

Experimental Climate Monitoring and Prediction

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Lareef Zubair and Michael Bell (FECT and IRI¹)

15 August 2013

FECT BLOG

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

FECT WEBSITES

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

August 8, 2013 PACIFIC SEAS STATE

During June through early July the observed ENSO conditions remained neutral. Most of the ENSO prediction models indicate a continuation of neutral ENSO through the remainder of 2013. However, a few (mainly statistical) models call for cooling towards borderline or weak La-Nina conditions for northern autumn into winter. While a few others (mainly dynamical) forecast developing El-Nino conditions during this same time frame.

(Text Courtesy IRI)

INDIAN OCEAN STATE

The sea surface temperature around Sri Lanka was neutral during 4th-10th August 2013.

MJO STATE

MJO is neutral and not influences Sri Lanka rainfall.

Highlights

Monitoring and Predictions:

Rainfall was quite heavy in July in the Southwestern regions of Sri Lanka. Compared to the rest of the island, small regions in Galle & Kegalle to Puttalam are likely to receive heavier rainfall on tomorrow (16th of August). Ongoing rainfall is likely to increase drastically during 17th-19th August. Thereafter rainfall shall fluctuate below 3 mm/day till September. However, eastern coasts and southern regions are likely to experience significant rainfall event during 18th-20th August.

Summary

Monitoring

Weekly Monitoring: Rainfall ranged between 5-40 mm during 6th-13th August 2013. Maximum rainfall observed for small regions in Jaffna and Moneragala districts on 8th August. Northern half of the island received more rainfall compared to the southern half of the island.

Monthly Monitoring: Southwestern regions of Sri Lanka received an above average rainfall during the month of July. The entire country received less than 15 mm of daily rainfall, with Colombo and Gampaha districts receiving the highest rainfall during the month (14 mm/day).

Predictions

7-day prediction: Southwestern regions of Sri Lanka shall receive 5-45 mm of rainfall and shall spread northeastward in a reducing manner during 14th-20th August 2013.

IMD WRF Model Forecast & IRI forecast: For 16th of August, IMD WRF model predicts less than 36 mm of rainfall for Galle and Kegalle districts and it shall spread most nearby regions in a reducing manner. For the same day Ampara, Batticaloa and Trincomalee shall receive less than 8mm of rainfall/day. NOAA model predicts more or less same moisture condition for the entire country during 14th-19th August.

30 Days Prediction: Overall- Ongoing rainfall is likely to increase drastically during 17th-19th August, but rainfall shall not exceed 4mm/day. Thereafter rainfall shall fluctuate below 3 mm/day till September. No significant events are expected. **Western Slopes** – The rainfall shall increase drastically during 17th-19th & decrease with more or less same rate during 19th-20th. Rainfall is not predicted for 20th-22nd. Thereafter rainfall shall increase gradually. **Western Coast** – The rainfall pattern persisting in the entire country shall be observed in this region. **Eastern Slopes**– Existing rainfall shall increase gradually till 19th, but no significant event is expected. Thereafter rainfall shall decrease gradually. **Eastern Coast** – The rainfall pattern persisting in the entire country shall be observed in this region, but amount of rainfall is high. However, significant event is likely to be observe during 18th-20th. **Northern region-** Existing increasing trend of the rainfall shall persist till 22nd & shall decrease thereafter. **Southern Region-** The rainfall pattern persisting in the entire country shall be observed in this region & significant event is likely to be observe during 18th-20th.

Seasonal Prediction: As per IRI Multi Model Probability Forecast issued on July 2013; for August 2013 to October 2013, there is a 50-70% probability for temperature to be above normal in the country while the rainfall is to be climatological.

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

2. Predictions

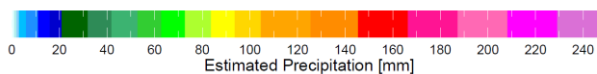
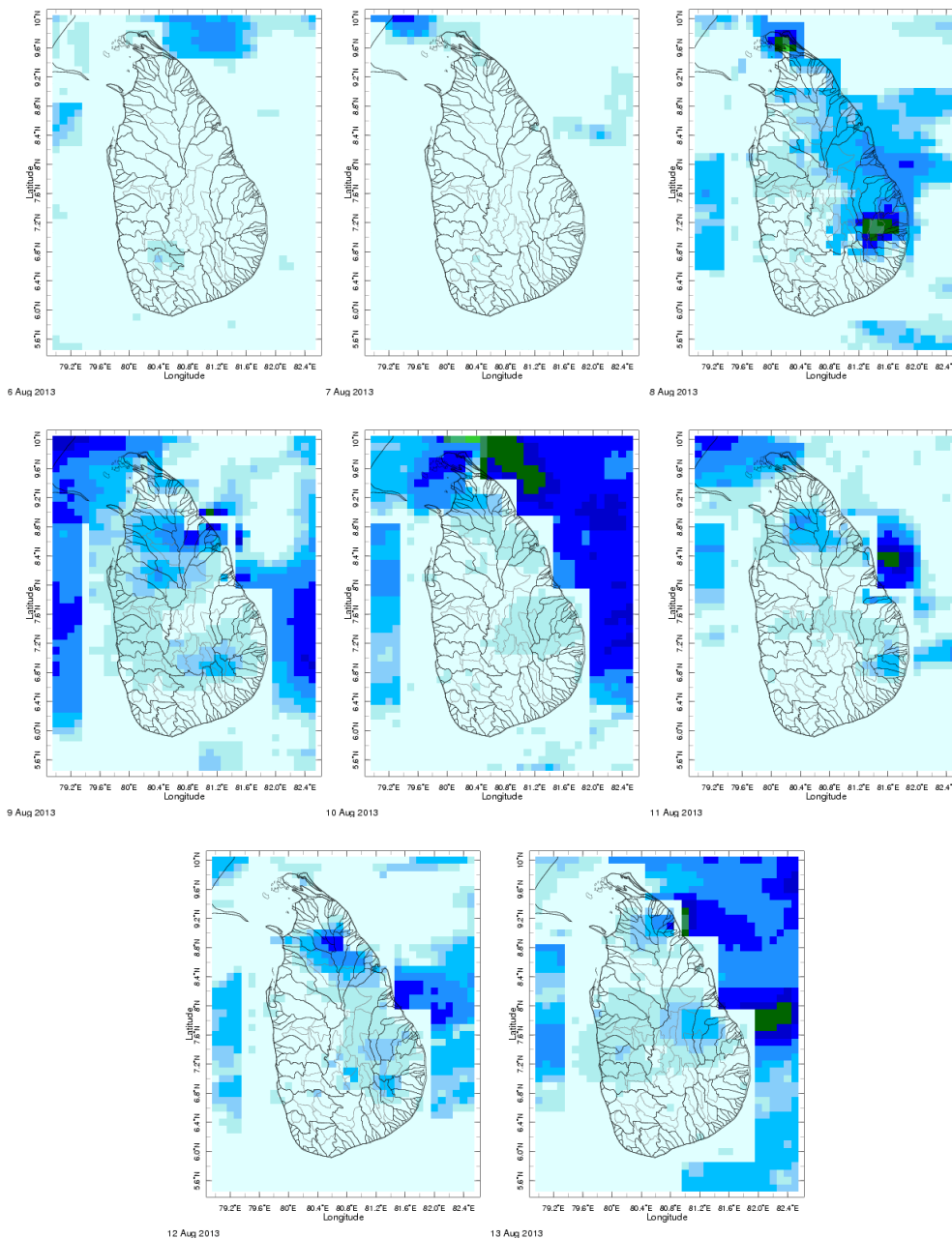
- NCEP GFS Ensemble 1-7 day predictions
- WRF model forecast Regional Meteorological Center, Chennai, Indian Meteorological Department)
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

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

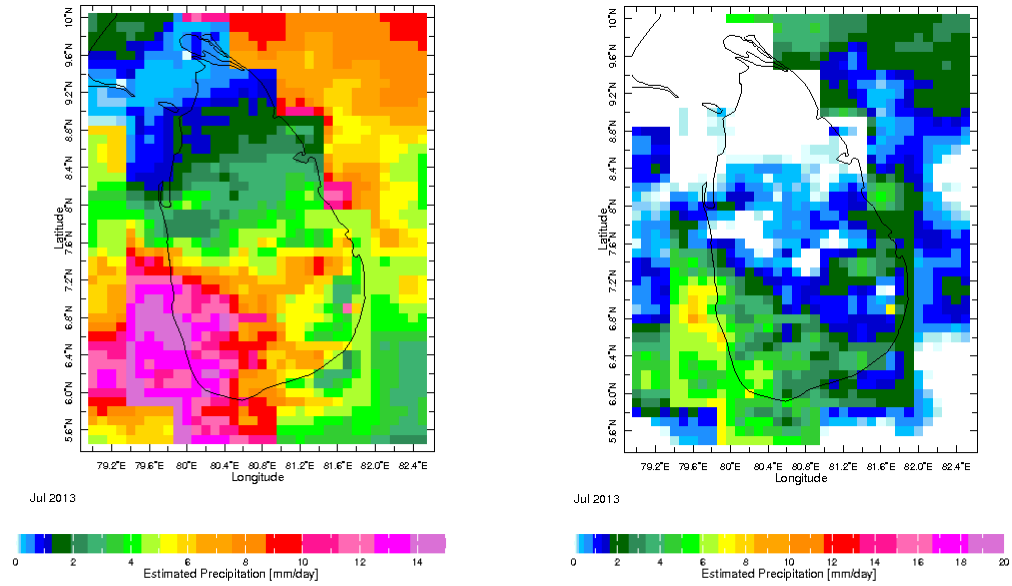
² These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

1. Monitoring

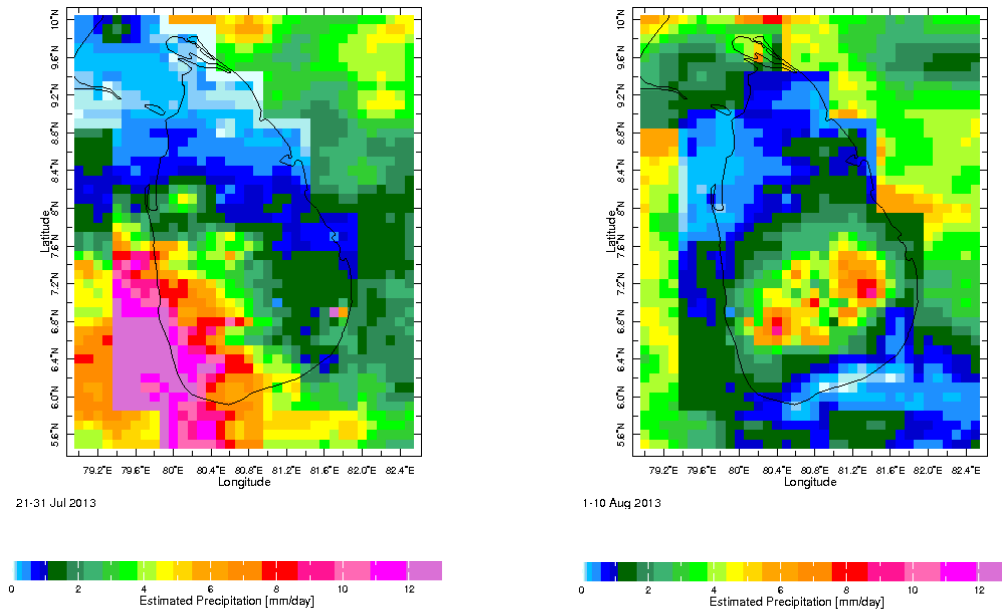
a) Daily Satellite Derived Rainfall Estimate Maps: 6th-13th August 2013 (Left-Right, Top-Bottom)



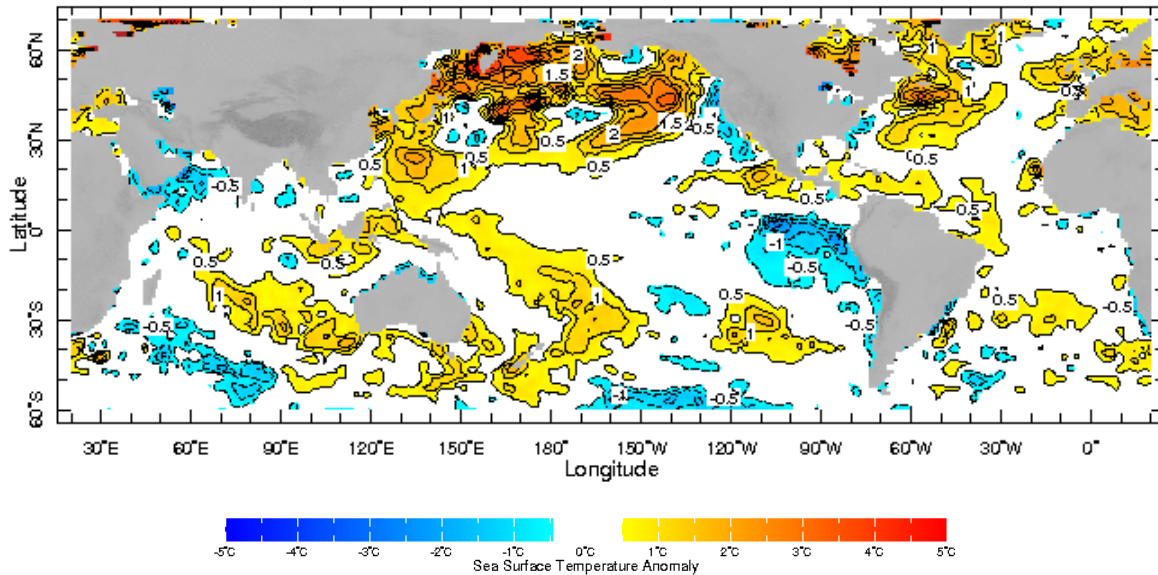
b) Monthly Satellite Derived Rainfall Estimates for July 2013 (Total – Left and Anomaly -Right)



c) Dekadal (10 Day) Satellite Derived Rainfall Estimates (21-30 July & 01-10 August, 2013)



b) Weekly Average SST Anomalies

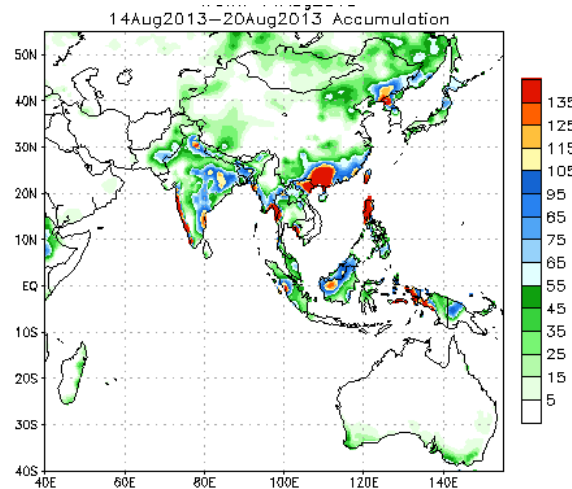


Weekly Average SST Anomalies ($^{\circ}\text{C}$), 4th-10th August, 2013

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

2. Predictions

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

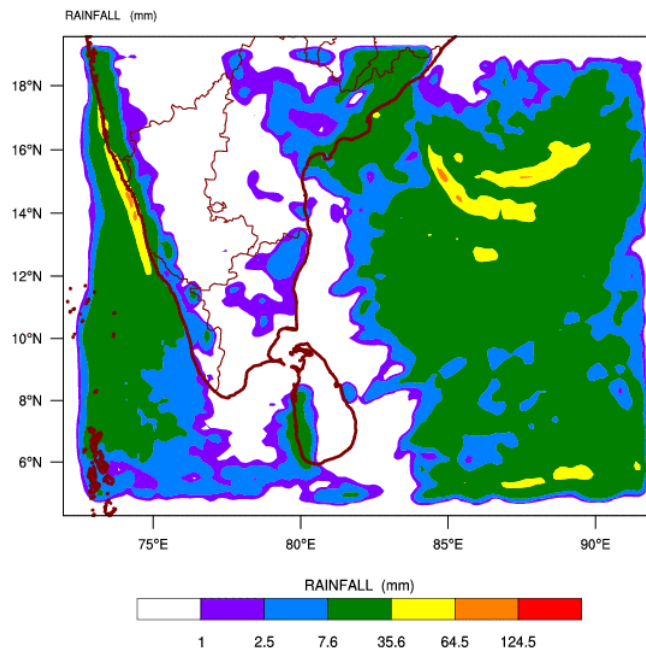


Bias correction based on last 30-day forecast error

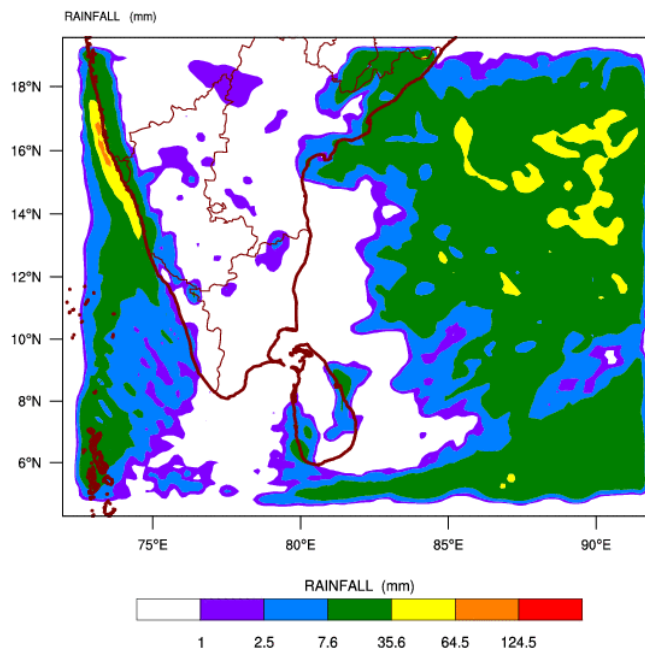
Source – NOAA Climate Prediction Center

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

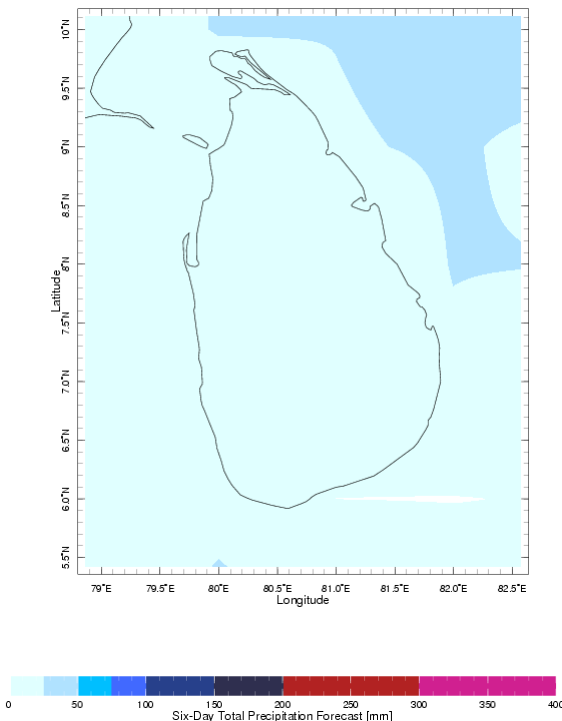
WRF MODEL FORECAST (48 HR.) RAINFALL(mm)
based on 00 UTC of 13-08-2013 valid for 03 UTC of 15-08-2013



WRF MODEL FORECAST (72 HR.) RAINFALL(mm)
based on 00 UTC of 13-08-2013 valid for 03 UTC of 16-08-2013



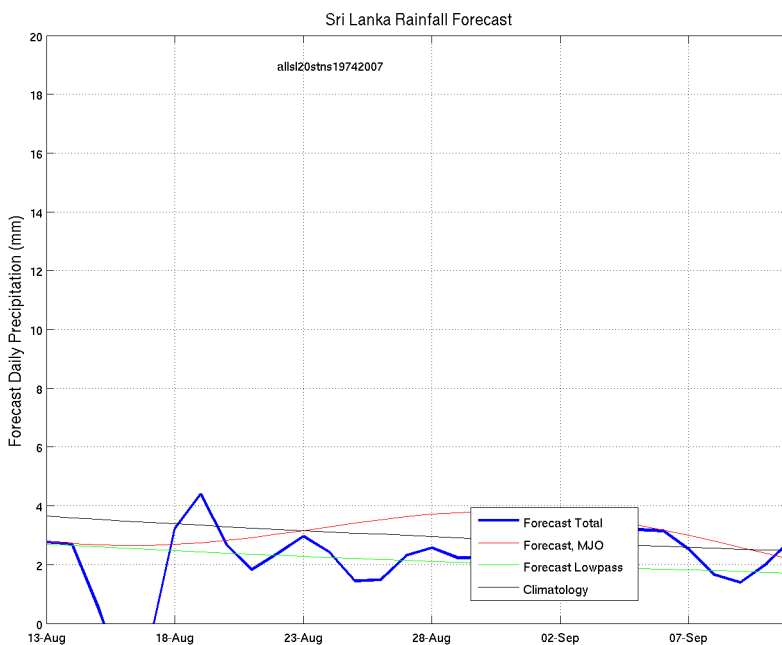
c) Weekly Precipitation Forecast for 14th-19th August 2013 (Precipitation Forecast in Context Map Tool, IRI)



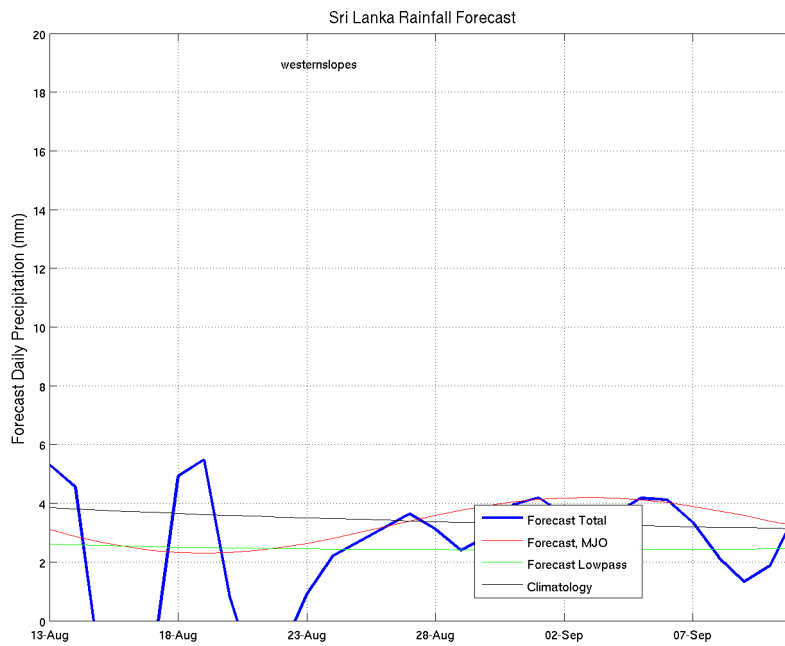
d) 1 month experimental predictions by Paul Roundy and L. Zubair

Predictions based on observed cloud cover and atmospheric waves. Issued 15th August, 2013

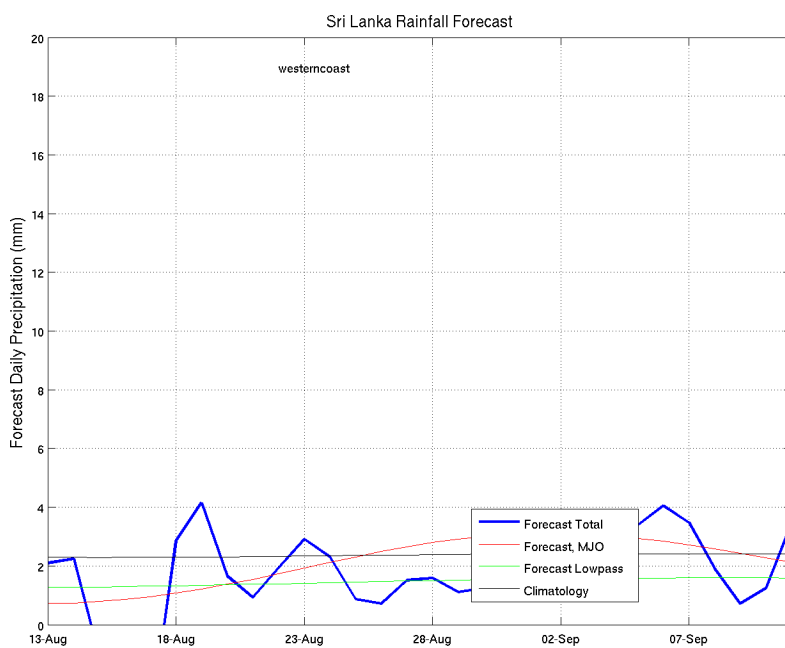
All Sri Lanka (Rainfall Scale from 0-20mm/day)



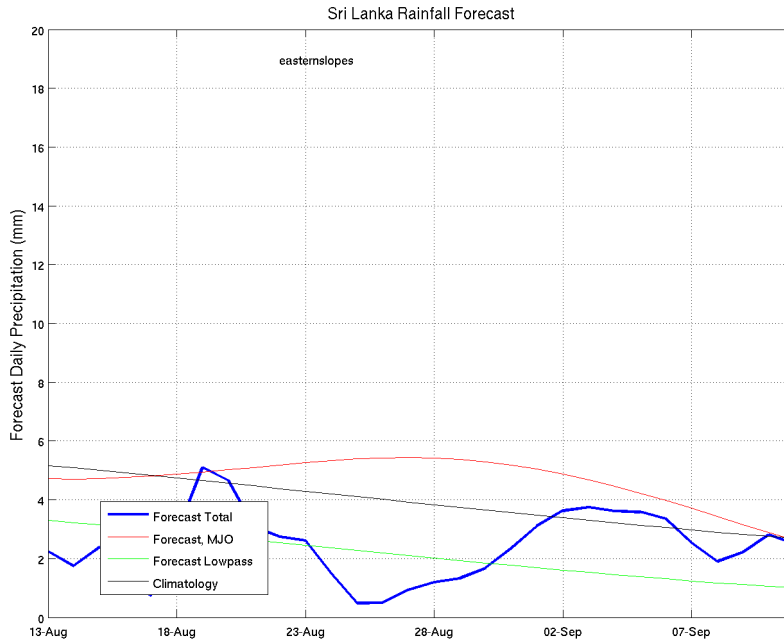
Western Slopes (Rainfall Scale from 0-20 mm/day)



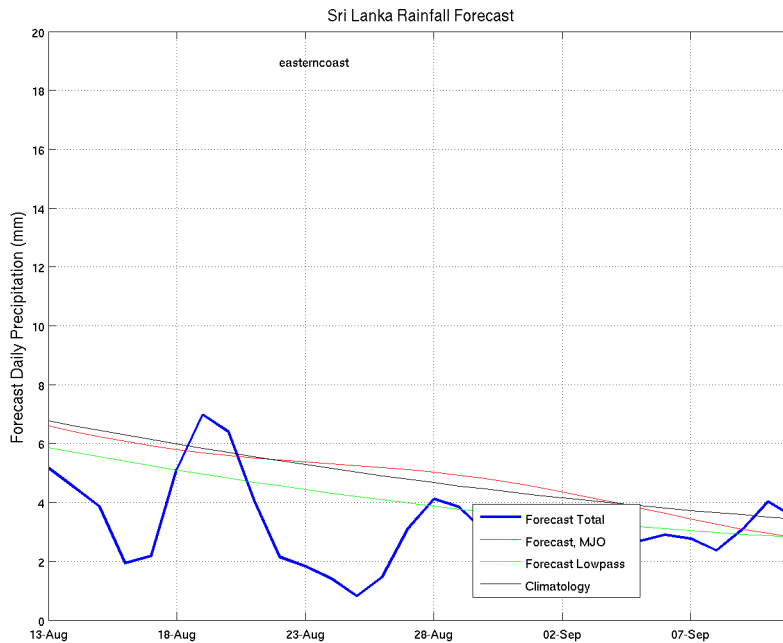
Western Coast (Rainfall Scale from 0-20 mm/day)



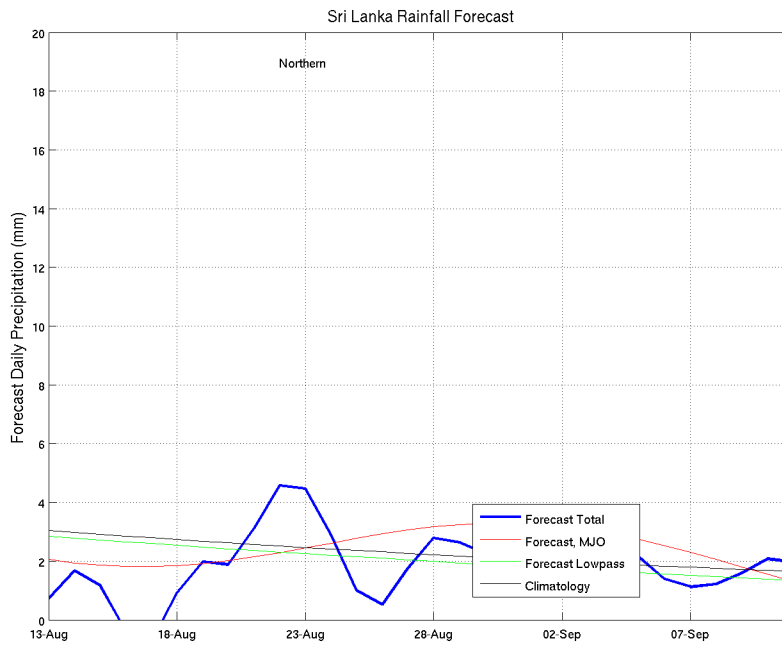
Eastern Slopes (Rainfall Scale- from 0-20 mm/day)



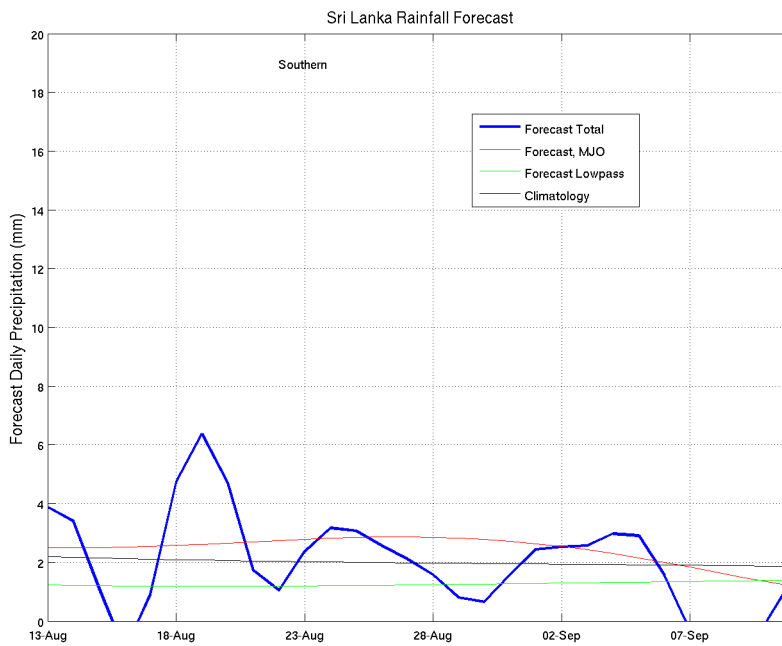
Eastern Coast (Rainfall Scale- from 0-20 mm/day)



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

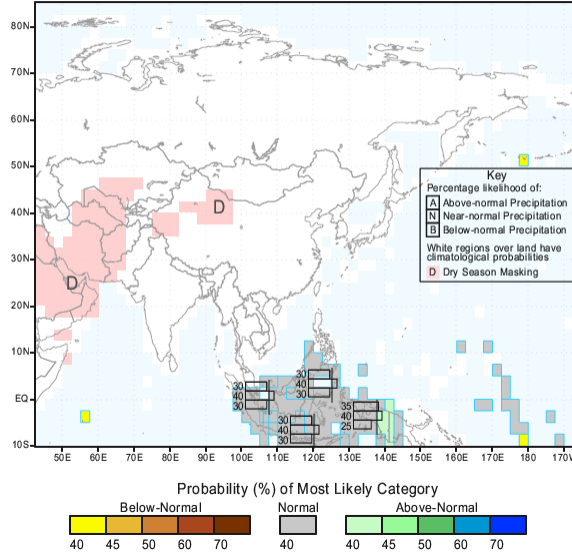


Southern Region (Rainfall Scale- from 0-20 mm/day)



e) Seasonal Rainfall and Temperature Predictions from IRI

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



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

