

Experimental Climate Monitoring and Prediction

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Lareef Zubair and Michael Bell (FECT and IRI¹)

27 June 2013

FECT BLOG

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June 20, 2013 PACIFIC SEAS STATE

During May through mid-June observed ENSO conditions remained neutral. Most of the ENSO prediction models indicate a continuation of neutral ENSO into northern autumn. However few models, mainly but not exclusively statistical models, call for cooling towards borderline or weak La-Nina conditions during the coming northern summer season into the latter part of the 2013.
(Text Courtesy IRI)

INDIAN OCEAN STATE

The sea surface temperature around Sri Lanka showed cold anomaly and western seas of the island showed -1°C anomaly during 16th-22nd June 2013.

Highlights

Monitoring and Predictions:

In the coming week Southwestern regions shall experience higher rainfall compared to the rest of the island. Compared to the rest of the island Kalutara, Galle and Ampara districts shall receive heavier rainfall on the 28th of June. However, no rainfall is being shown for the 29th for the entire country. Existing rainfall shall increase slightly after June 27th and shall persist with variations (6-9 mm/day) till 10th of July in most regions of Sri Lanka. Around 4th July rainfall events shall be significant for the western coastal regions and Southern regions of Sri Lanka.

Summary

Monitoring

Weekly Monitoring: Rainfall ranged between 5-90 mm during 19th-25th June 2013. 20th was dryer than rest of the days of the week. Except for a few regions in the Northern Province, the entire country received a significant amount of rainfall from 21st-23rd June.

Monthly Monitoring: Sri Lanka received an above average rainfall during the month of May. The entire country received less than 15 mm of daily rainfall, with Western province receiving the highest rainfall during the month (10-15 mm/day).

Predictions

7-day prediction: Southwestern regions shall receive 5-55 mm of rainfall during 26th June-2nd July 2013.

IMD WRF Model Forecast & IRI forecast: For 28th June, IMD WRF model predicts less than 35 mm of rainfall for Kalutara & Galle districts which shall reduce and spread towards the coastal belts of Puttalam & Matara districts and parts of Ratnapura & Kegalle districts. On the same day Ampara district shall receive less than 35 mm of rainfall & shall spread in a reducing manner towards the coastal belts of Batticaloa district. For the 29th of June, dry conditions are predicted for the entire country. NOAA model predicts dryer condition during 25th-30th June for the entire country compared with the past weeks.

30 Days Prediction: Overall- Existing rainfall shall increase slightly after the 27th of June, and shall persist with variations (6-9 mm/day) till 10th of July. But no significant rainfall events shall be expected. **Western Slopes** – The rainfall pattern persisting in the entire country shall be observed in this region with higher amounts of rainfall. But the rate of rainfall increase shall be higher than the entire country. **Western Coast** – The rainfall pattern existing in the entire country shall be present in this region with differing amounts of rainfall, and a significant amount of rainfall can be expected around 4th July. **Eastern Slopes** – The rainfall will gradually increase till it reaches a significant rainfall event around 28th. **Eastern Coast** – Rainfall shall increase till the 28th & shall remain constant around 10-12 mm/day thereafter. **Northern region-** The decreasing trend in rainfall shall persist till 6th July. **Southern Region-** Rainfall shall remain around 2-4 mm/day till 4th July & there shall be a significant rainfall event around 4th July.

Seasonal Prediction: As per IRI Multi Model Probability Forecast issued on June 2013; for July 2013 to September 2013, there is a 50-60% probability for temperature to be above normal in the country while the rainfall is to be climatological.

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- Monthly Rain fall Estimates
- Decadal (10 Day) Satellite Derived Rainfall Estimates
- Weekly Average SST Anomalies

2. Predictions

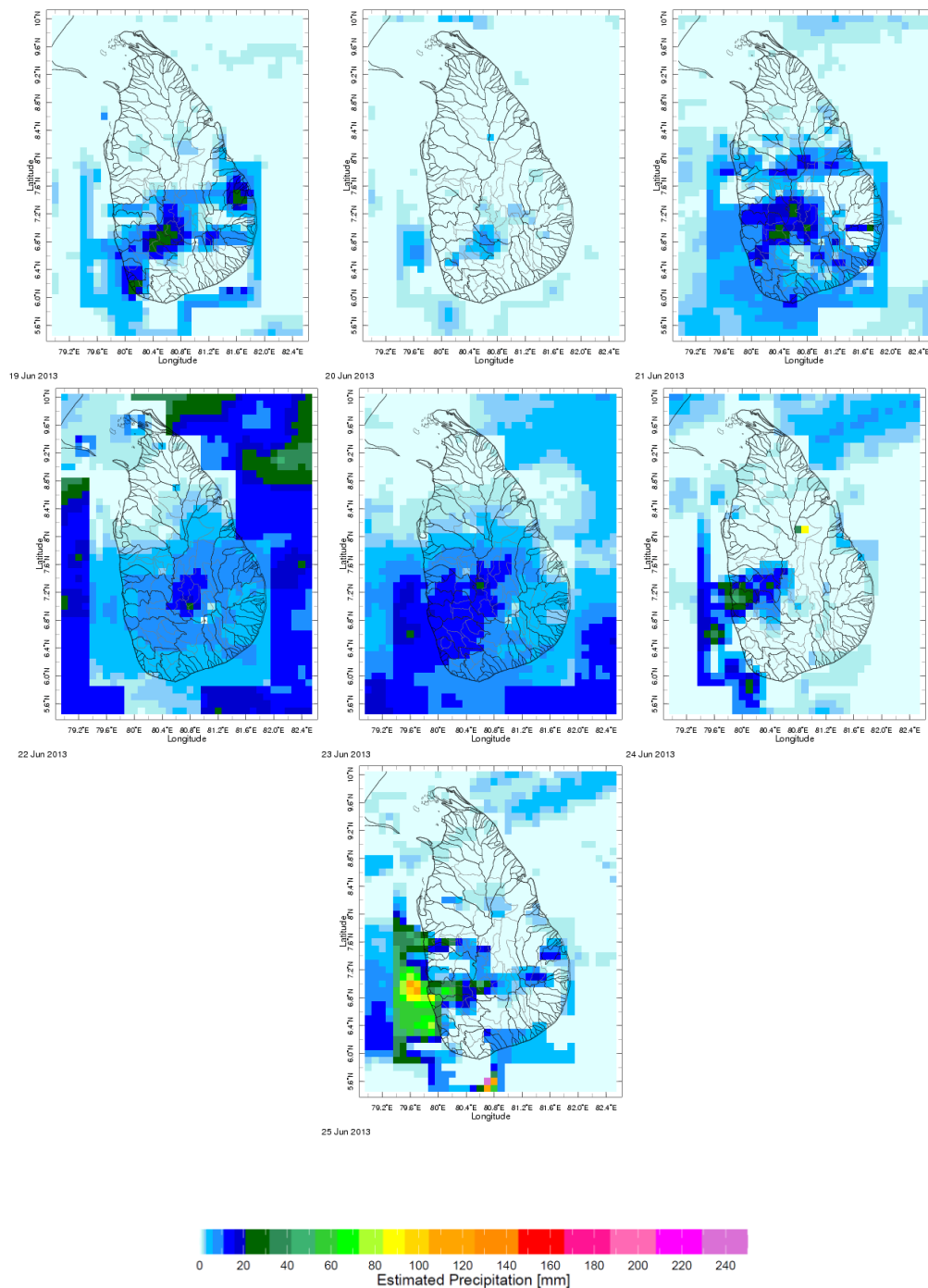
- NCEP GFS Ensemble 1-7 day predictions
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

¹ International Research Institute for Climate and Society, Earth Institute at Columbia University, New York.

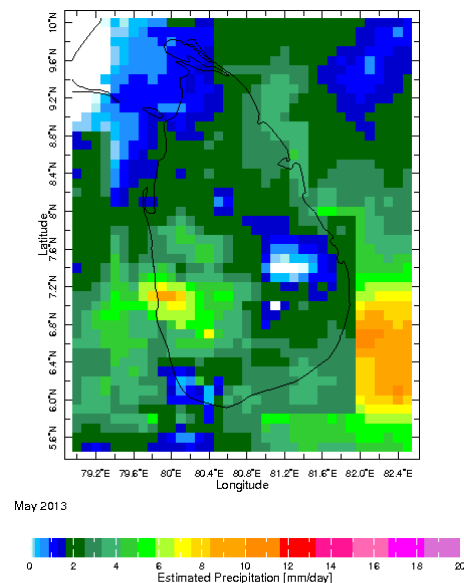
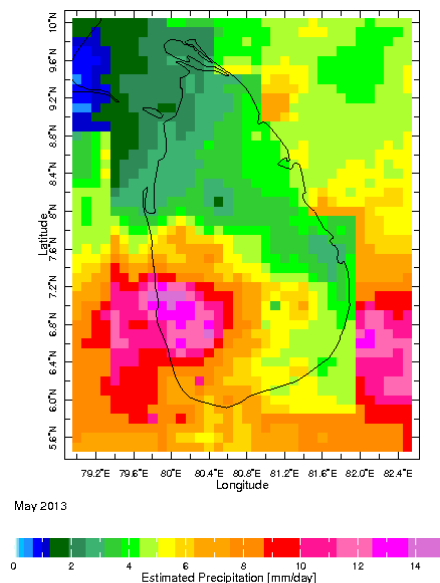
² These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

1. Monitoring

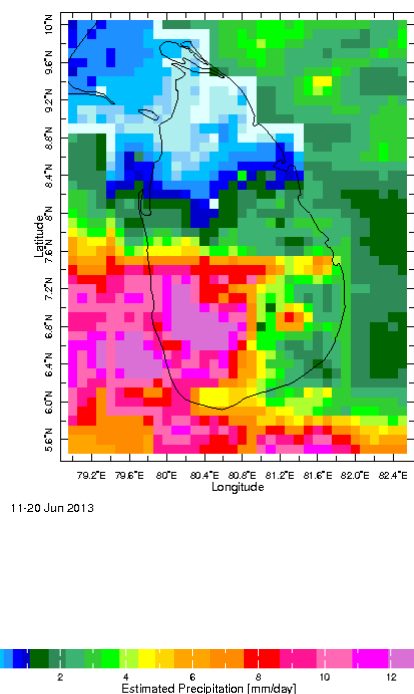
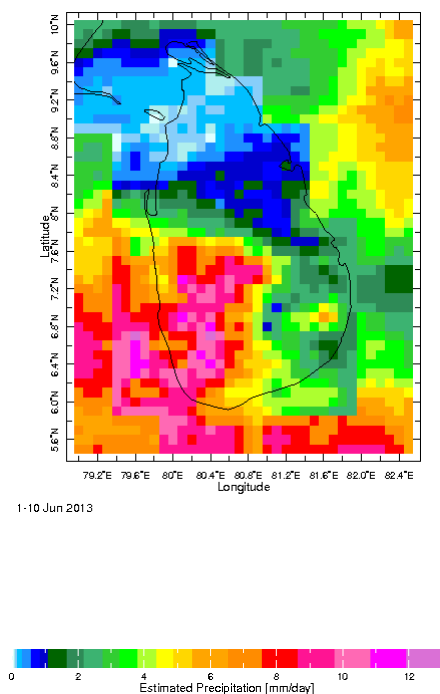
a) Daily Satellite Derived Rainfall Estimate Maps: 19th–25th June 2013 (Left-Right, Top-Bottom)



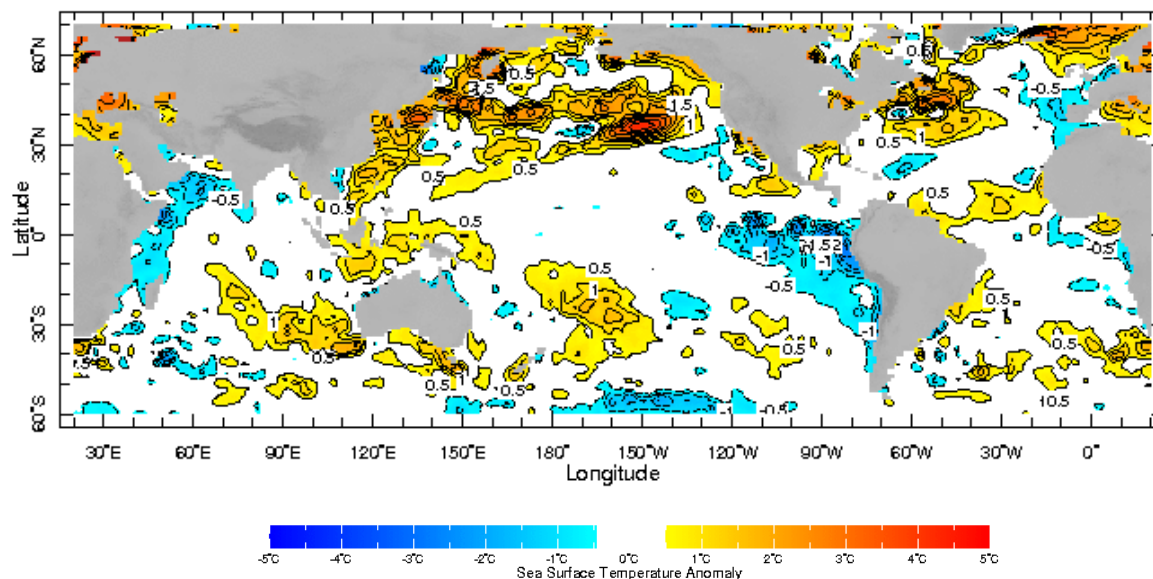
b) Monthly Satellite Derived Rainfall Estimates for May 2013 (Total – Left and Anomaly -Right)



c) Dekadal (10 Day) Satellite Derived Rainfall Estimates (1-10 June & 11-20 June, 2013)



b) Weekly Average SST Anomalies

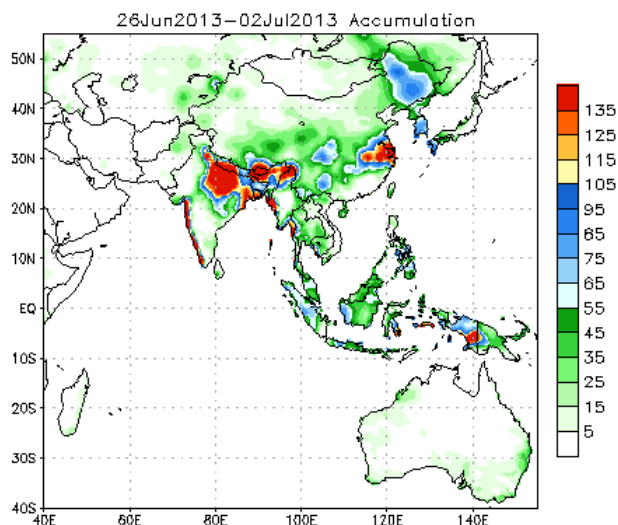


Weekly Average SST Anomalies ($^{\circ}\text{C}$), 16th-22nd June, 2013

Data Source: NCEP Environmental monitoring center (Climatology 1971-2000)

2. Predictions

a) NCEP GFS Ensemble 1-7 day predictions, NOAA, Climate Prediction Centre, USA.

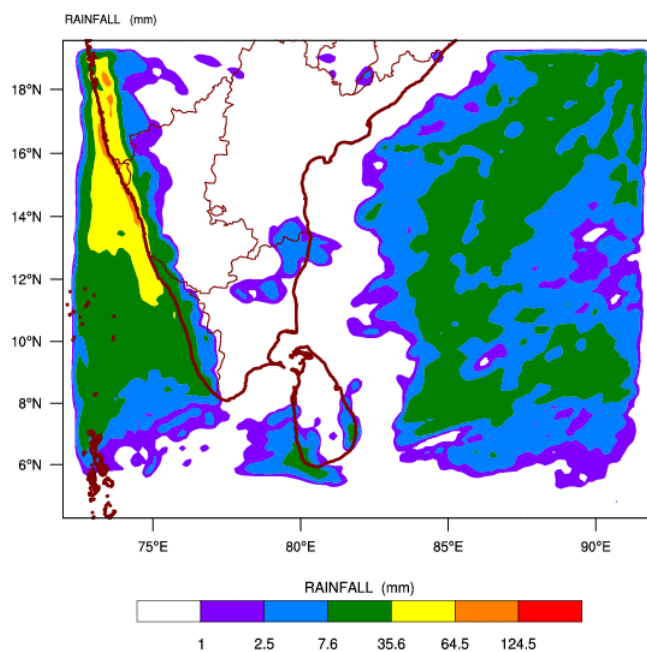


Bias correction based on last 30-day forecast error

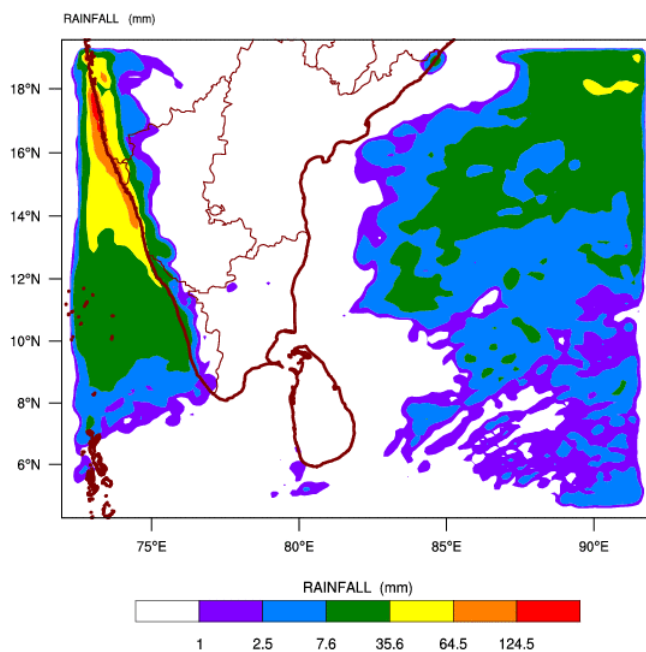
Source – NOAA Climate Prediction Center

b) *WRF model forecast* Regional Meteorological Center, Chennai, Indian Meteorological Department)

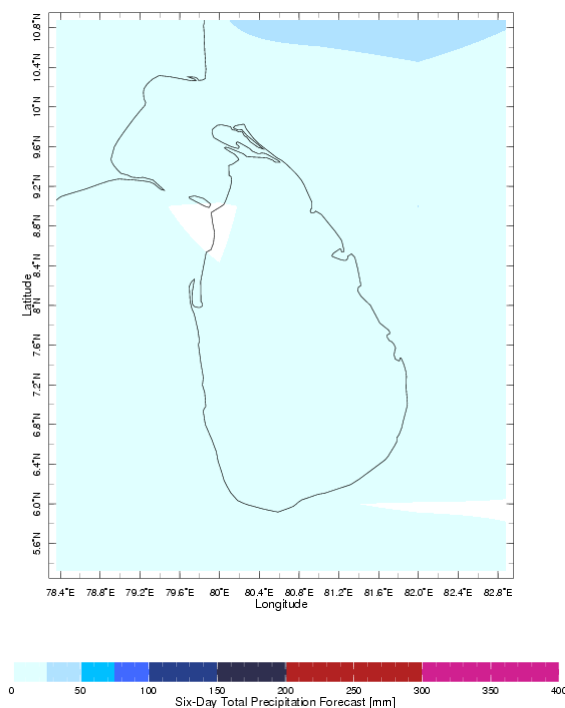
WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\
based on 00 UTC of 26-06-2013 valid for 03 UTC of 28-06-2013



WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\
based on 00 UTC of 26-06-2013 valid for 03 UTC of 29-06-2013



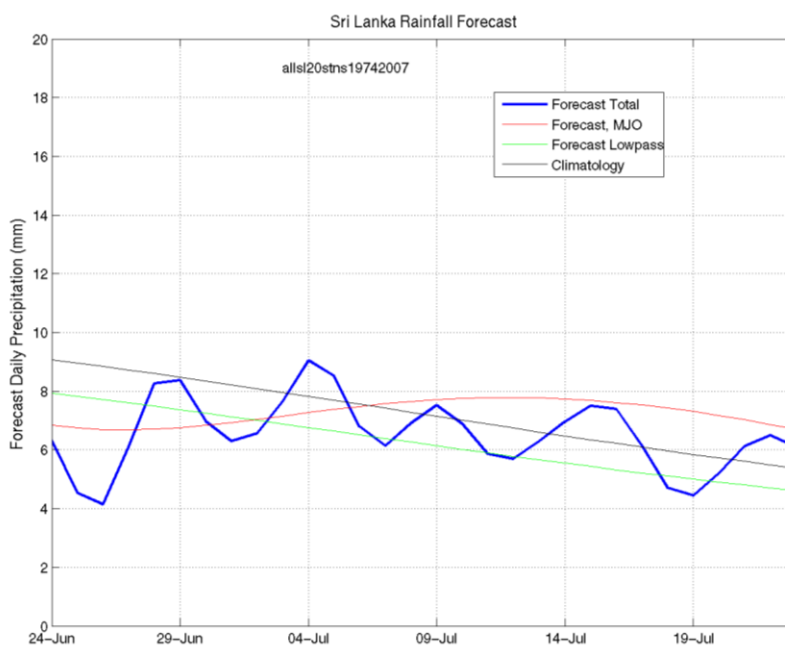
c) Weekly Precipitation Forecast for 25th-30th June 2013 (Precipitation Forecast in Context Map Tool, IRI)



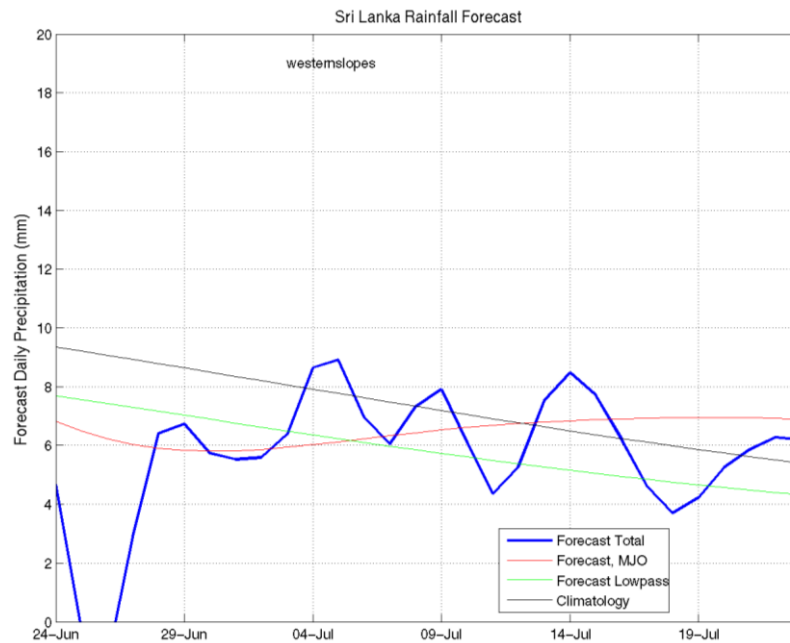
d) 1 month experimental predictions by Paul Roundy and L. Zubair

Predictions based on observed cloud cover and atmospheric waves. Issued 26th June, 2013

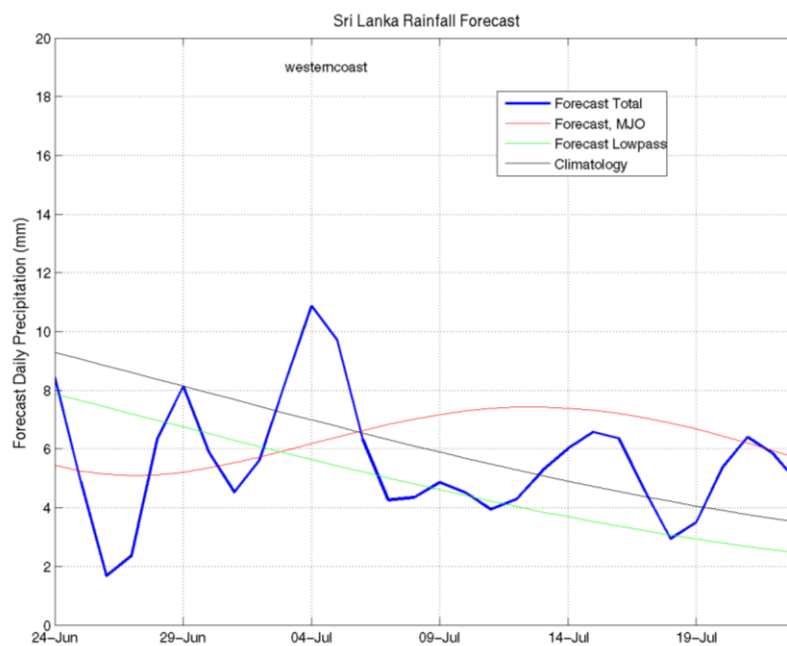
All Sri Lanka (Rainfall Scale from 0-20 mm/day)



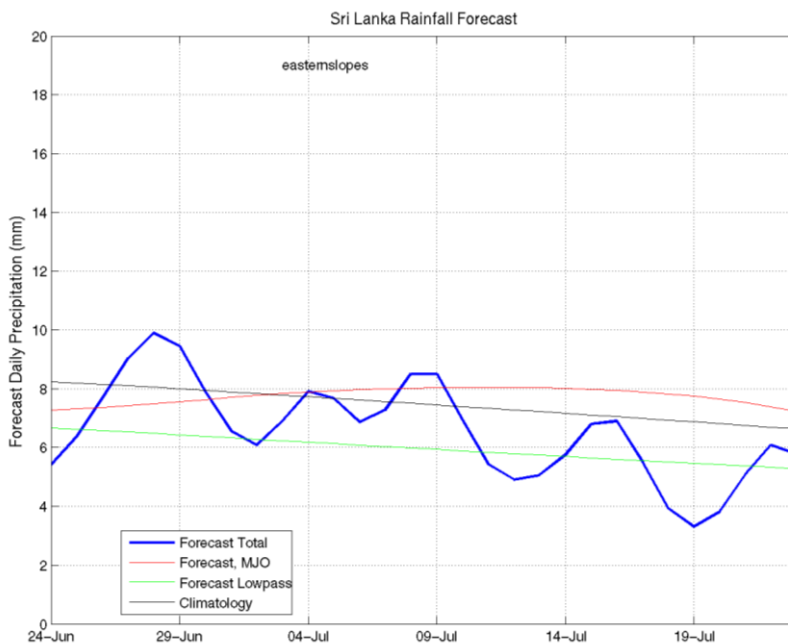
Western Slopes (Rainfall Scale from 0-20 mm/day)



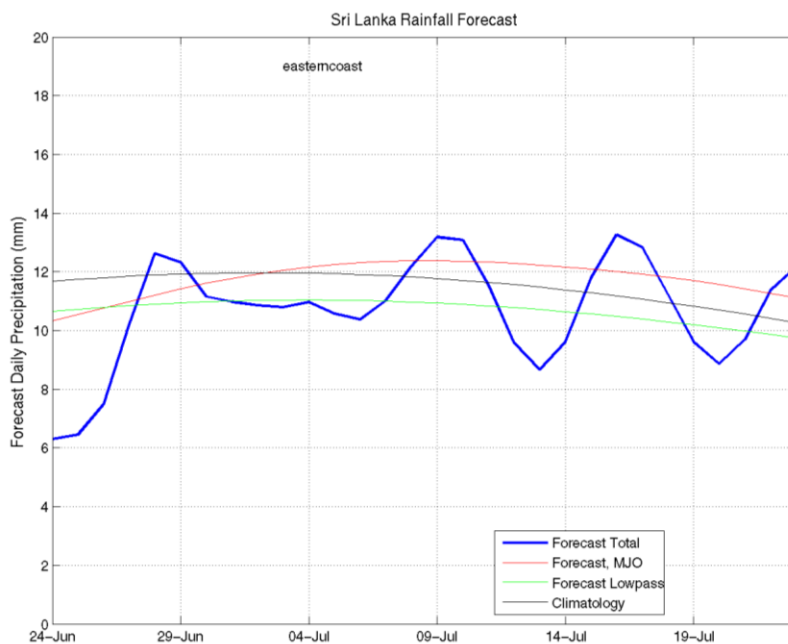
Western Coast (Rainfall Scale from 0-20 mm/day)



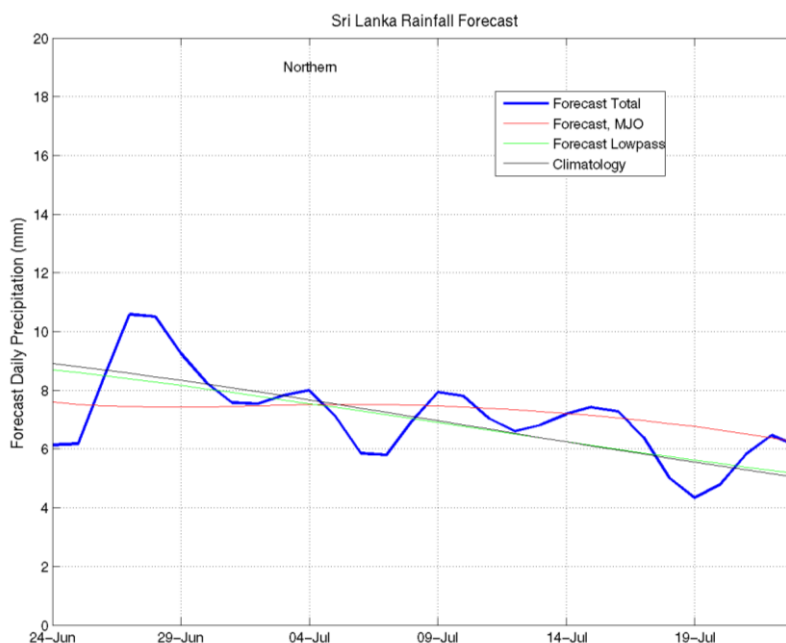
Eastern Slopes (Rainfall Scale- from 0-20 mm/day)



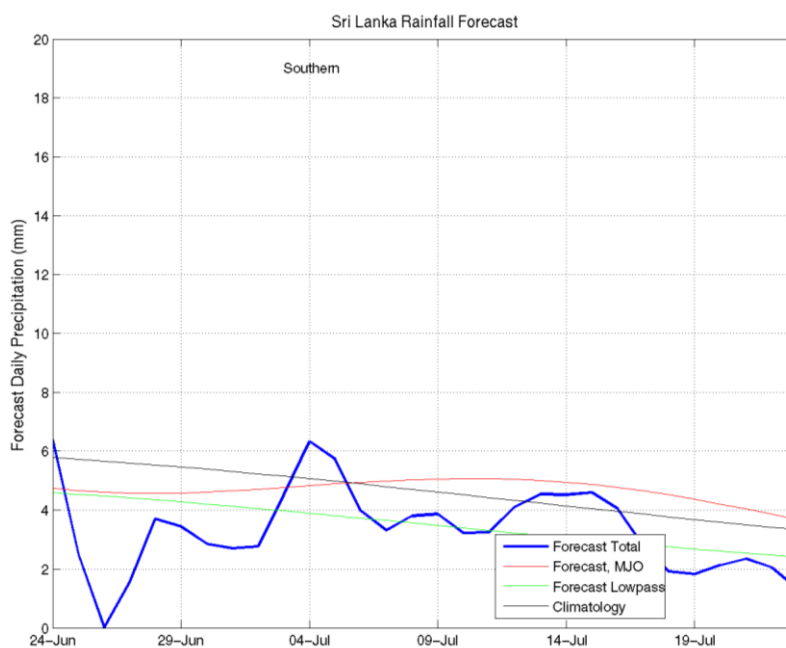
Eastern Coast (Rainfall Scale- from 0-20 mm/day)



Northern Region (Rainfall Scale- from 0-20 mm/day)

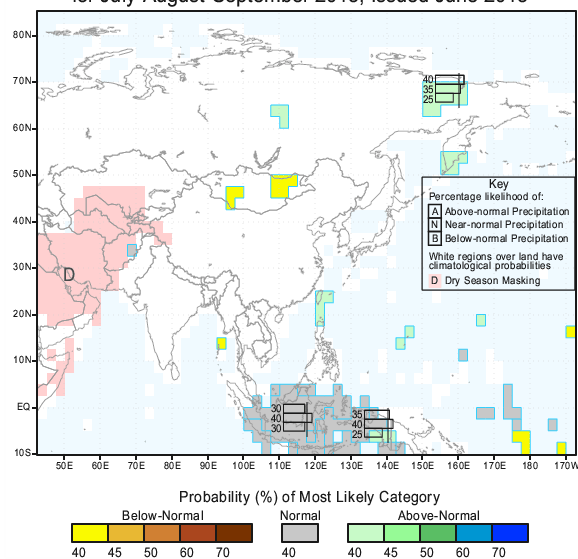


Southern Region (Rainfall Scale- from 0-20 mm/day)



e) Seasonal Rainfall and Temperature Predictions from IRI

IRI Multi-Model Probability Forecast for Precipitation
for July-August-September 2013, Issued June 2013



IRI Multi-Model Probability Forecast for Temperature
for July-August-September 2013, Issued June 2013

