

## Experimental Climate Monitoring and Prediction

by: Sewwandhi Chandrasekara, Prabodha Agalawatte, Sanjaya Ratnayake, Zeenas Yahiya,  
Lareef Zubair and Michael Bell (FECT and IRI<sup>1</sup>)

22 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 15, 2013 PACIFIC SEAS STATE

During July through early August the observed ENSO conditions remained neutral. Most of the ENSO prediction models indicate a continuation of neutral ENSO through the remainder of 2013 & into early 2014. 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 some warming towards borderline or weak El-Nino conditions for this same time frame.

(Text Courtesy IRI)

### INDIAN OCEAN STATE

The sea surface temperature around Sri Lanka was neutral during 11<sup>th</sup>-17<sup>th</sup> August 2013.

### MJO STATE

MJO is neutral and not influences Sri Lanka rainfall.

### Highlights

#### Monitoring and Predictions:

During past week (15<sup>th</sup>-21<sup>st</sup> August) rainfall was quite low compared to the month of July. Kalutara district is likely to receive heavy rainfall on tomorrow (23<sup>rd</sup> August) compared to rest of the regions of Sri Lanka. Ongoing rainfall is likely to decrease gradually till the end of August, but rainfall shall not exceed 2 mm/day. No significant rainfall events are predicted for the entire country, except for the Southern regions. Southern regions are likely to experience significant rainfall event during 23<sup>rd</sup>-25<sup>th</sup> August.

### Summary

#### Monitoring

**Weekly Monitoring:** Rainfall ranged between 5-30 mm during 14<sup>th</sup>-19<sup>th</sup> August 2013. Maximum rainfall observed in Jaffna district on 19<sup>th</sup> August. However, entire Sri Lanka showed dry condition during this period.

**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 5-35 mm of rainfall and shall spread northeastward in a reducing manner during 21<sup>st</sup>-27<sup>th</sup> August 2013.

**IMD WRF Model Forecast & IRI forecast:** For 23<sup>rd</sup> of August, IMD WRF model predicts less than 65 mm of rainfall for coastal regions of Kalutara district and it shall spread most nearby districts (Matara - Puttalam, Kegalle and Ratnapura in a reducing manner. NOAA model predicts more or less same moisture condition for the entire country, except Mannar district shall receive dry condition during 21<sup>st</sup>-26<sup>th</sup> August.

**30 Days Prediction: Overall-** Ongoing rainfall is likely to decrease gradually till the end of August, but rainfall shall not exceed 2 mm/day. No significant rainfall events are predicted. **Western Slopes** – Low amount of daily rainfall (less than 3 mm/day) shall persist till the end of August. **Western Coast** – Rainfall is not predicted during 24<sup>th</sup>-26<sup>th</sup> August and low amount of rainfall is likely to observe till the end of month. **Eastern Slopes**– Rainfall shall increase gradually after 28<sup>th</sup>. However, significant rainfall events are not expected till the end of August. **Eastern Coast** – The rainfall shall remain more or less constant (less than 2 mm/day) till 30<sup>th</sup> of August. **Northern region-** The rainfall pattern persisting in the Eastern Coasts shall be observed in this region. **Southern Region-** The rainfall shall increase gradually till 24<sup>th</sup> and shall decrease in a same rate. Rainfall shall increase gradually after 28<sup>th</sup> of August. However, significant rainfall event is likely to be observe during 23<sup>rd</sup>-25<sup>th</sup> August.

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

### Inside this Issue

#### 1. Monitoring

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

#### 2. Predictions

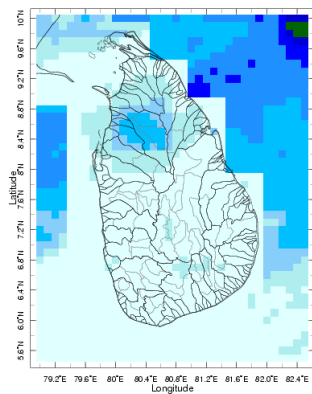
- NCEP GFS Ensemble 1-7 day predictions
- WRF model forecast Regional Meteorological Center, Chennai, Indian Meteorological Department)
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

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

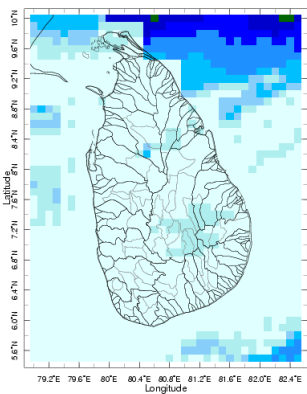
<sup>2</sup> These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

## 1. Monitoring

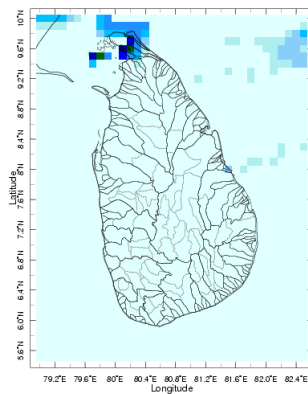
### a) Daily Satellite Derived Rainfall Estimate Maps: 14<sup>th</sup>-19<sup>th</sup> August 2013 (Left-Right, Top-Bottom)



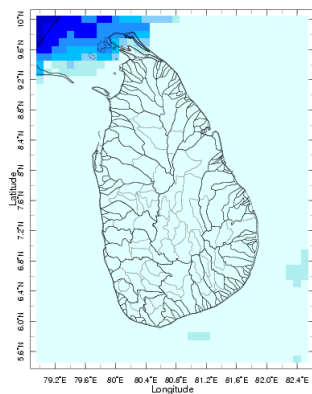
14 Aug 2013



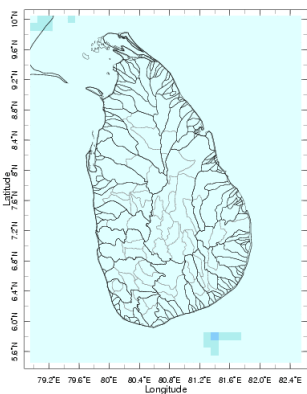
15 Aug 2013



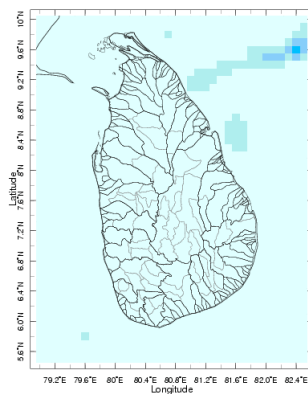
16 Aug 2013



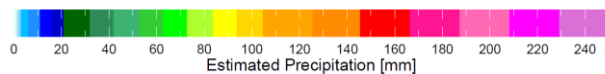
17 Aug 2013



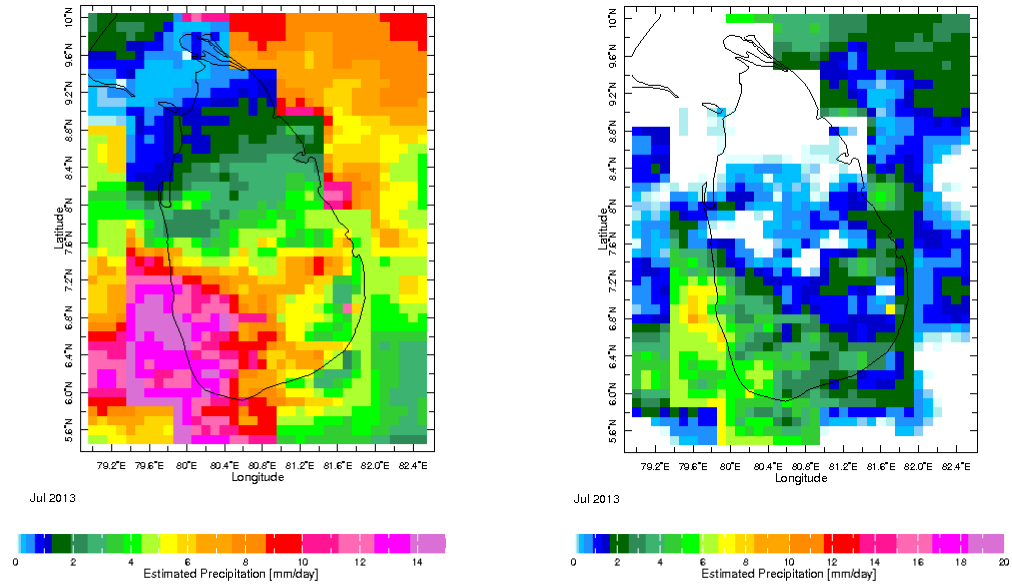
18 Aug 2013



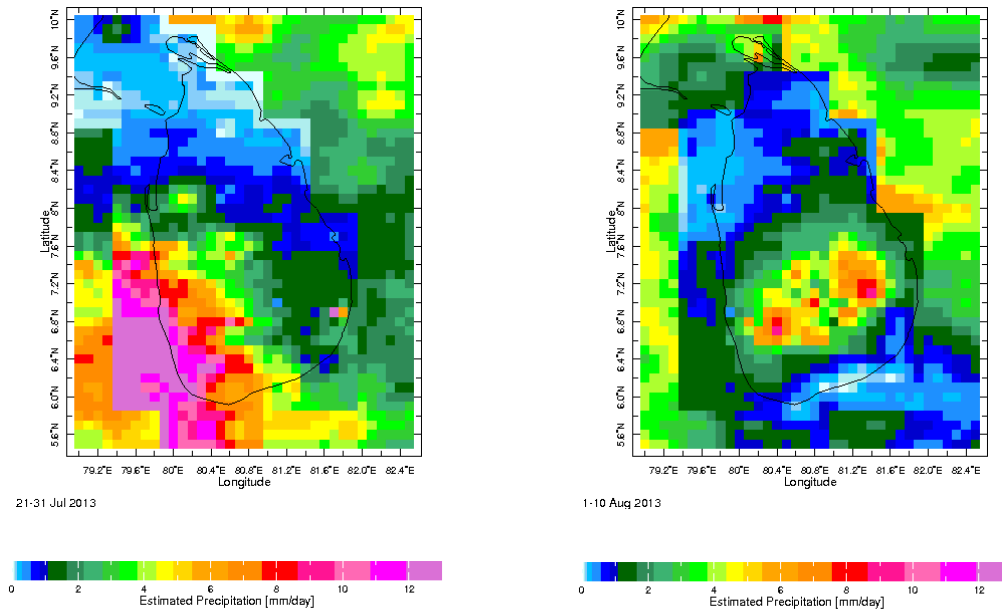
19 Aug 2013



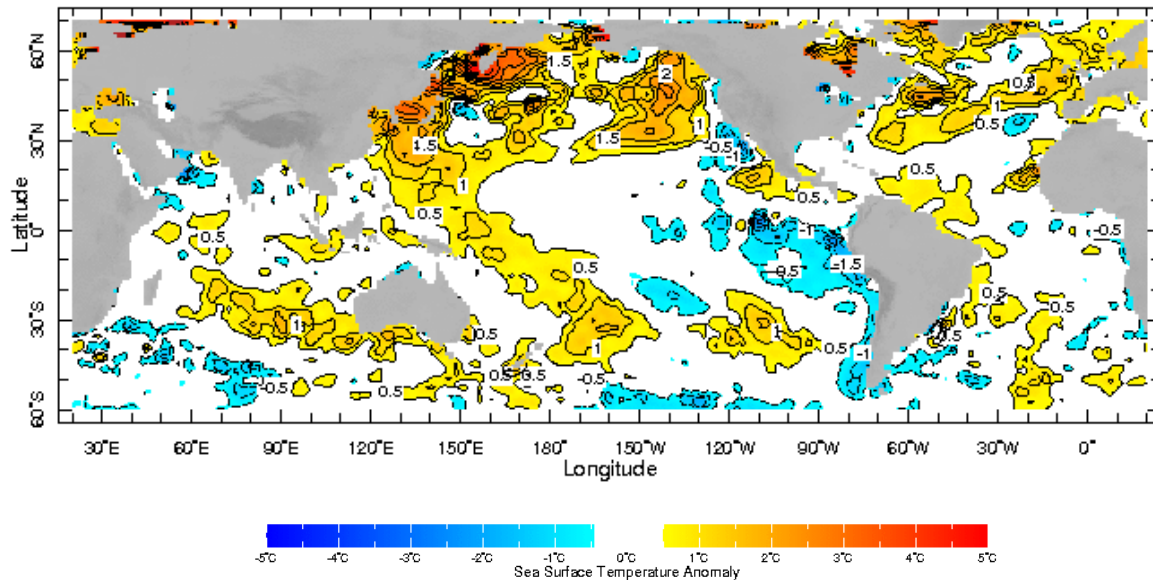
**b) Monthly Satellite Derived Rainfall Estimates for July 2013 (Total – Left and Anomaly -Right)**



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



**b) Weekly Average SST Anomalies**

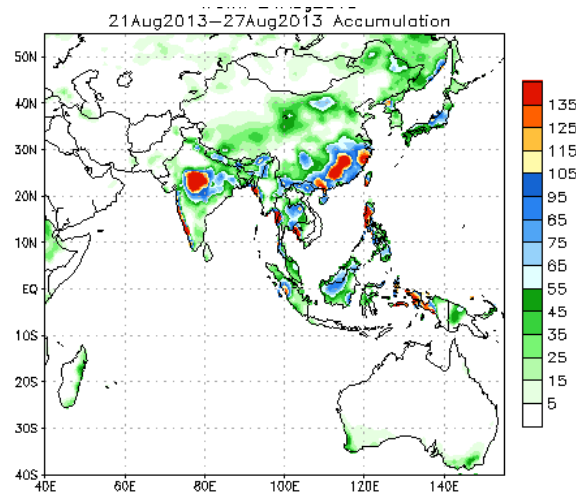


Weekly Average SST Anomalies ( $^{\circ}$ C), 11<sup>th</sup>-17<sup>th</sup> August, 2013

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

**2. Predictions**

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

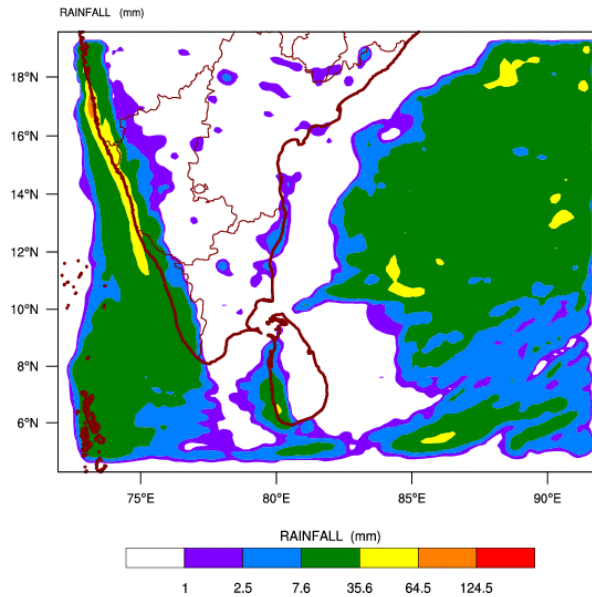


Bias correction based on last 30-day forecast error

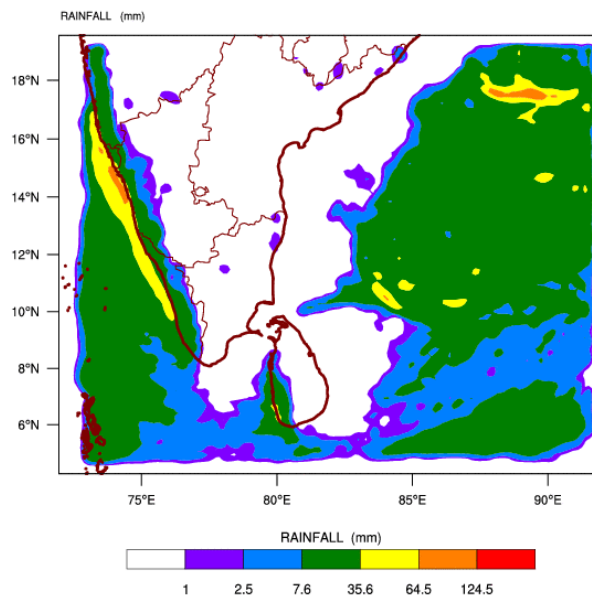
Source – NOAA Climate Prediction Center

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

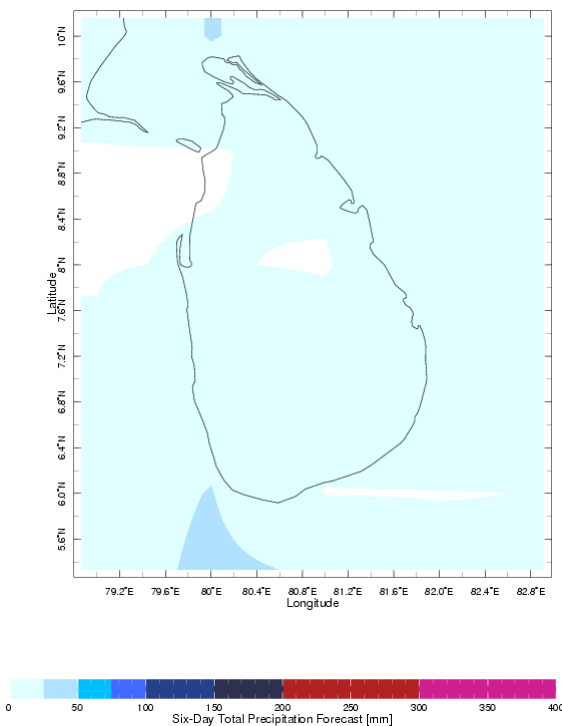
WRF MODEL FORECAST (48 HR.) RAINFALL(mm)  
based on 00 UTC of 20-08-2013 valid for 03 UTC of 22-08-2013



WRF MODEL FORECAST (72 HR.) RAINFALL(mm)  
based on 00 UTC of 20-08-2013 valid for 03 UTC of 23-08-2013



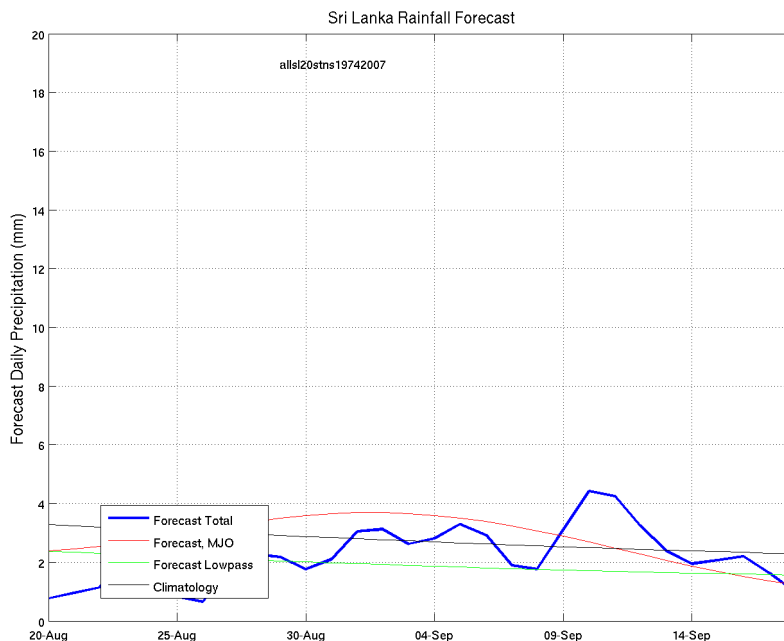
**c) Weekly Precipitation Forecast for 21<sup>st</sup>-26<sup>th</sup> August 2013 (Precipitation Forecast in Context Map Tool, IRI)**



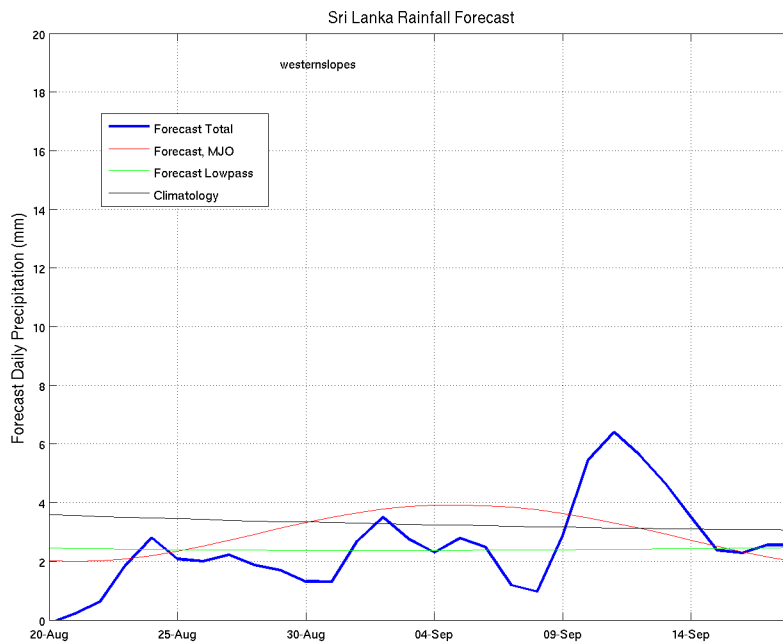
**d) 1 month experimental predictions by Paul Roundy and L. Zubair**

Predictions based on observed cloud cover and atmospheric waves. Issued 21<sup>st</sup> August, 2013

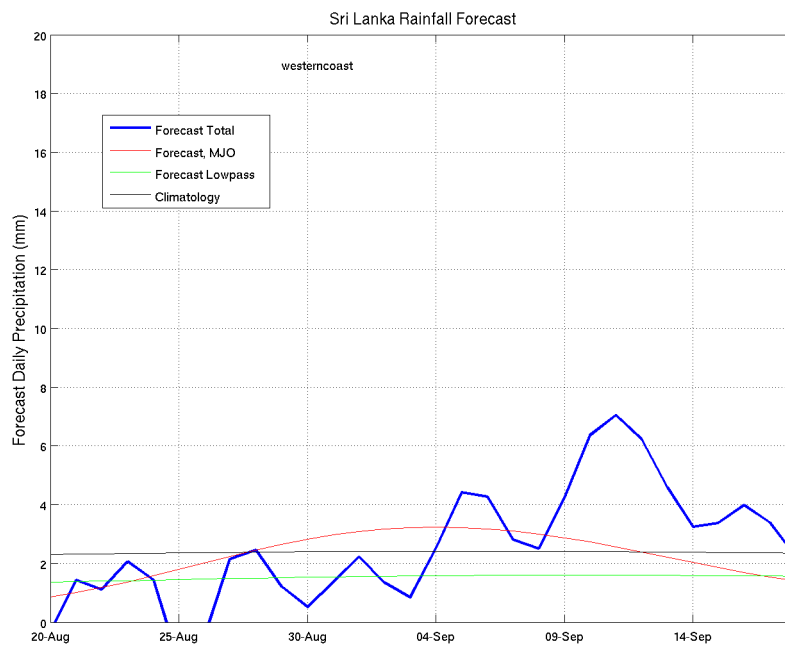
**All Sri Lanka (Rainfall Scale from 0-20mm/day)**



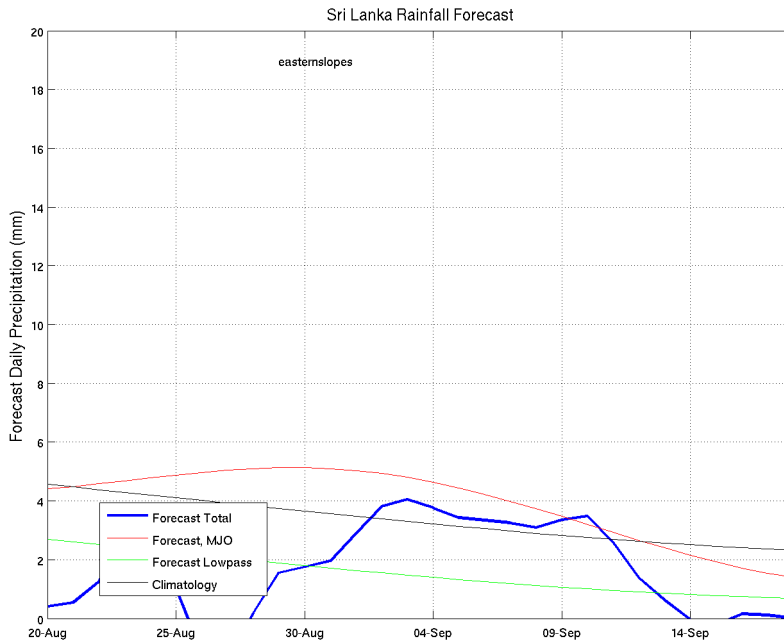
**Western Slopes (Rainfall Scale from 0-20 mm/day)**



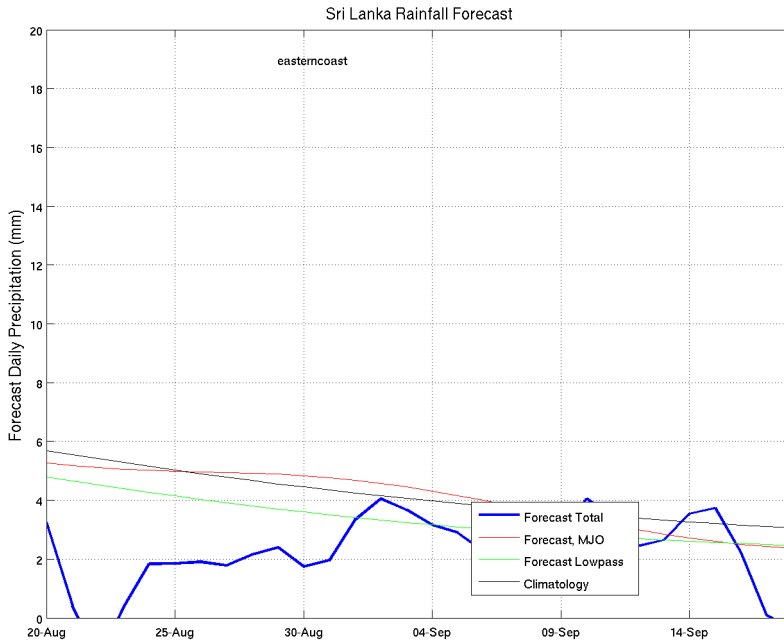
**Western Coast (Rainfall Scale from 0-20 mm/day)**



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

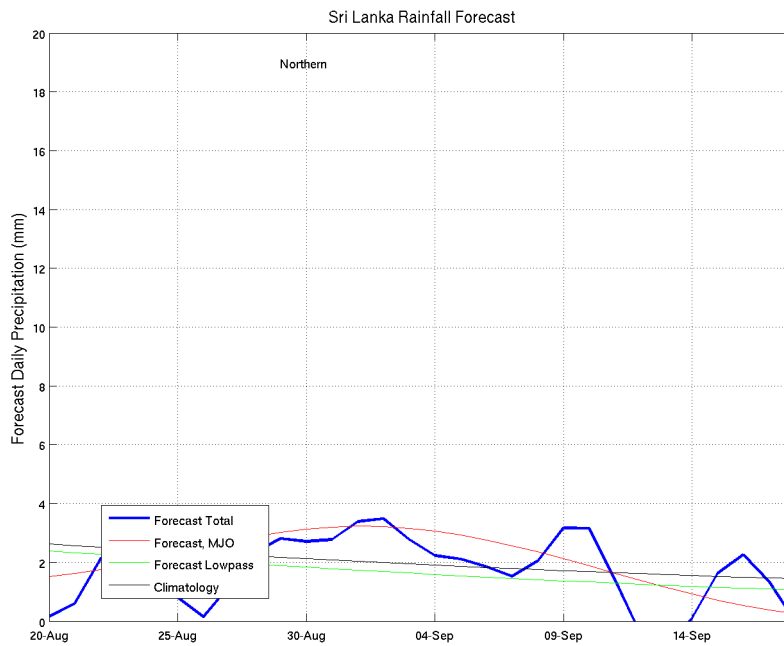


**Eastern Coast (Rainfall Scale- from 0-20 mm/day)**

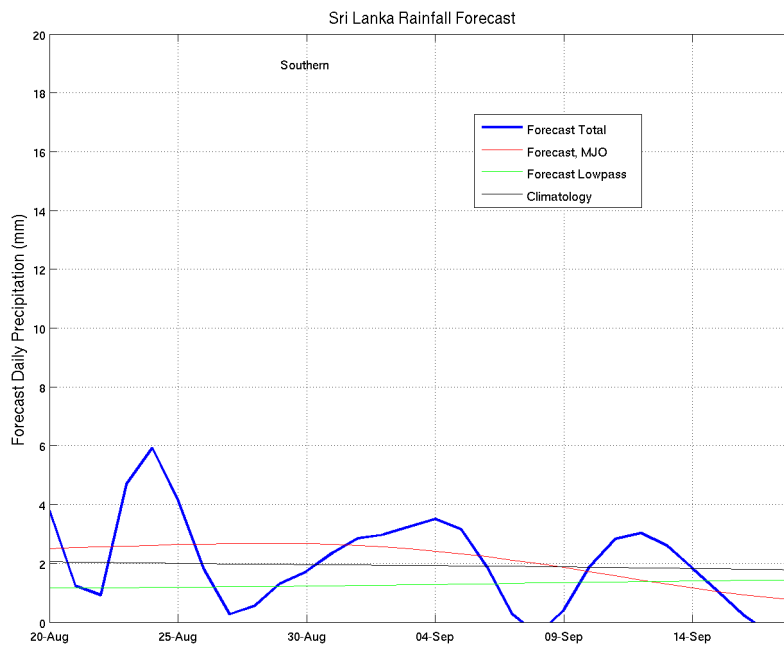




**Northern Region (Rainfall Scale- from 0-20 mm/day)**

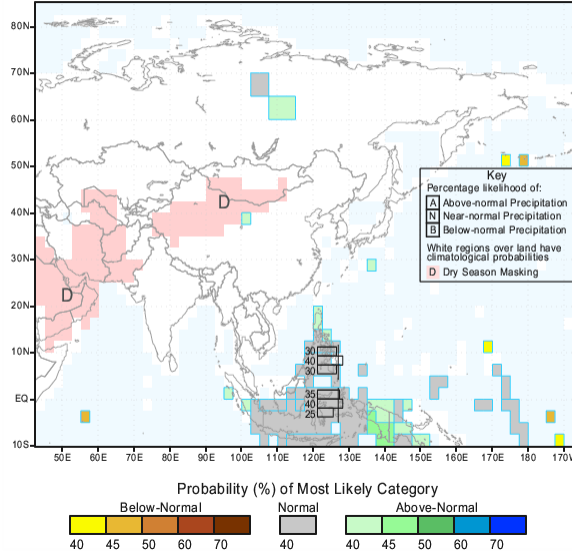


**Southern Region (Rainfall Scale- from 0-20 mm/day)**



**e) Seasonal Rainfall and Temperature Predictions from IRI**

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



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

