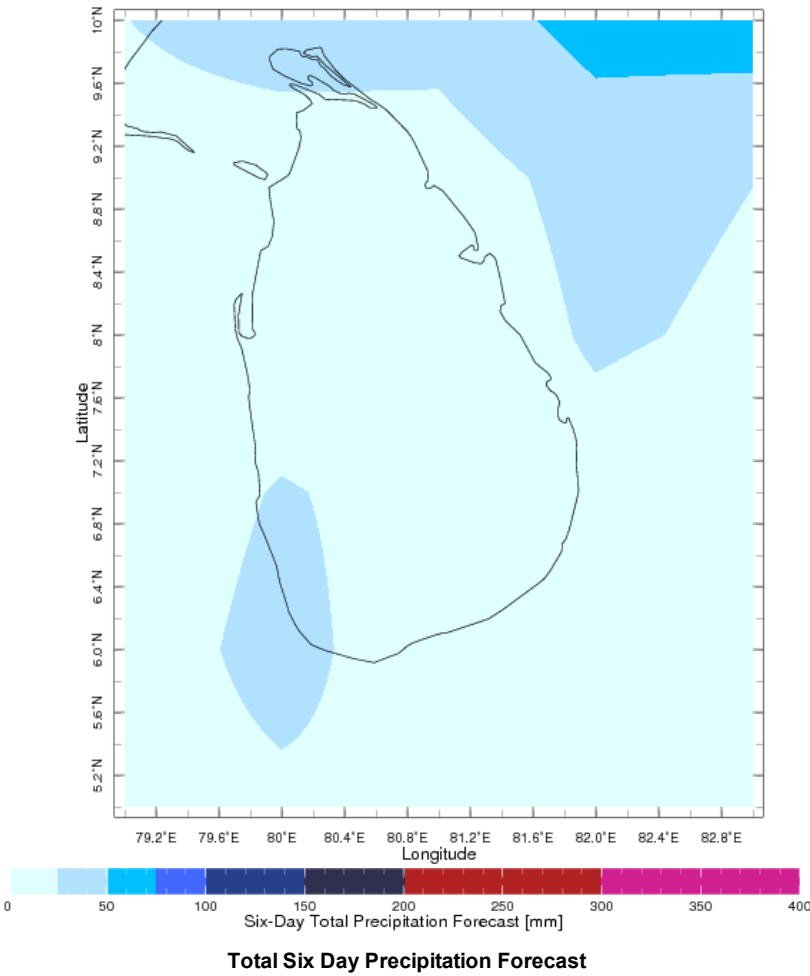
Weekly Rainfall Forecast from IRI

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.

Forecast for 31 Aug 2016 - 5 Sep 2016 Issued 0000 31 Aug 2016

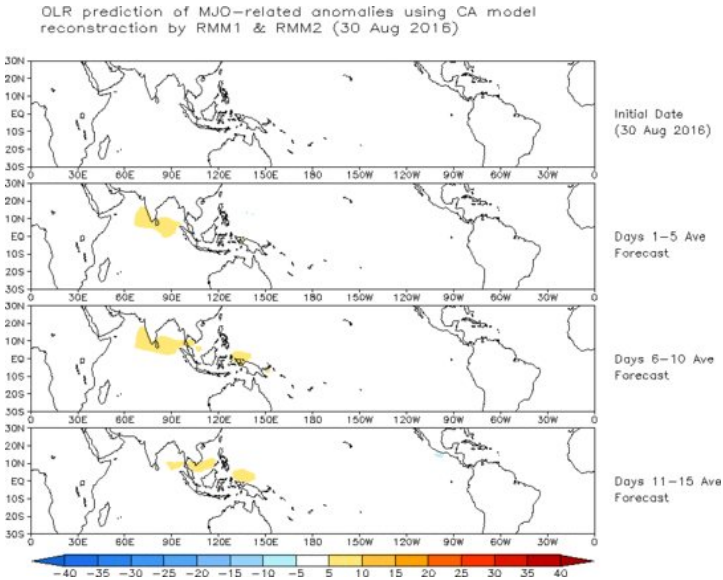


Forecast for 31 Aug 2016 - 5 Sep 2016 Issued 0000 31 Aug 2016



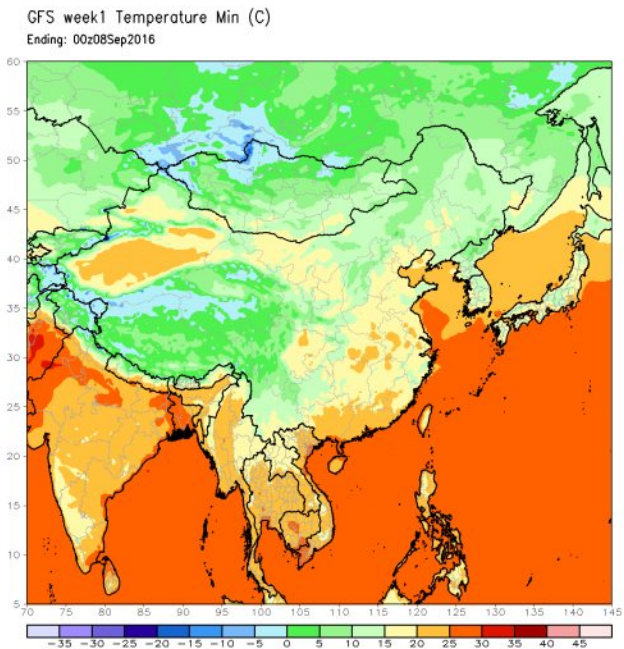
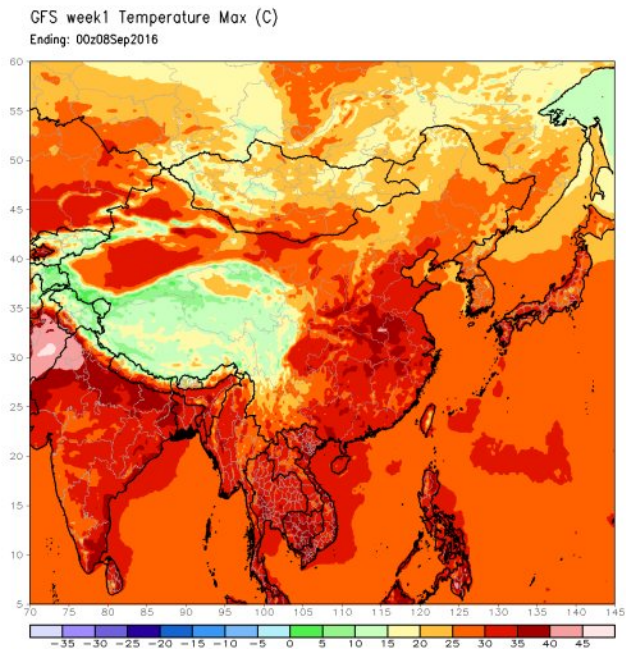
Madden Julian Oscillation (MJO) related Outgoing Longwave Radiation (OLR) Forecast

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.



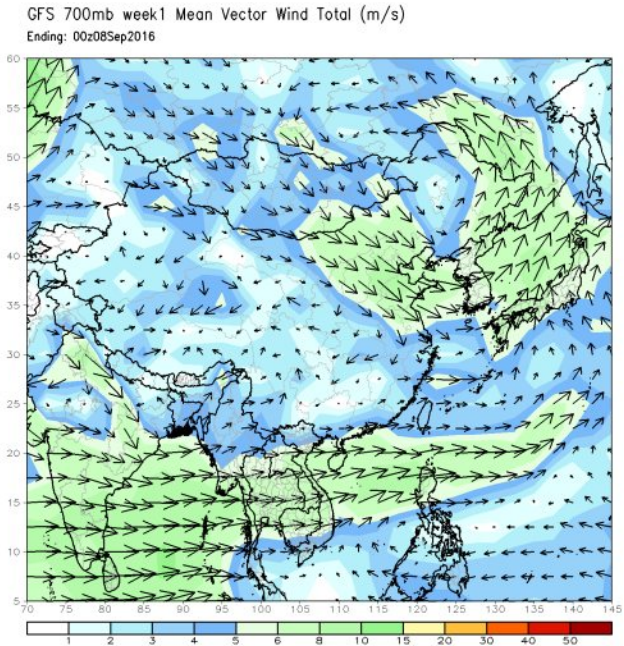
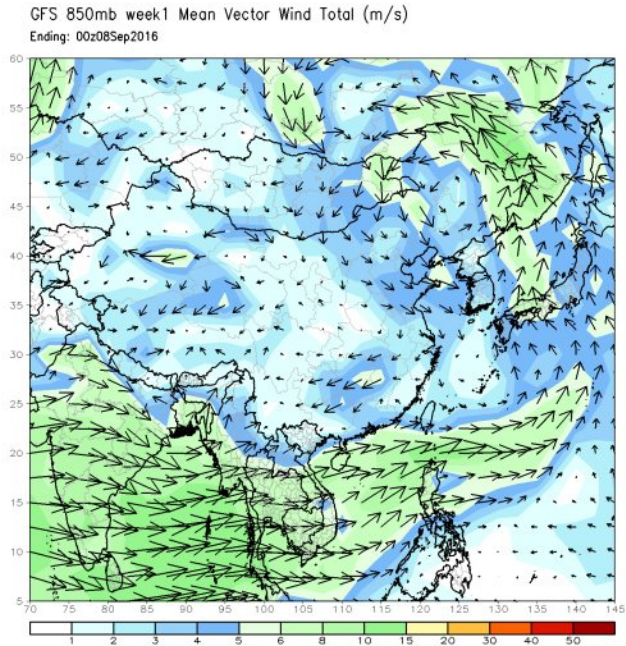
Weekly Temperature Forecast

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



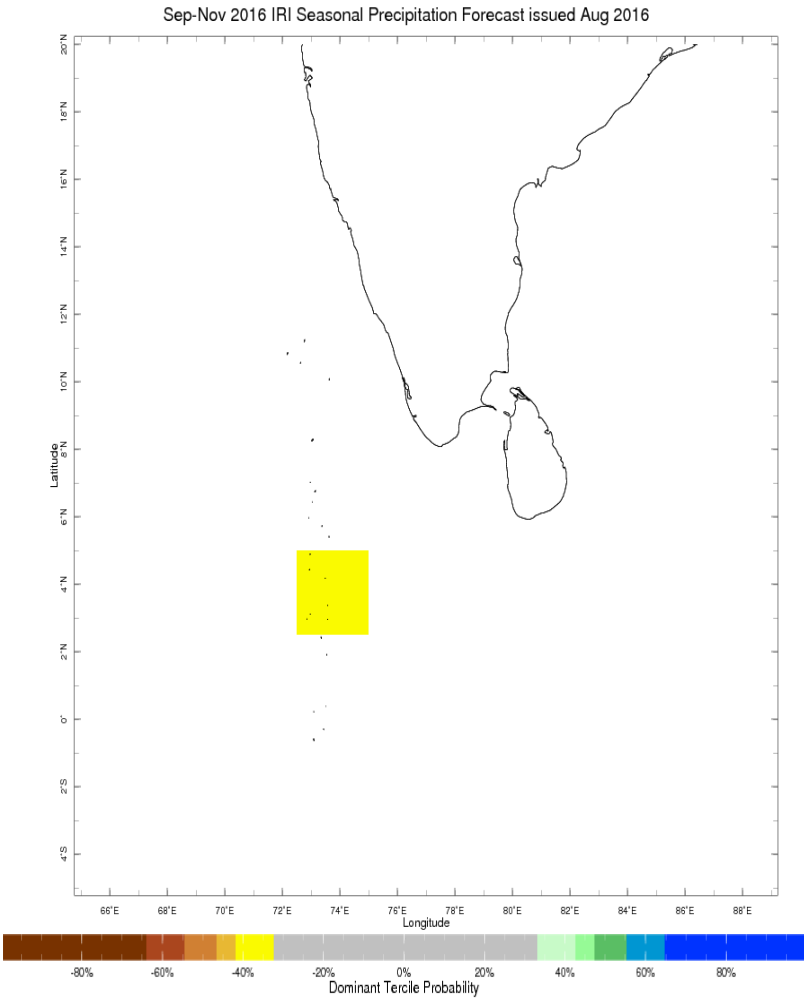
Weekly Wind Forecast

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

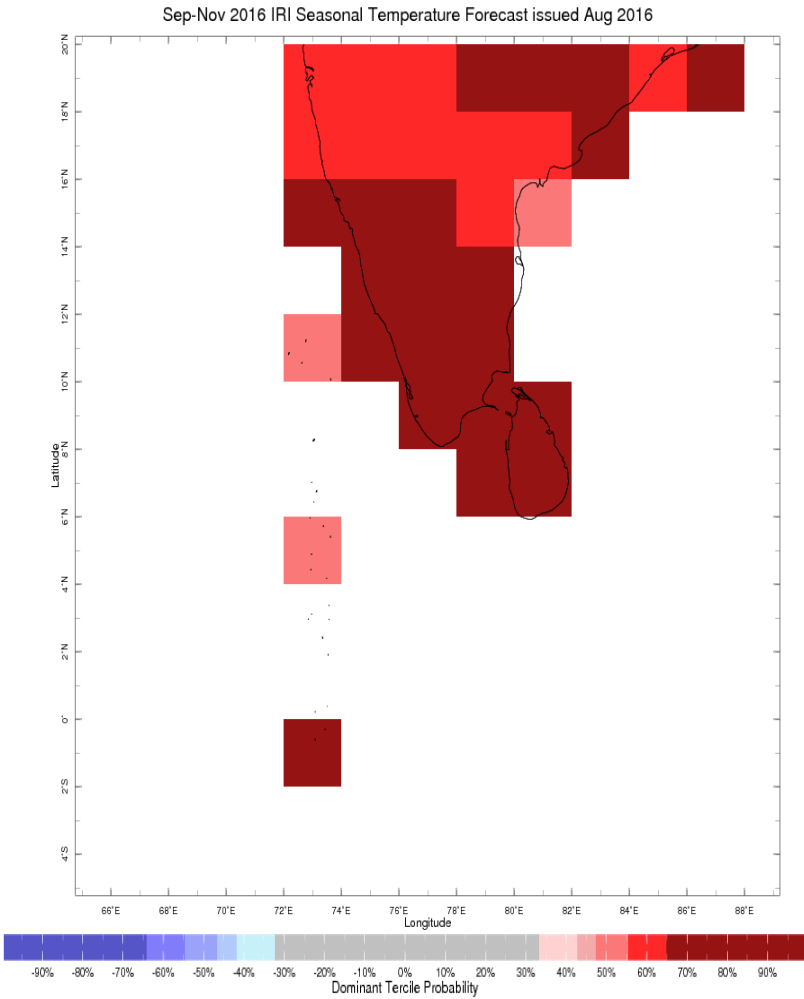


Seasonal Rainfall and Temperature Forecast

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%).



Precipitation Forecast



Temperature Forecast

Subscribe to our Monthly Maldives Newsletter

Subscribe

[Follow @fectmv](#)
Contact Us
email: fectsl@gmail.com
phone: (+94) 81 2376746
blog: www.fectsl.blogspot.com

Foundation for Environment, Climate & Technology
C/O Mahaweli Authority of Sri Lanka,
Digana Village,
Rajawella,
SRI LANKA