FECT Foundation for Environment Climate and Technology
c/o, Maintenance Office, Mahaweli Authority, Digana Village, Rajawella, Sri Lanka.
Phone (+94) 81-2376746, 4922992 E-mail climate@sltnet.lk Web Site http://www.climate.lk

Experimental Climate Monitoring and Prediction

by: Udara Rathnayake, Prabodha Agalawatte, Zeenas Yahiya, Lareef Zubair and Michael Bell (FECT and IRI[1])

09 June 2016

Highlights

Previous week was dry except rainfall on the 3rd and 7th of June. The highest rainfall up to 70 mm was seen around Balangoda on the 3rd. The Temperature was highest (35- 40 ^{0}C) in the eastern coastal area and was lowest in the hill country (15- 20 ^{0}C) in the previous week. NOAA NCEP models predict up to 125mm total rainfall in south western region in the next week while other regions shall have up to 85mm rainfall. NOAA CPC GFS model predicts 35- 40 ^{0}C maximum temperature near Ampara town and surrounding regions during next week. The wind shall be easterly with speed around 15 m/s. MJO is expected to remain weak in the next two weeks but shall be in the Indian Ocean. Therefore, a slight enhancement is expected in rainfall due to this factor.

www.fb.com/fectmv

@fectmv

Monitoring

Rainfall

***Weekly Monitoring*:** 1st- 7th June was a dry week except slight rain on the 3rd and 7th. No rainfall was seen during 1st-2nd and 4th-6th June, while on the 3rd, up to 70 mm rainfall was seen near Balangoda. Nittambuwa and surrounding cities. The western sea region received up to 60 mm rainfall while Western region of Colombo, northern region of Ratnapura and eastern region of Kalutara experienced up to 30 mm rainfall on the 7th. Based on the CPC Unified Precipitation Analysis, up to 75 mm total rainfall was seen around Puttalam and surrounding regions. According to the RFE 2.0 model, up to 100 mm total rainfall was received in Kegalle and up to 75 mm total rainfall was seen in surrounding regions in the same week. It recorded up to 100 mm of total rainfall anomaly in central Kegalle and 100 mm in nearby cities.

***Monthly Monitoring*:** Entire country received more rainfall than the historical average during May 2016. The districts in western, north western and north central provinces received up to ~600mm monthly excess rainfall than the historical average. CPC Unified Precipitation Analysis also recorded up to 750 mm total rainfall in the same regions. According to RFE2, up to 750 mm of total monthly rainfall was received in Kegalle and Gampaha while the surrounding regions experienced up to 500 mm total rainfall during the month. Northern region of the country received 6 times more rainfall than the historical average and north western province and Matale received 4 times more rainfall. Nearly 400mm of accumulated average monthly precipitation was recorded as above normal historical average in May. During 1st -19th May, above average rainfall was received while the highest daily average precipitation in the entire country was recorded as 120 mm on the 15th.

Temperature

The highest maximum temperature was seen along northern and eastern sea as 35- 40 ^{0}C during 29th May- 4th June. Kandy and Nuwara Eliya region experienced low maximum temperature as 20 ^{0}C while the maximum temperature in the rest of the country was between 30- 35 ^{0}C. Entire country has experienced 25- 30 ^{0}C of minimum temperature except Kandy, Nuwara Eliya, Ratnapura and surrounding districts. The mean temperature in South western, northern and central regions of the country was between 1^{0}C- 3 ^{0}C during this week.

Wind

During the week, southern most region of the country experienced 15 m/s total Easterly wind while northern region received up to 10 m/s wind with the same direction in 850 mb level. At to the 700mb level, bottom part of the country received 10 m/s wind while northern most region received up to 5 m/s wind.

Ocean State

Pacific seas state: May 19, 2016

During mid-May 2016 the positive tropical Pacific SST anomaly was quickly weakening, now indicating only a weak El Niño. The atmospheric variables continue to support the El Niño pattern, but at much reduced strength. This includes only a mildly weakened Walker circulation and excess rainfall in the central tropical Pacific, failing to extend eastward as it did in previous months. Most ENSO prediction models indicate a return to neutral by the end of May, with likely development of La Niña (of unknown strength) by fall. (*Text Courtesy IRI*)

Indian Ocean State

1^{0}C above average sea surface temperature was observed around 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 Foundation for Environment Climate and Technology
c/o, Maintenance Office, Mahaweli Authority, Digana Village, Rajawella, Sri Lanka.
Phone (+94) 81-2376746, 4922992 E-mail climate@sltnet.lk Web Site http://www.climate.lk

Predictions

Rainfall

14-day prediction: NOAA NCEP models predict up to 125mm total rainfall in south western region while up to 55 mm total rainfall is expected in northern, southern and eastern regions of the country during 8th– 14th June. Again rainfall shall increase during 15th – 21st June. More than 135 mm total rainfall is expected in Colombo, Gampaha, Kegalle and nearby regions during this week while the other regions shall receive up to 85 mm rainfall.

Numerical weather prediction: NWP model predicts up to 80mm rainfall around Ratnapura on the 10th while surrounding regions shall have up to 40 mm of rainfall. Up to 40m rainfall is expected around Ratnapura, Gampaha, Colombo and Kalutara during 11th-12th June. On the 13th, up to 40 mm of rainfall is expected in Western province districts and around Ratnapura.

IMD WRF & IRI Model Forecast: According to the IMD WRF model, there shall be up to 35mm total rainfall along the coastal stretch between Puttalam and Galle during 10th – 11th. The IRI CFS model predicts up to 75 mm total rainfall in the sea near Galle while the nearby regions shall have up to 50 mm total rainfall for 8th- 13th June.

Seasonal Prediction: As per IRI Multi Model Probability Forecast for June to August, 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 ^{0}C maximum temperature near Ampara town and surrounding regions during 10th- 16th June and 30- 35 ^{0}C maximum temperature along north, east and south of the country. Maximum temperature in the hill country shall be bet ween 20- 25 ^{0}C. During the same week, minimum temperature is expected around Nuwara Eliya and Ratnapura to be 15- 20 ^{0}C while in Uva, Central, Sabaragamuwa and Western provinces it shall be 20- 25 ^{0}C.

Wind

There shall not be a big change in the wind pattern in the next week compared to this week. NOAA CPC GFS models at 850 mb and 700 mb levels forecast 15 m/s of wind during 10th – 16th June which is easterly.

MJO based OLR predictions

On the 7th, MJO is in phase 8, therefore it shall suppress rainfall in Sri Lanka. MJO prediction models predict that the MJO shall be in the Indian Ocean in next 15 days. The MJO is expected to remain weak in the next two weeks. Therefore, the impact of MJO on the rainfall in Sri Lanka shall be minimal. During first 5 next days, MJO shall suppress rainfall in the country. During 13th-17th June, it shall not have a significant impact on the rainfall while it shall slightly enhance rainfall in Sri Lanka during 18th-22nd June.

FOUNDATION FOR ENVIRONMENT, CLIMATE AND TECHNOLOGY

www.climate.lk www.tropicalclimate.org/maldives

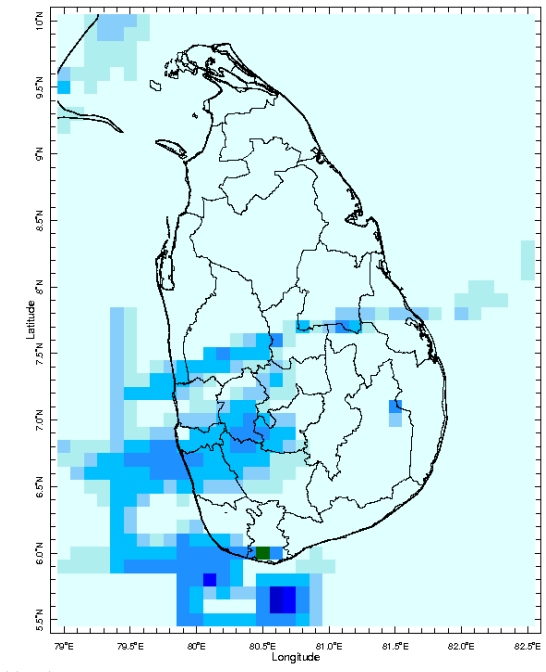
Weekly Hydro- Meteorological Report for Sri Lanka

Inside This Issue

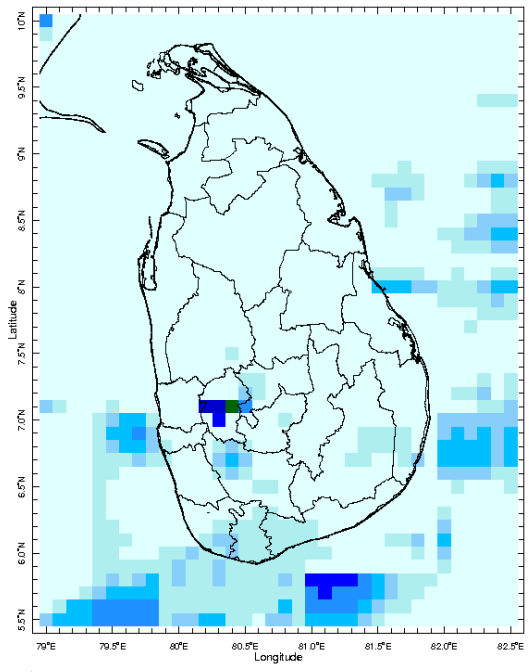
MONITORING

Daily Rainfall Monitoring

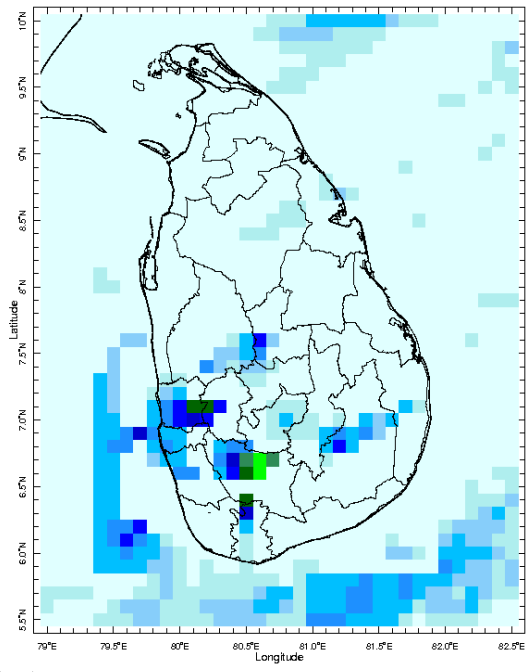
The following figures show the satellite observed rainfall in the last 7 days in Sri Lanka.



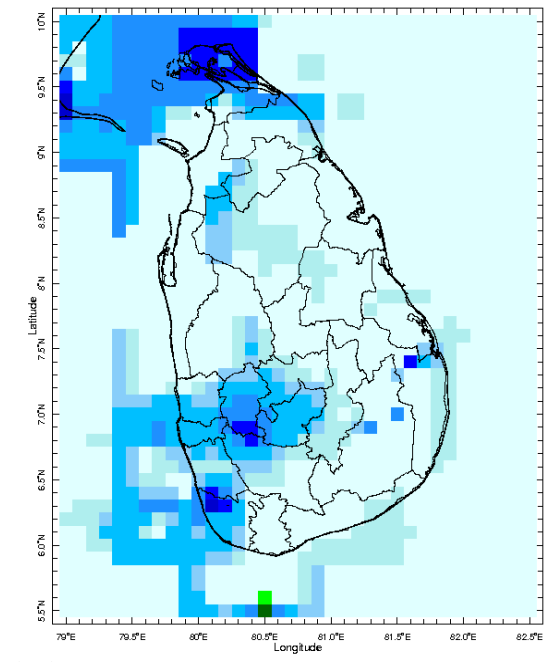
1 Jun 2016



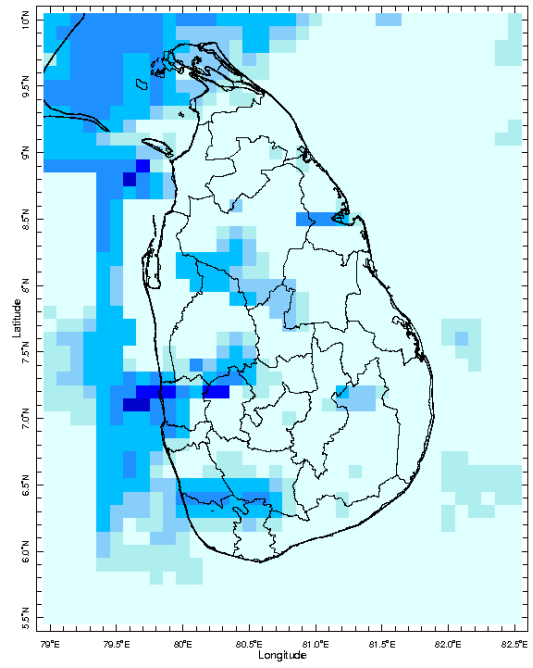
2 Jun 2016



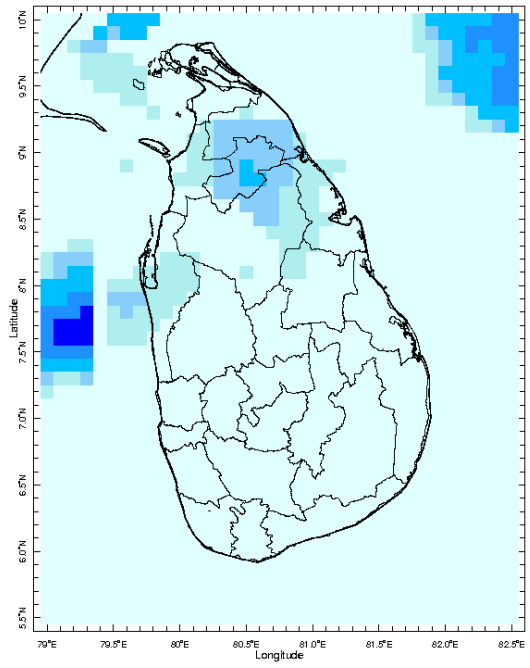
3 Jun 2016



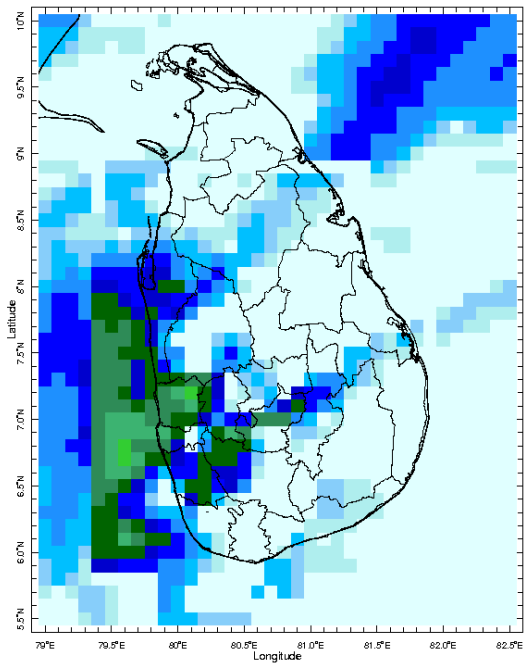
4 Jun 2016



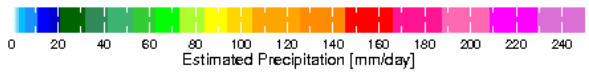
5 Jun 2016



6 Jun 2016

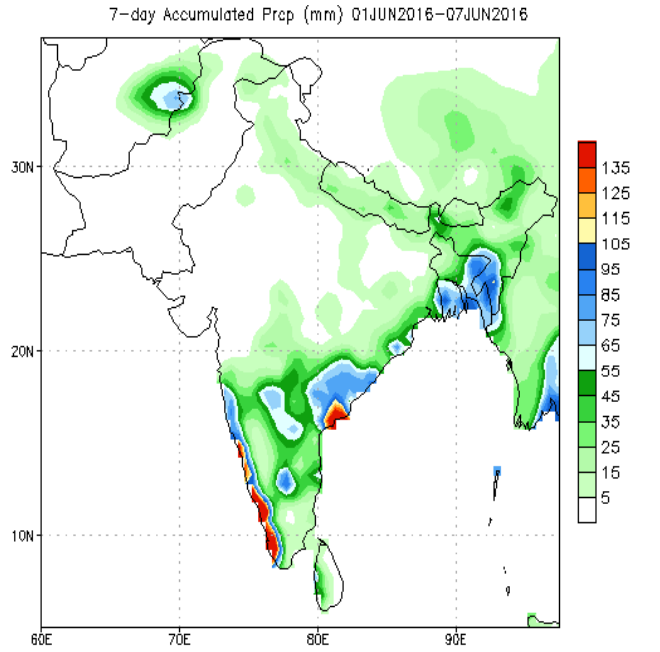


7 Jun 2016

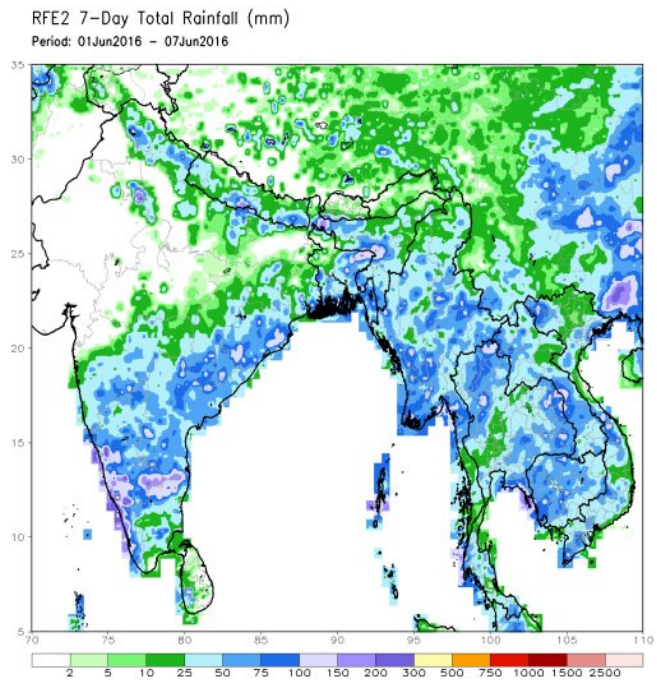


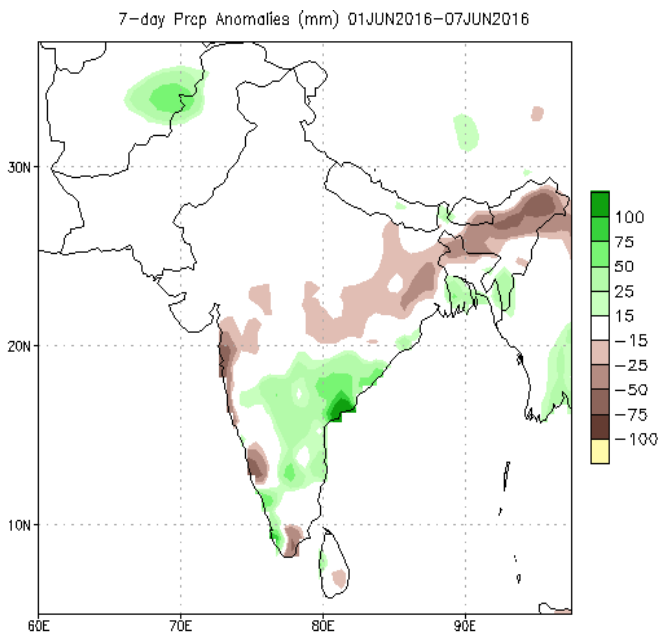
Weekly Rainfall Monitoring

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.

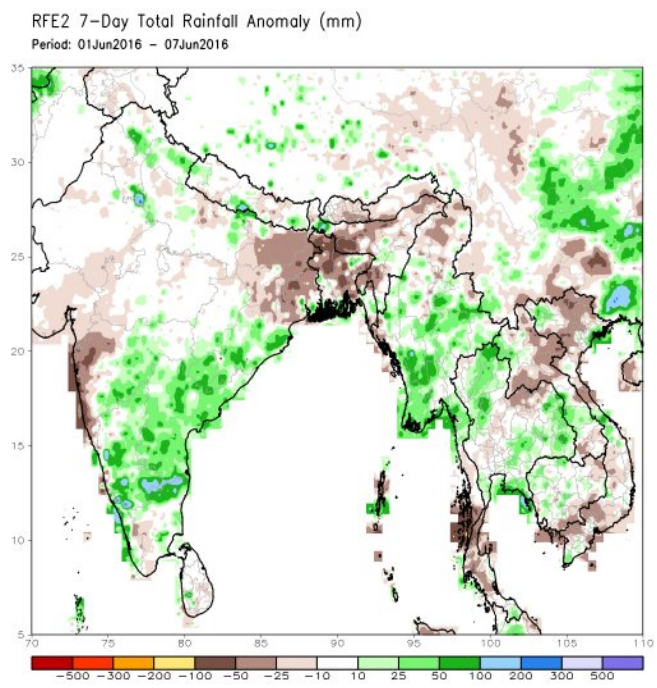


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis



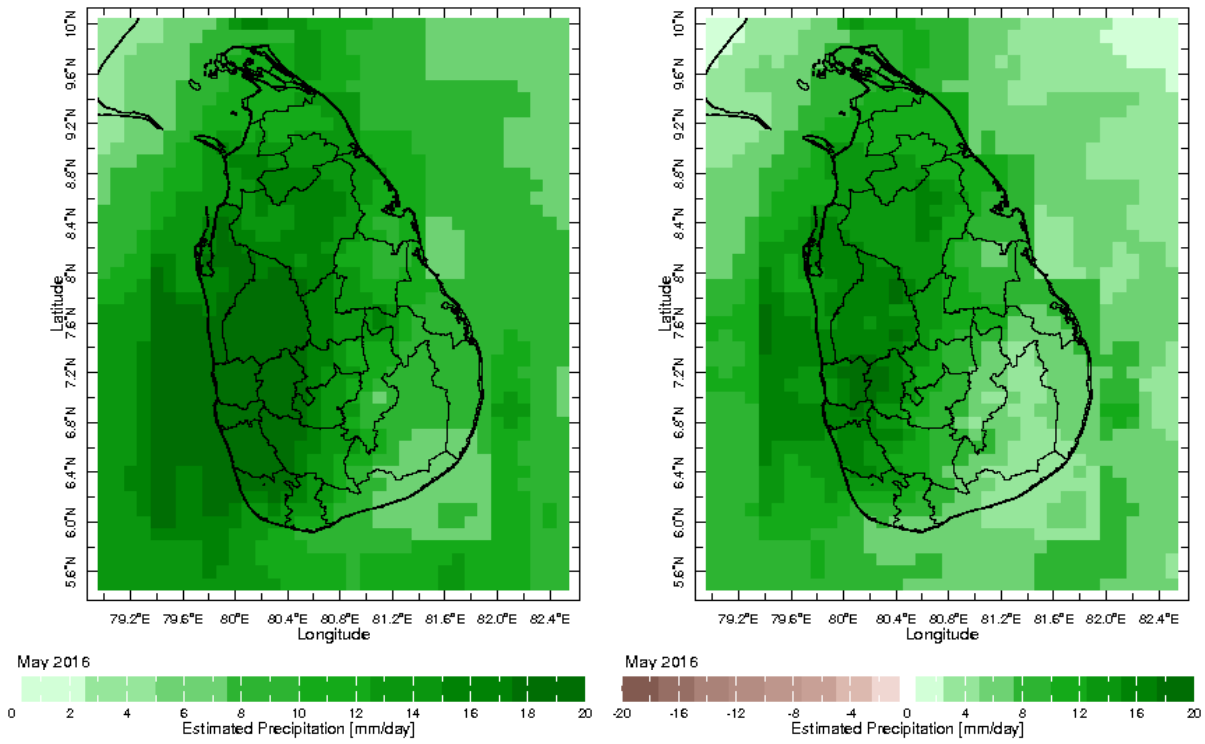


Data Source: CPC Unified (gauge-based & 0.5x0.5 deg resolution) Precipitation Analysis Climatology (1981-2010)



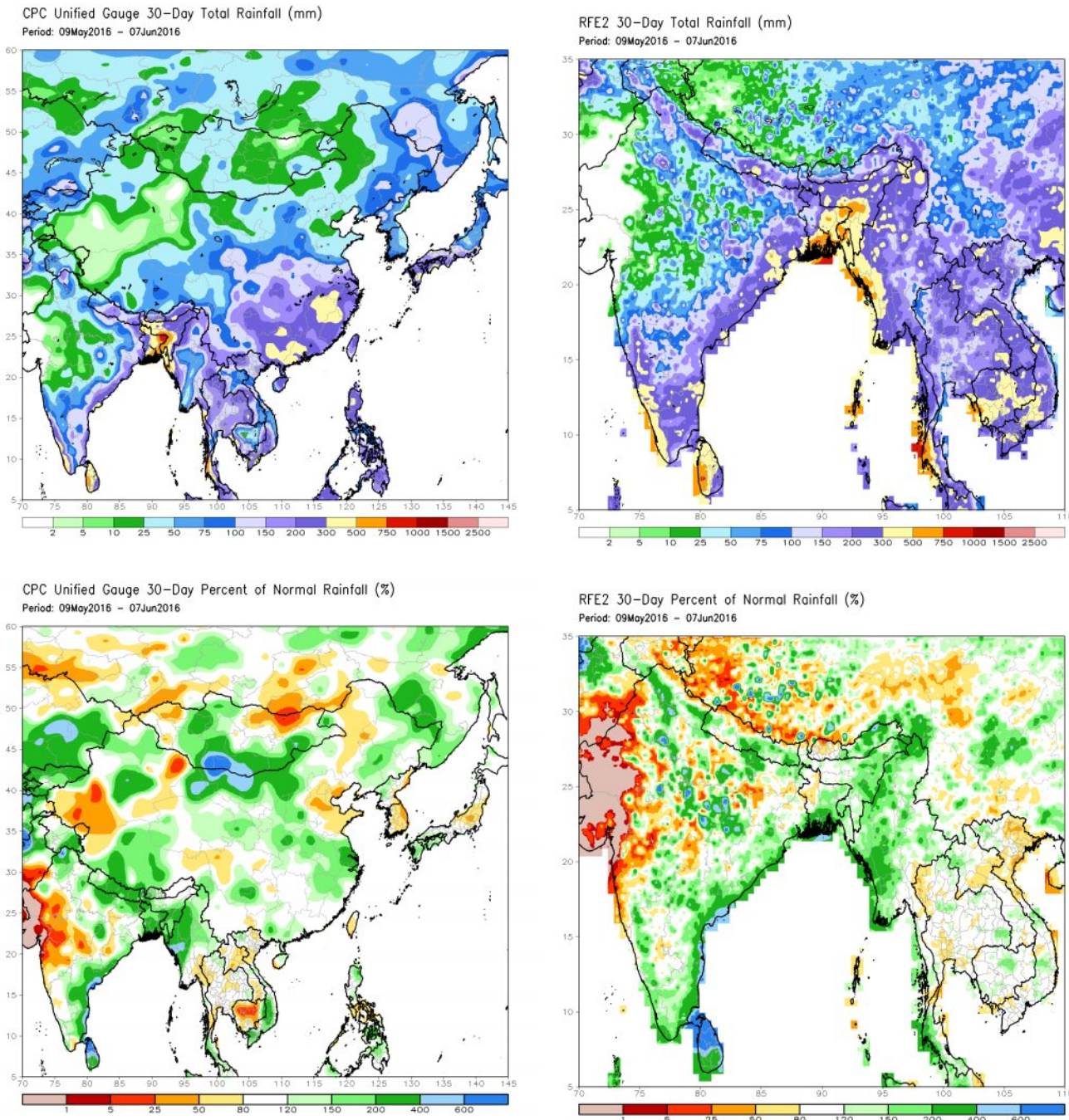
Monthly Rainfall Monitoring

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

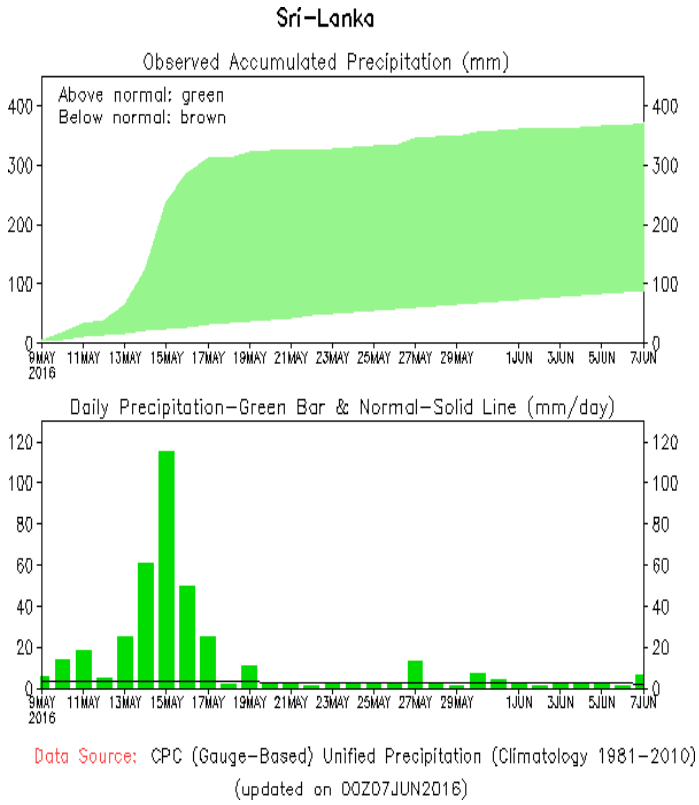


Monthly Average **Monthly Anomaly**

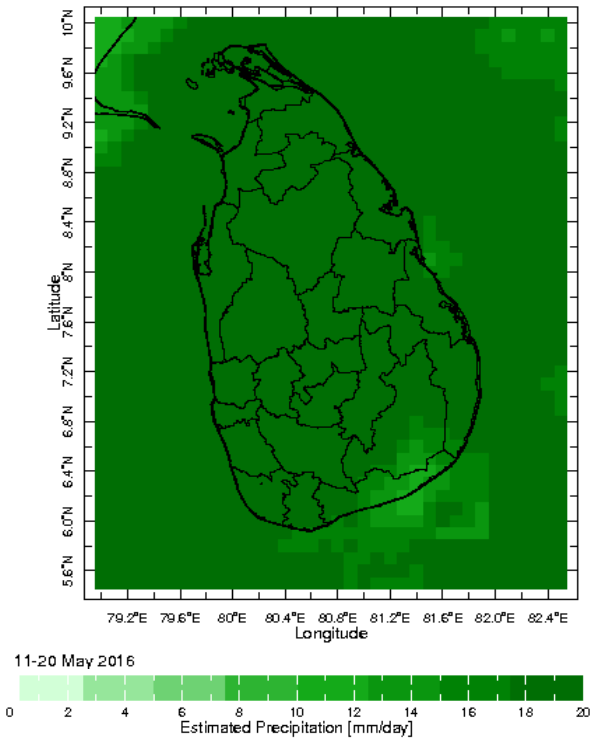
The figure in the top-left shows the total rainfall in the past 30 days from CPC Unified Precipitation Analysis while the figure in the top-right shows the total rainfall for the same period from RFE 2.0 Satellite Rainfall Estimates. The bottom two figures show the percentage of rainfall received in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

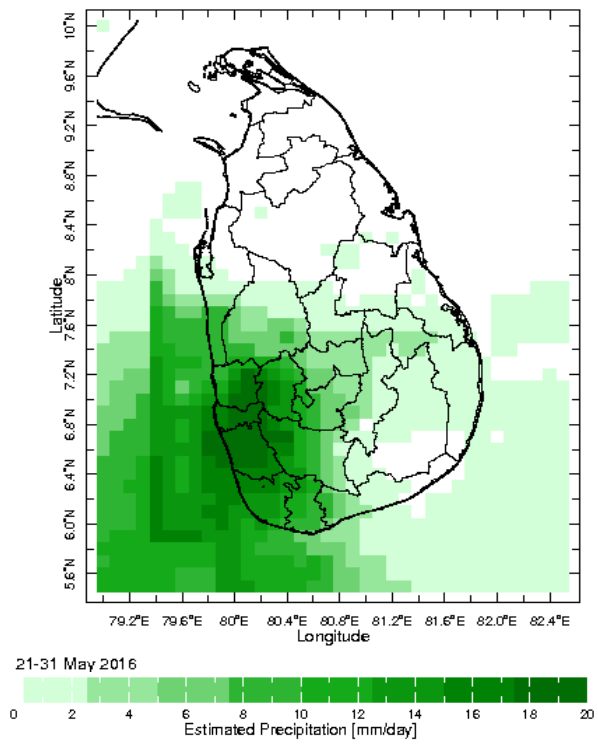


The following figure shows the observed accumulated rainfall (top) and daily observed rainfall (bottom) in Sri Lanka in the last 30 days.

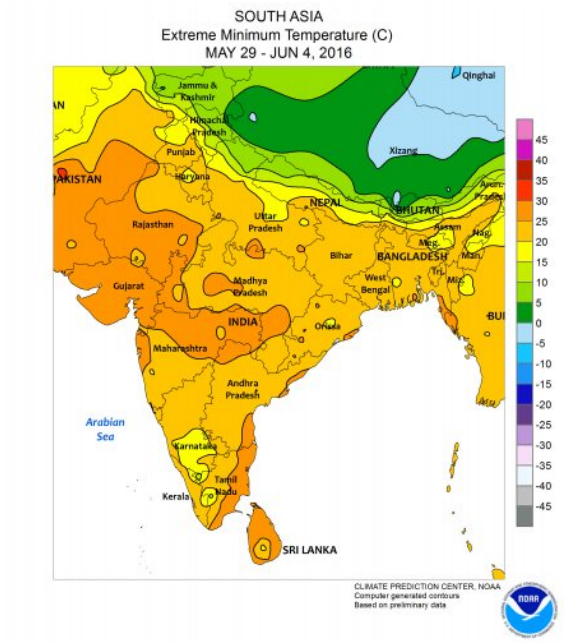


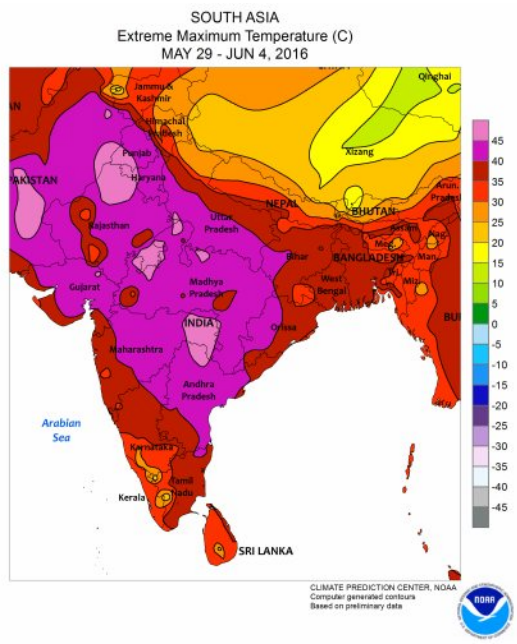
Dekadal (10 Day) Satellite Derived Rainfall Estimates

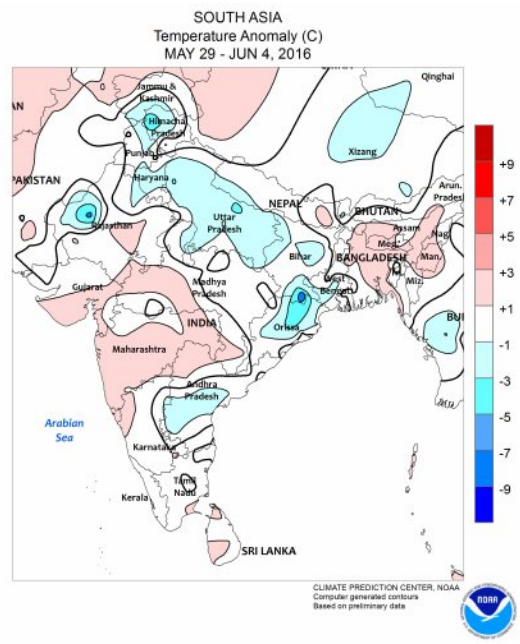




Weekly Temperature Monitoring

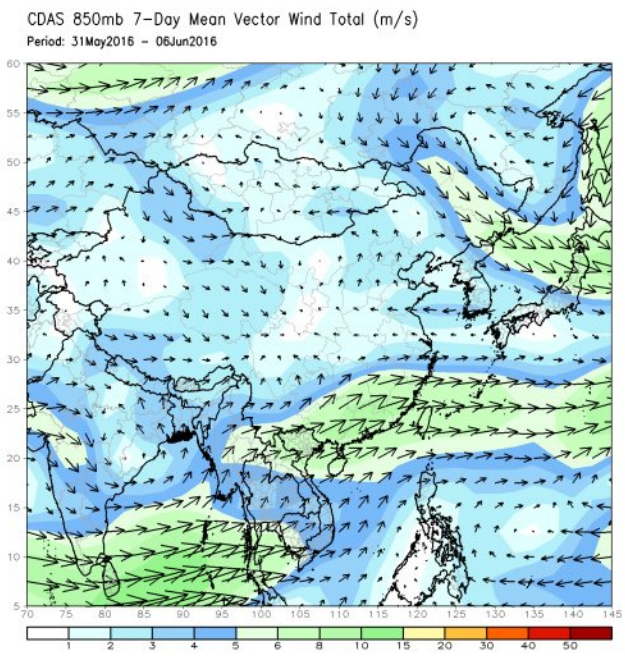


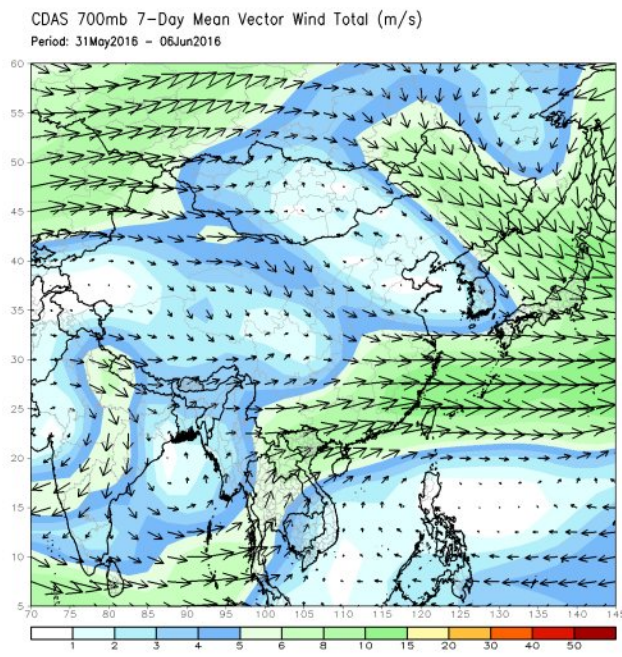




Weekly Wind Monitoring

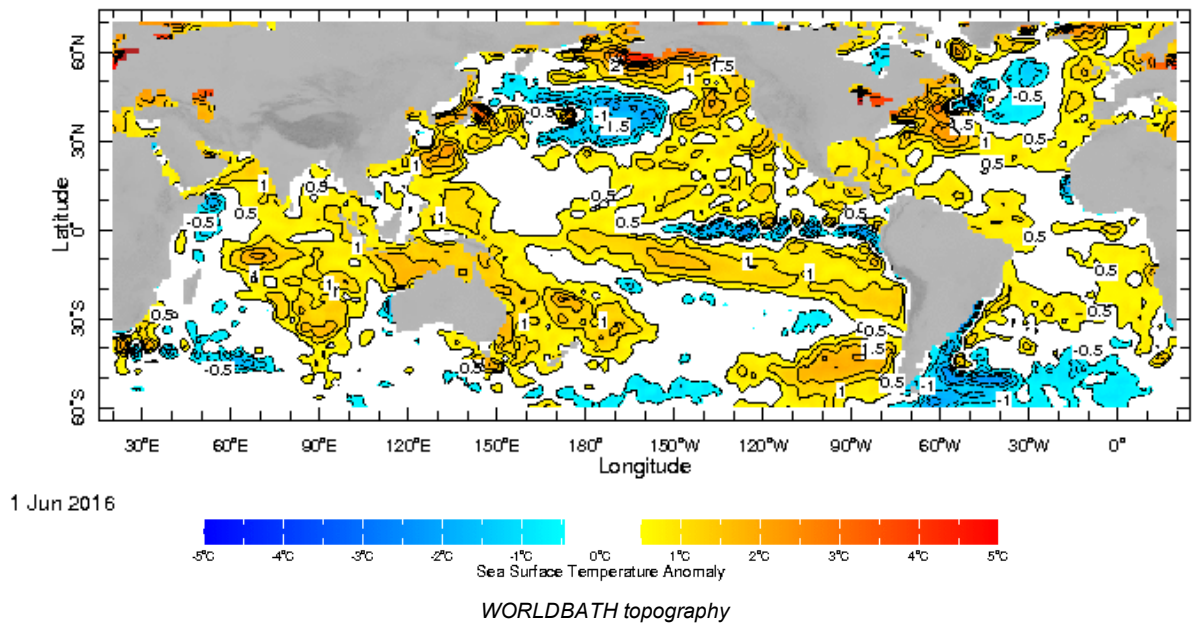
The following figures show the mean vector wind total of the past 7 days near Sri Lanka at two levels. The figure on the left shows 850 mb (~1500 m) level and the figure on the right shows 700 mb (~3000 m) level.



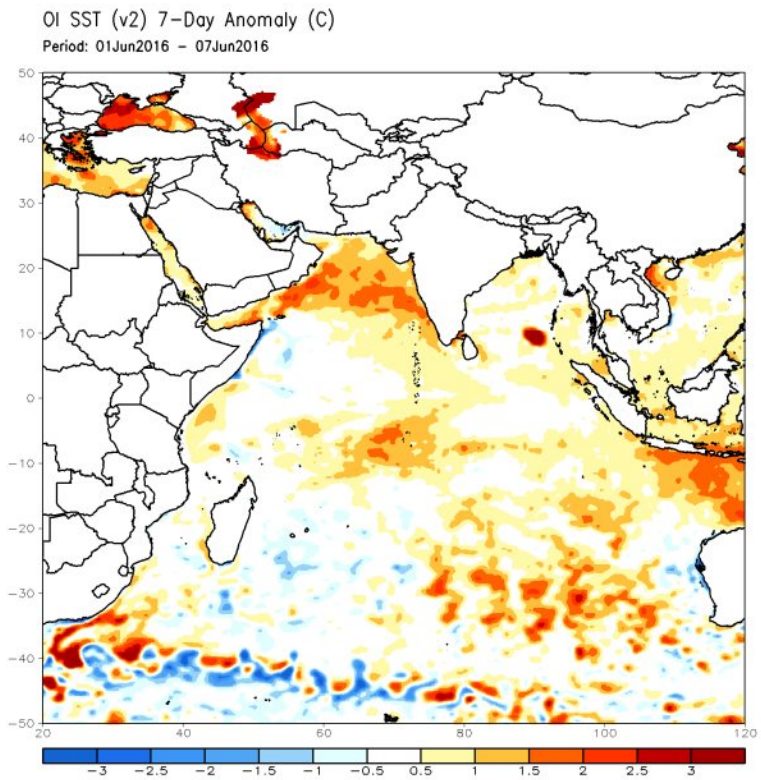


Weekly Average SST Anomalies

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

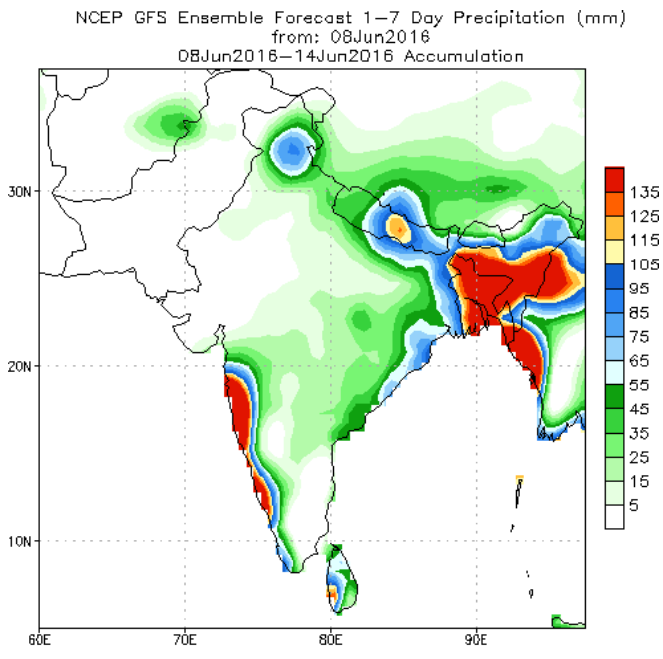


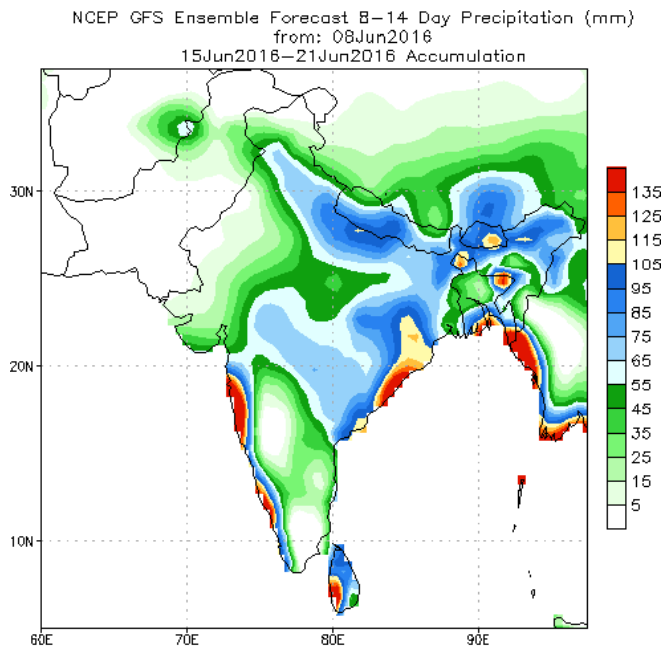
Optimum Interpolated Sea Surface Temperature Anomaly in the Indian Ocean from NOAA CPC



PREDICTIONS

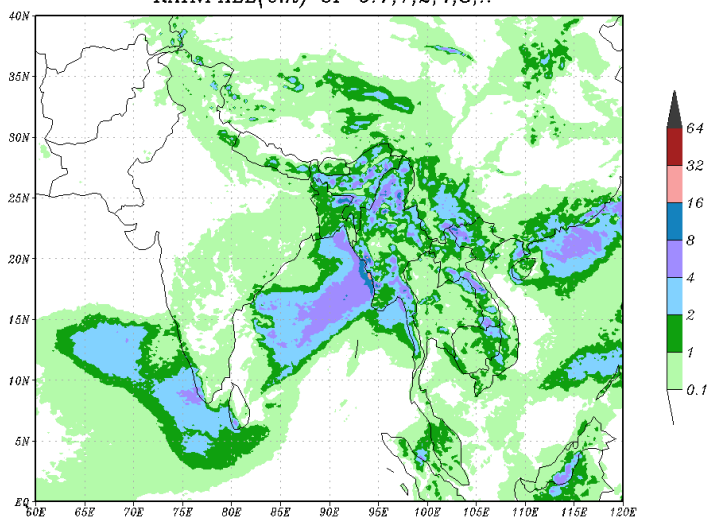
NCEP GFS 1- 14 Day prediction



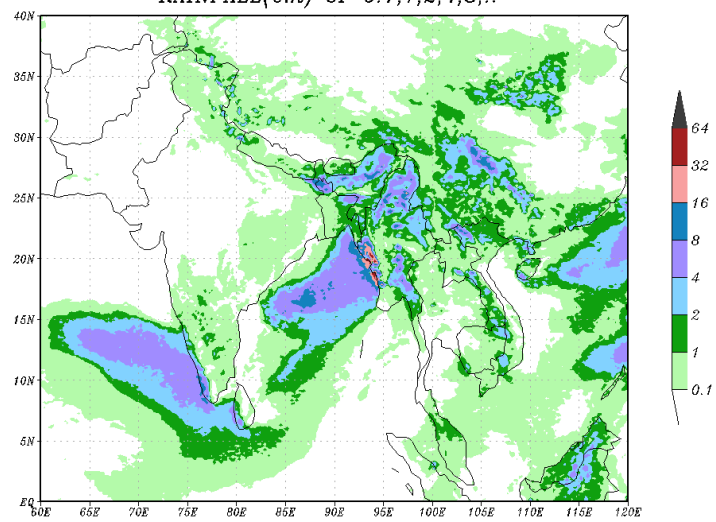


Numerical Weather Prediction (NWP) Model Forecast from NCMRWF India

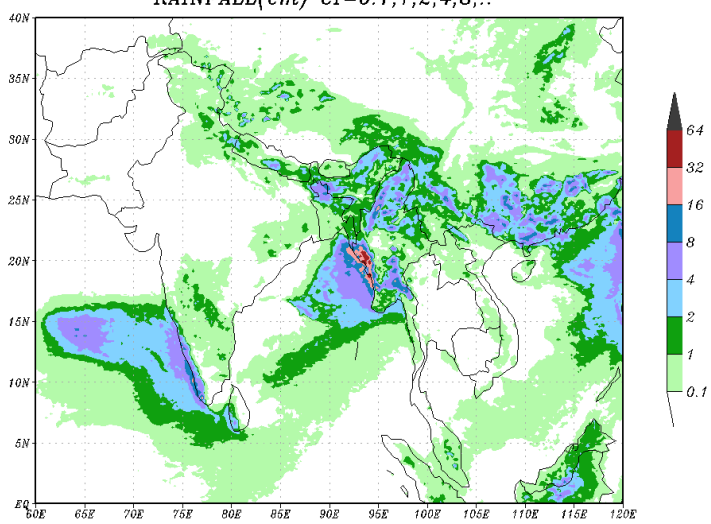
NCUM (17km) DAY 2 FORECAST VALID ON 00Z8JUN2016
RAINFALL(cm) CI=0.1,1,2,4,8,..



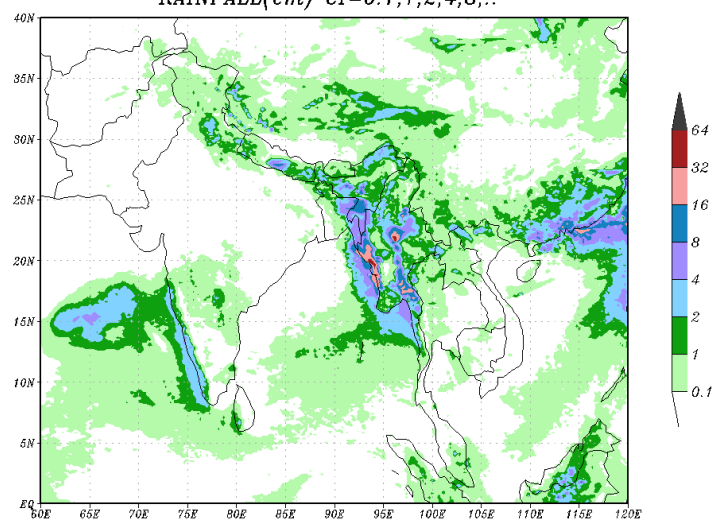
NCUM (17km) DAY 3 FORECAST VALID ON 00Z9JUN2016
RAINFALL(cm) CI=0.1,1,2,4,8,..



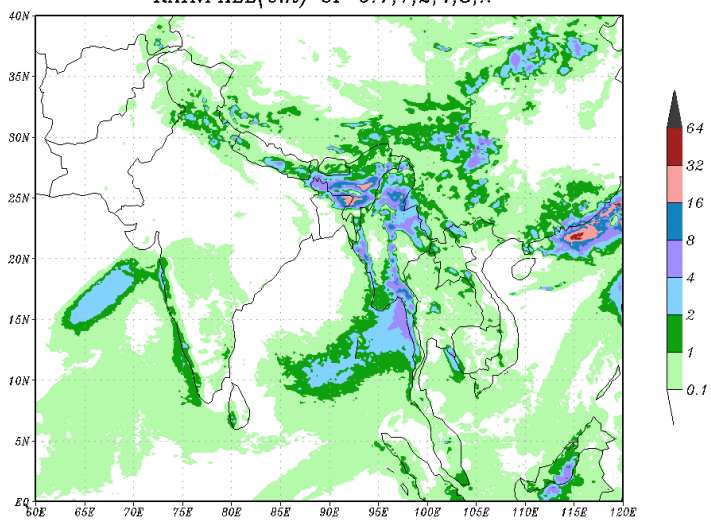
NCUM (17km) DAY 4 FORECAST VALID ON 00Z10JUN2016
RAINFALL(cm) CI=0.1,1,2,4,8,..



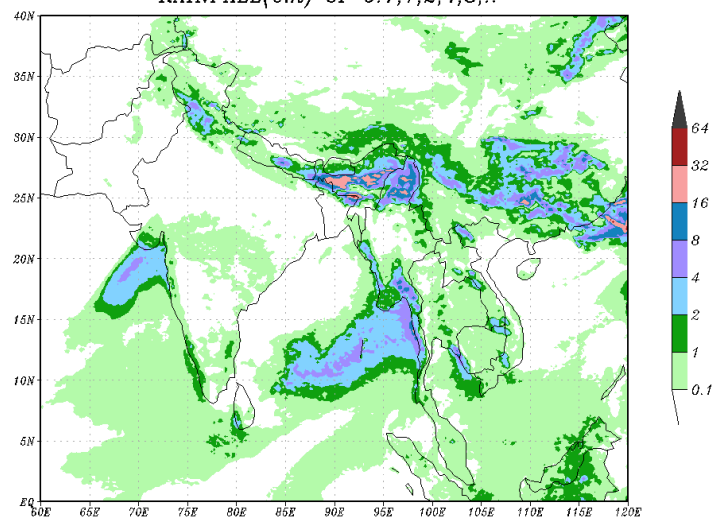
NCUM (17km) DAY 5 FORECAST VALID ON 00Z11JUN2016
RAINFALL(cm) CI=0.1,1,2,4,8,..

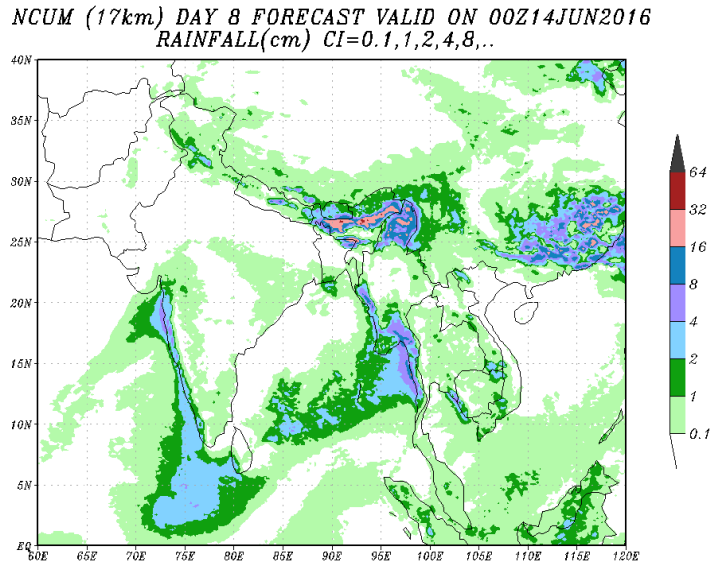


NCUM (17km) DAY 6 FORECAST VALID ON 00Z12JUN2016
RAINFALL(cm) CI=0.1,1,2,4,8,..

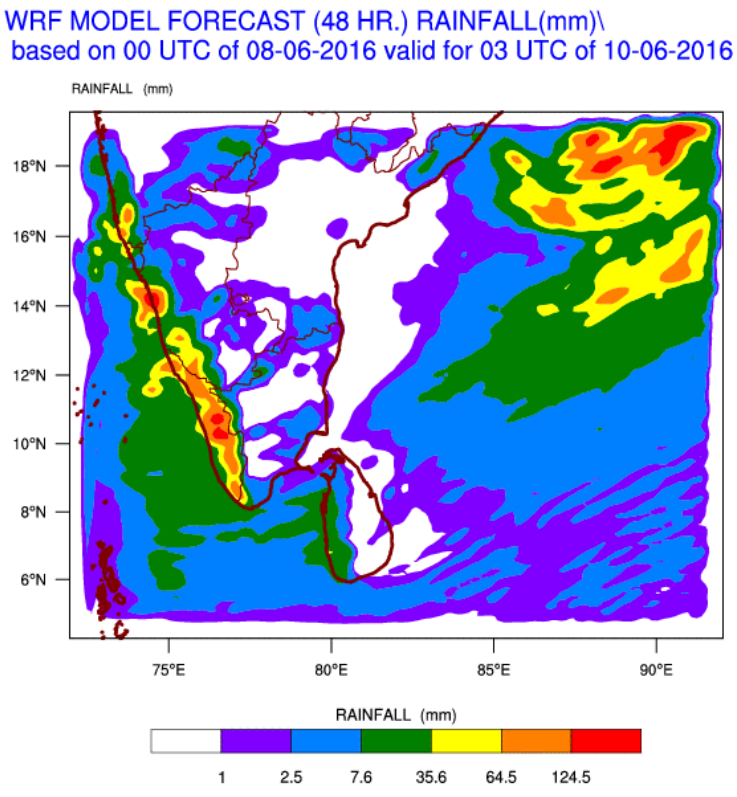


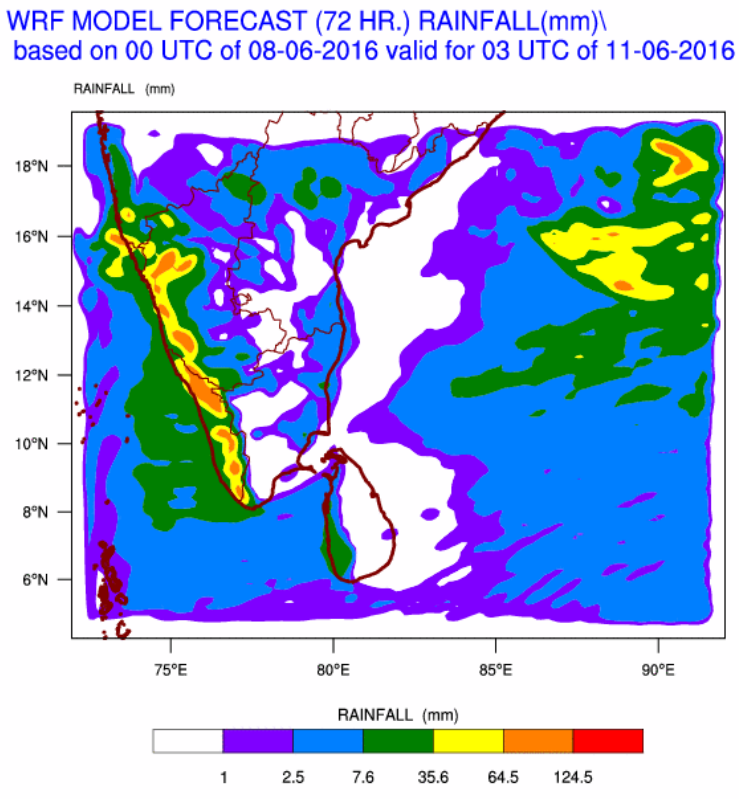
NCUM (17km) DAY 7 FORECAST VALID ON 00Z13JUN2016
RAINFALL(cm) CI=0.1,1,2,4,8,..





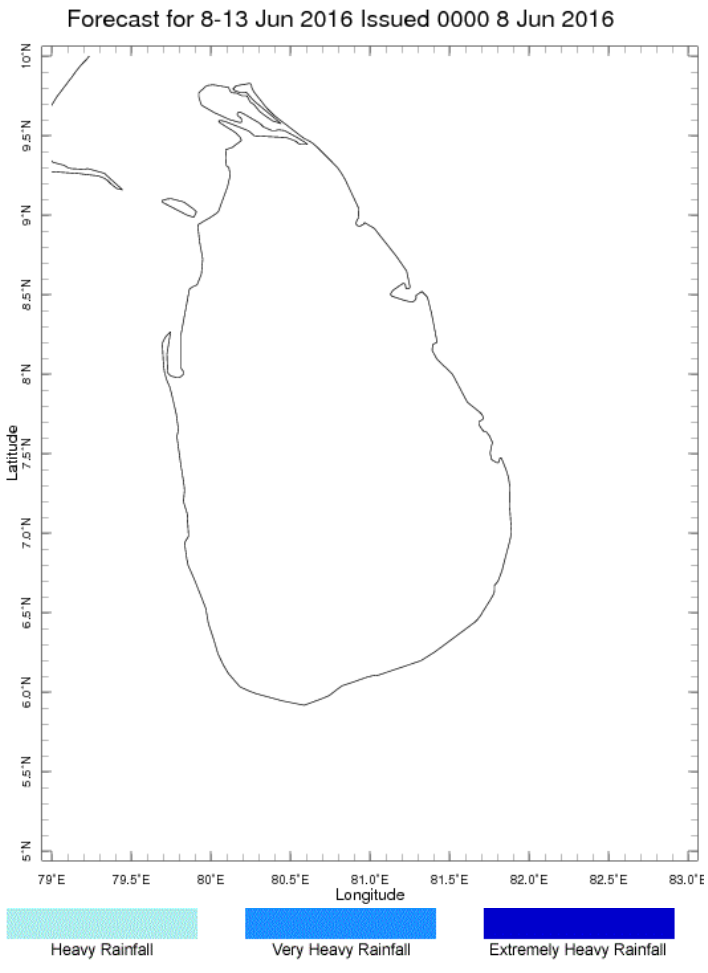
WRF Model Forecast (from IMD Chennai)



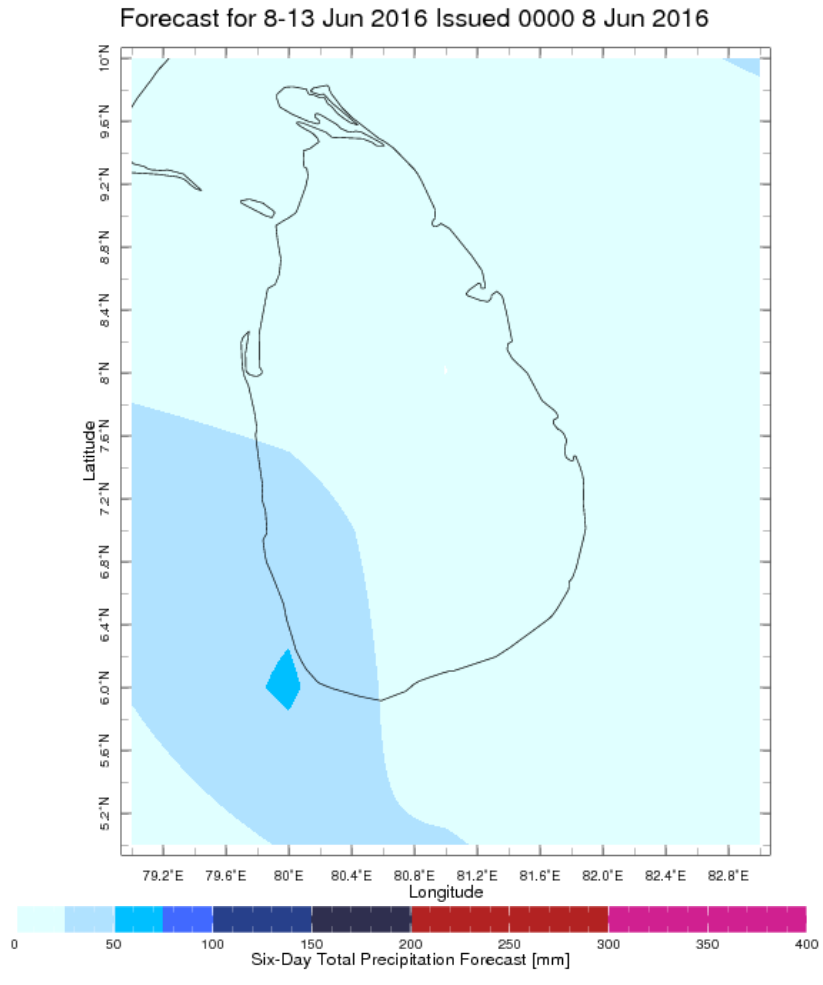


Weekly Rainfall Forecast from IRI

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.



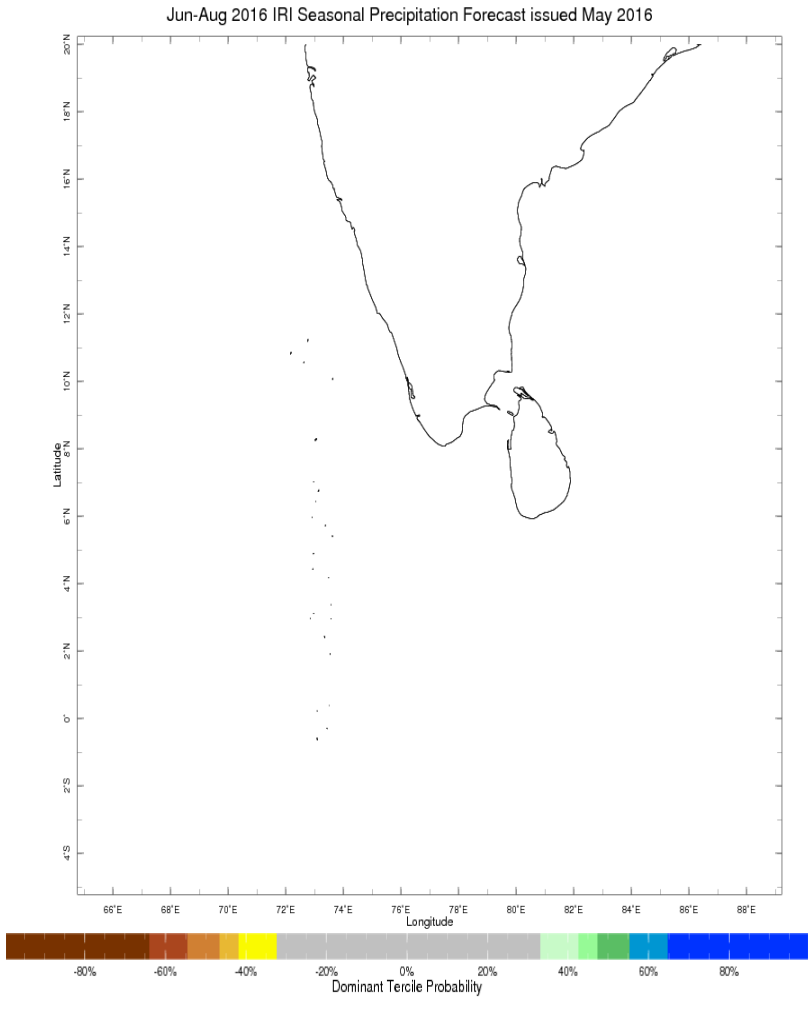
Extreme Rainfall Forecast



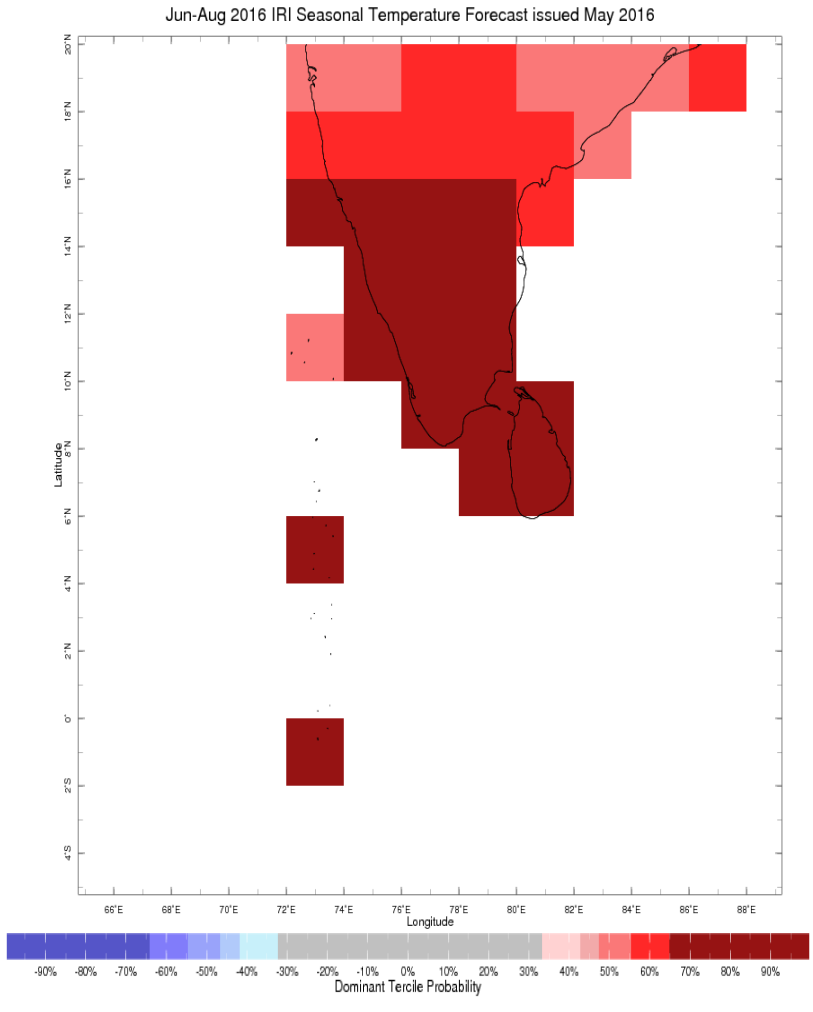
Total Six Day Precipitation Forecast

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%).



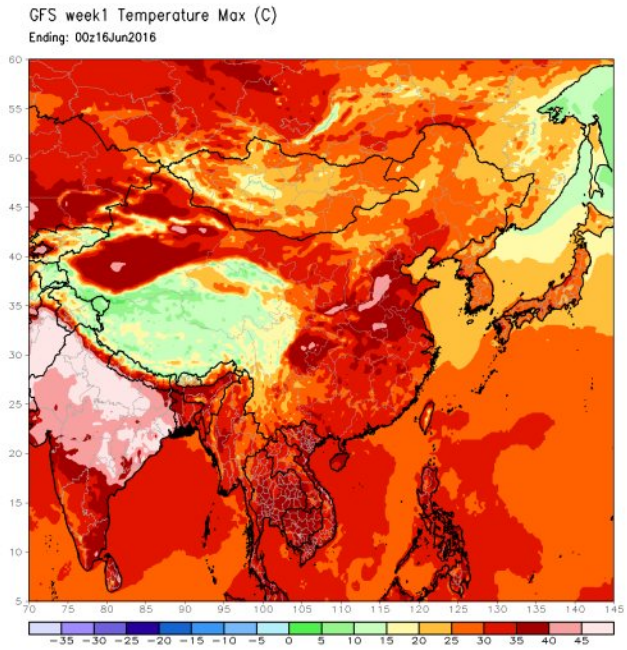
Precipitation Forecast

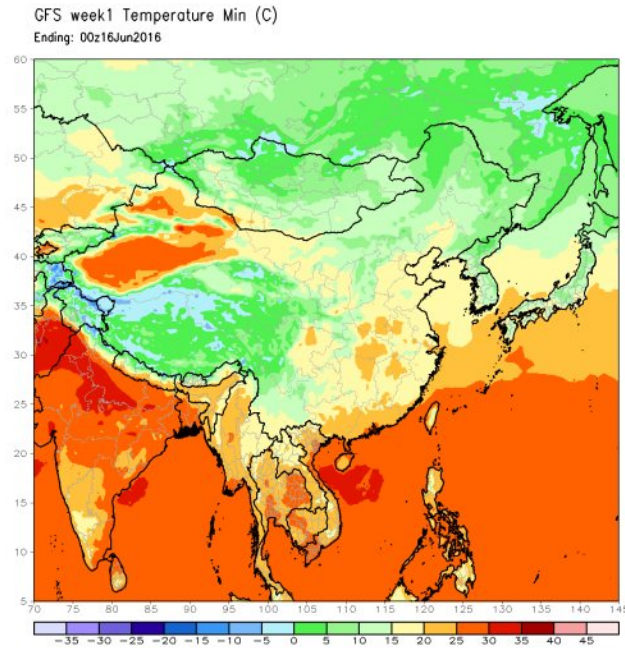


Temperature Forecast

Weekly Temperature Forecast

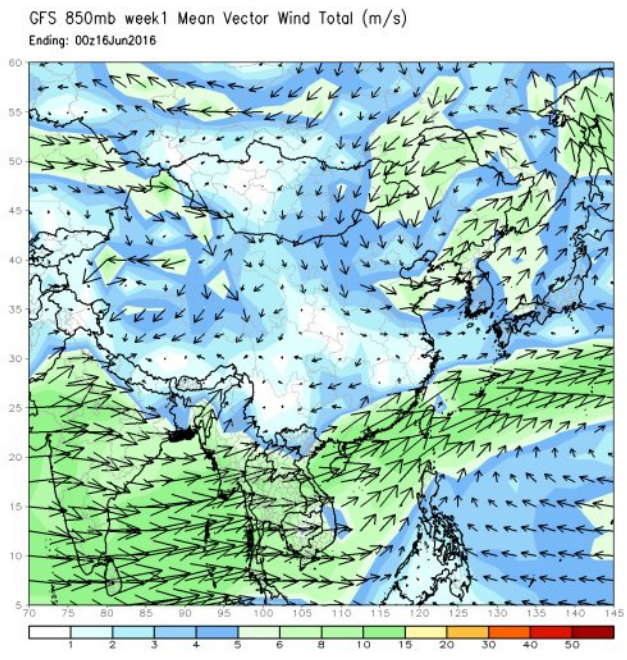
Weekly Minimum and Maximum Temperature prediction from the GFS model (from NOAA CPC)

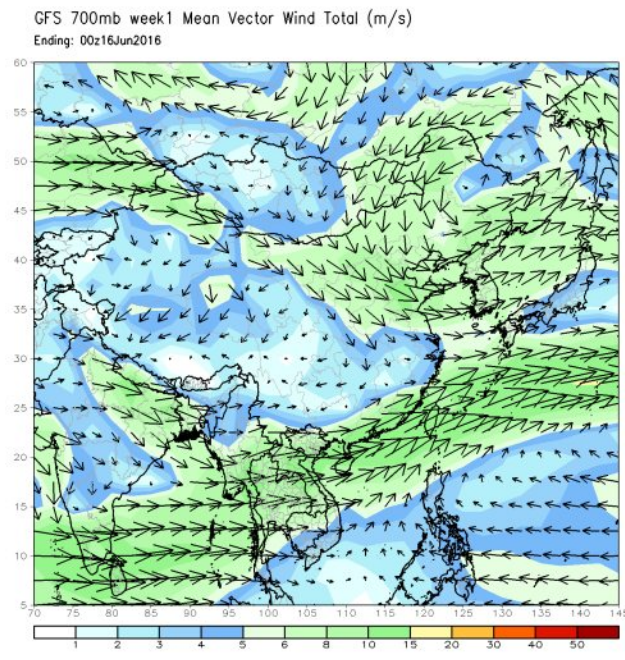




Weekly Wind Forecast

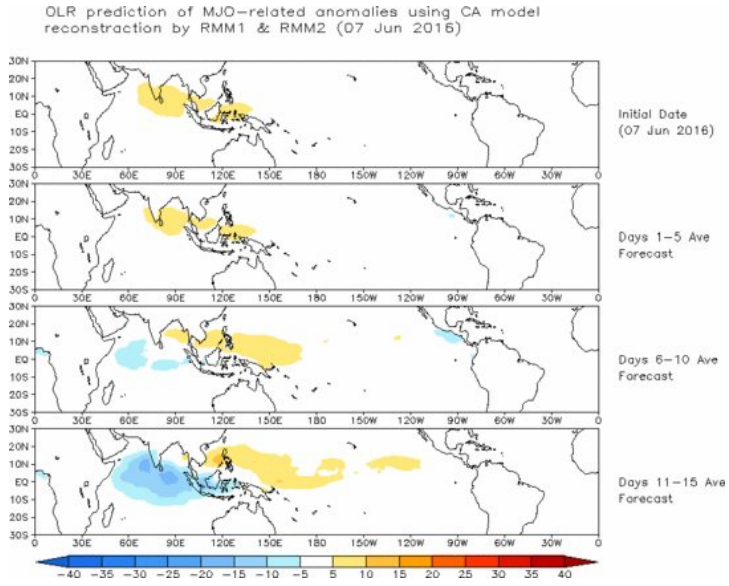
Weekly mean vector wind total prediction from the GFS model at 850 mb (left) and 700 mb (right) levels. (from NOAA CPC)





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.



Subscribe to our Monthly Maldives Newsletter

email address

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