

## Experimental Climate Monitoring and Prediction

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Lareef Zubair and Michael Bell (FECT and IRI<sup>1</sup>)

29 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 18<sup>th</sup>-24<sup>th</sup> August 2013.

### MJO STATE

MJO is at phase 1 and 8 and, not influences Sri Lanka rainfall.

### Highlights

#### Monitoring and Predictions:

*During past week (20<sup>th</sup>-26<sup>th</sup> August) rainfall was quite low compared to the month of July. Ratnapura and Nuwara Eliya districts are likely to receive heavy rainfall on today (29<sup>th</sup> August) compared to rest of the regions of Sri Lanka. However, Matara-Batticaloa and Puttalam-Jaffna districts shall receive lowest amount of predicted rainfall during 29<sup>th</sup>-30<sup>th</sup> August. Ongoing rainfall is likely to increase gradually during 29<sup>th</sup> August-1<sup>st</sup> September. Thereafter rainfall shall decrease till 7<sup>th</sup> September. No significant rainfall events are predicted for the entire country, except for the Eastern slopes and coasts during 1<sup>st</sup> August-3<sup>rd</sup> September.*

### Summary

#### Monitoring

**Weekly Monitoring:** Rainfall ranged between 5-10 mm during 20<sup>th</sup>-26<sup>th</sup> August 2013. Maximum rainfall observed in Northern half of the island on 26<sup>th</sup> August. However, entire Sri Lanka showed dry condition during this period compared to month July.

**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 27<sup>th</sup> August-2<sup>nd</sup> September 2013.

**IMD WRF Model Forecast & IRI forecast:** For 29<sup>th</sup> of August, IMD WRF model predicts less than 65 mm of rainfall for the border between Ratnapura and Nuwara Eliya districts and it shall spread island wide in a reducing manner, except for Matara, Puttalam, Kurunegala, Mannar, Kilinochchi, Jaffna (less than 1mm/day). For 30<sup>th</sup> of August, same model predicts less than 36 mm of rainfall for the entire country, except for Matara-Batticaloa and Puttalam-Jaffna districts (less than 1 mm/day). NOAA model predicts high rainfall (75-100 mm/week) for Kandy, Badulla and Nuwara Eliya districts and shall spread in a reducing manner towards Trincomalee district during 27<sup>th</sup> August-1<sup>st</sup> September.

**30 Days Prediction: Overall-** Ongoing rainfall is likely to increase gradually during 29<sup>th</sup> August-1<sup>st</sup> September. Thereafter rainfall shall decrease till 7<sup>th</sup> September. No significant rainfall events are expected. **Western Slopes** – The rainfall pattern persisting in entire country shall be observed in this region. **Western Coast** – Ongoing rainfall is likely to increase gradually during 29<sup>th</sup> August-5<sup>th</sup> September with a dropdown during 1<sup>st</sup>-3<sup>rd</sup> September. **Eastern Slopes**– Rainfall shall increase drastically during 29<sup>th</sup> August-1<sup>st</sup> September and significant rainfall event is likely to experience during 31<sup>st</sup> August-2<sup>nd</sup> September. Thereafter rainfall shall reduce till 4<sup>th</sup> and remain constant. **Eastern Coast** – The rainfall pattern persisting in entire country shall be observed in this region. However, significant rainfall event is likely to experience during 1<sup>st</sup>-3<sup>rd</sup> September. **Northern region-** The rainfall shall increase drastically during 29<sup>th</sup> August-2<sup>nd</sup> September and thereafter shall decrease in a same rate. **Southern Region-** The rainfall shall increase gradually till 5<sup>th</sup> September and thereafter shall decrease till 7<sup>th</sup> September.

**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

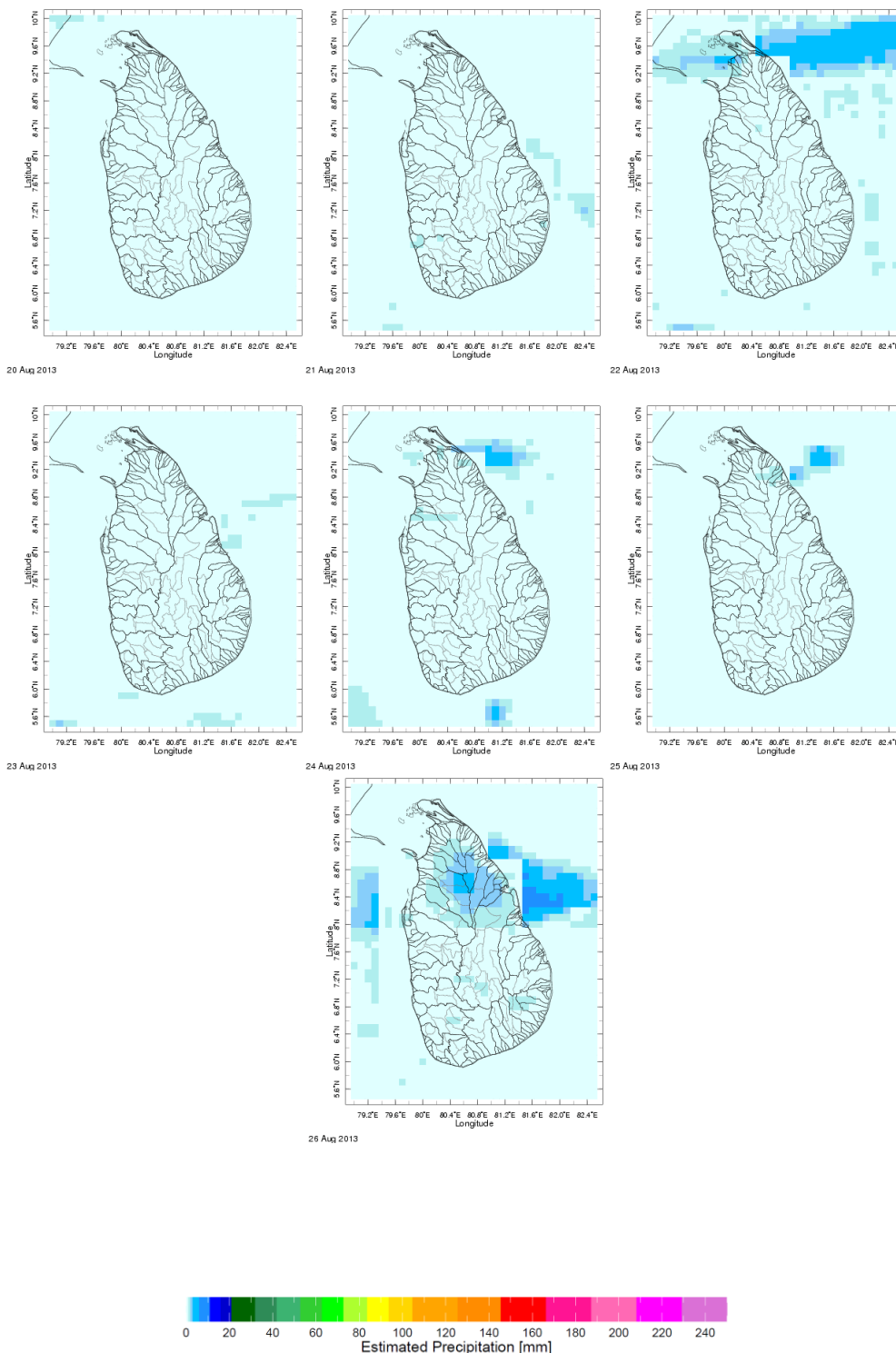
- NCEP GFS Ensemble 1-7 day predictions
- WRF model forecast Regional Meteorological Center, Chennai, Indian Meteorological Department)
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

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

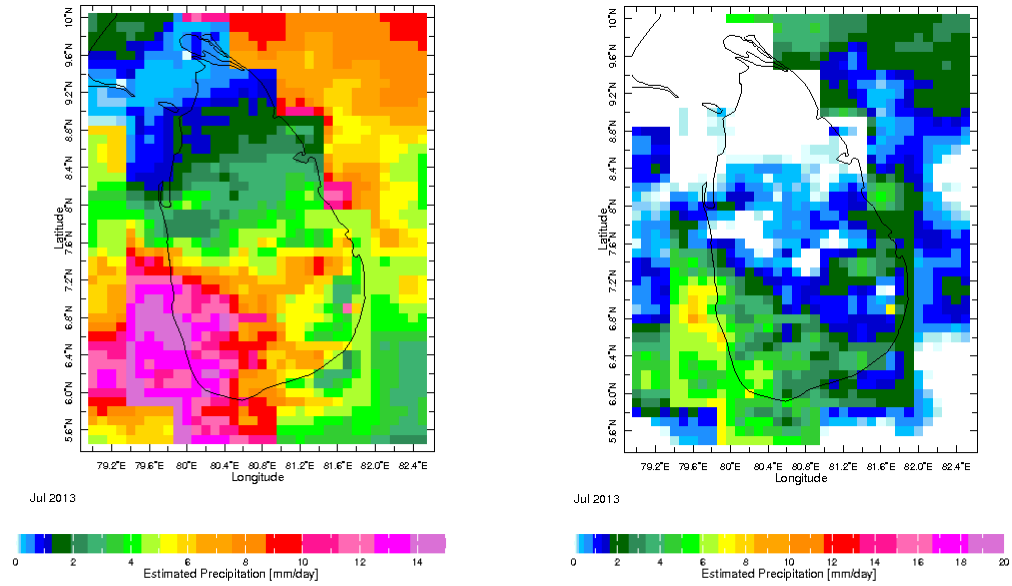
<sup>2</sup> These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

## 1. Monitoring

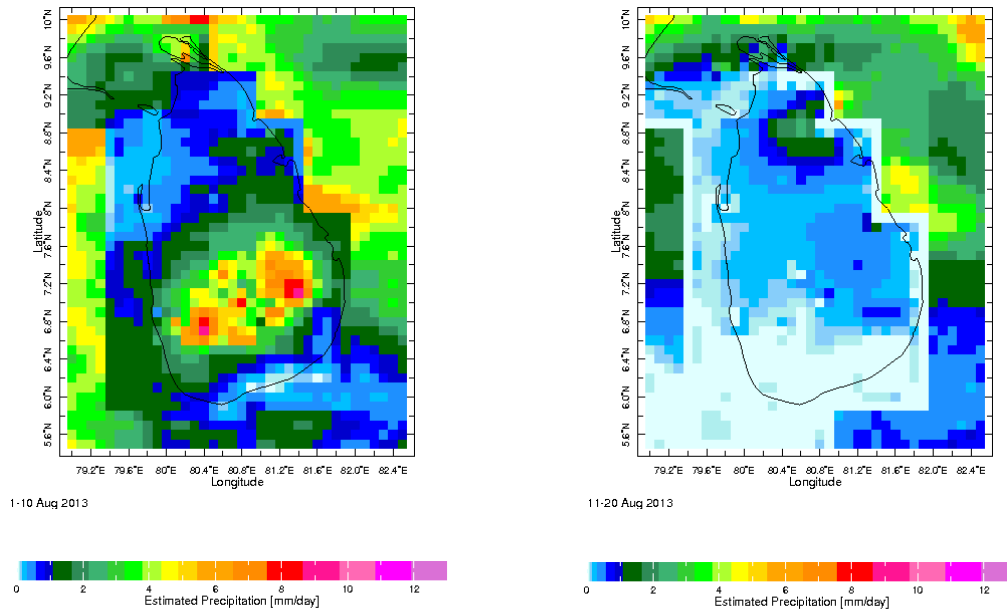
### a) Daily Satellite Derived Rainfall Estimate Maps: 20<sup>th</sup>-26<sup>th</sup> August 2013 (Left-Right, Top-Bottom)



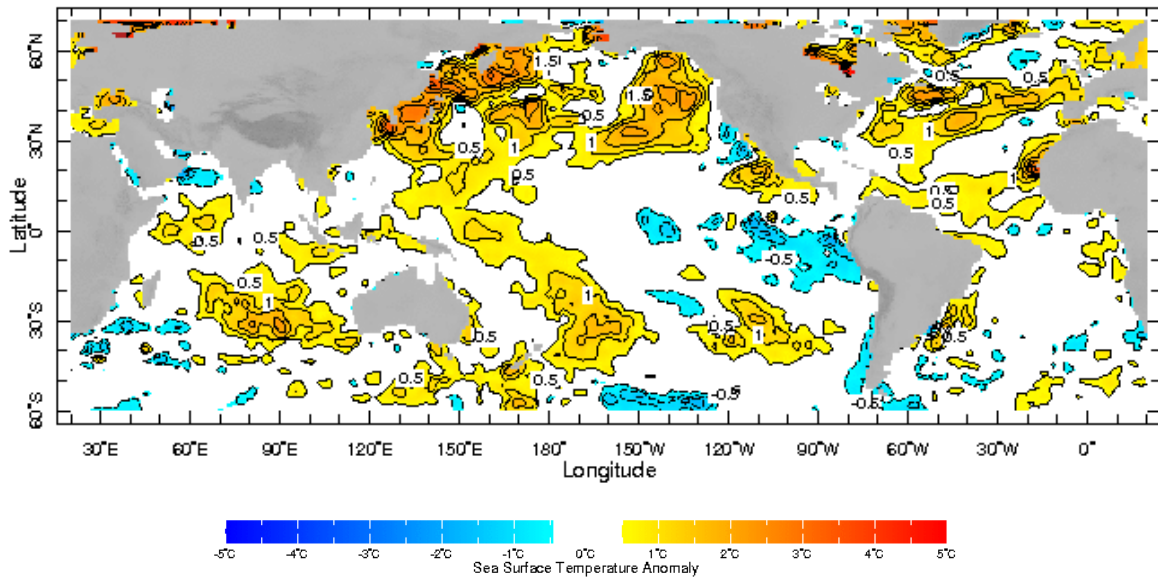
**b) Monthly Satellite Derived Rainfall Estimates for July 2013 (Total – Left and Anomaly -Right)**



**c) Dekadal (10 Day) Satellite Derived Rainfall Estimates (01-10 August & 11-20 August, 2013)**



**b) Weekly Average SST Anomalies**

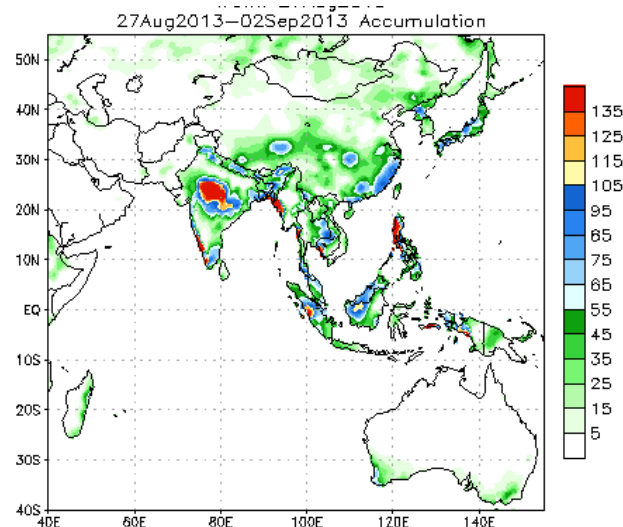


Weekly Average SST Anomalies ( $^{\circ}$ C), 18<sup>th</sup>-24<sup>th</sup> August, 2013

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

**2. Predictions**

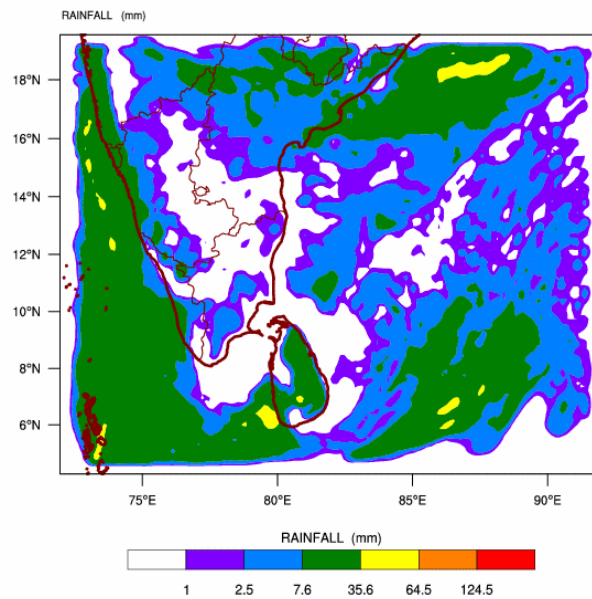
**a) NCEP GFS Ensemble 1-7 day predictions, NOAA, Climate Prediction Centre, USA.**



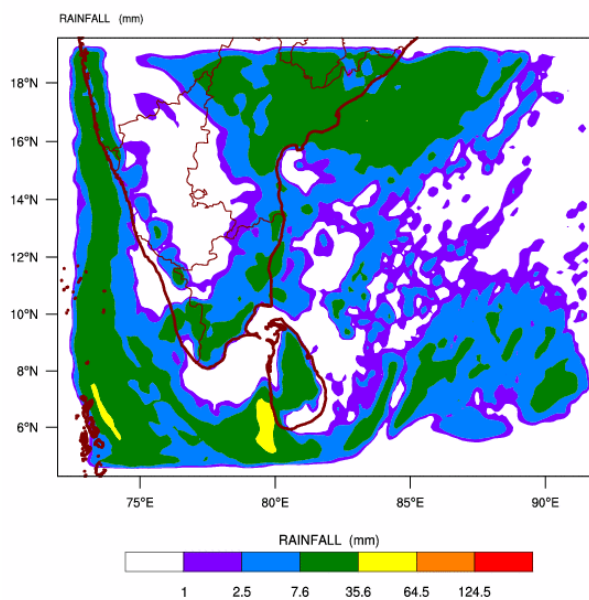
Source – NOAA Climate Prediction Center

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

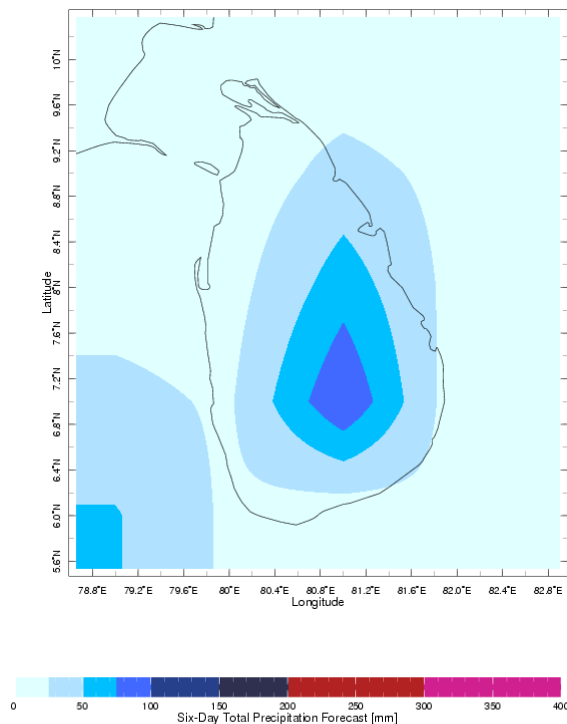
WRF MODEL FORECAST (48 HR.) RAINFALL(mm)  
based on 00 UTC of 27-08-2013 valid for 03 UTC of 29-08-2013



WRF MODEL FORECAST (72 HR.) RAINFALL(mm)  
based on 00 UTC of 27-08-2013 valid for 03 UTC of 30-08-2013



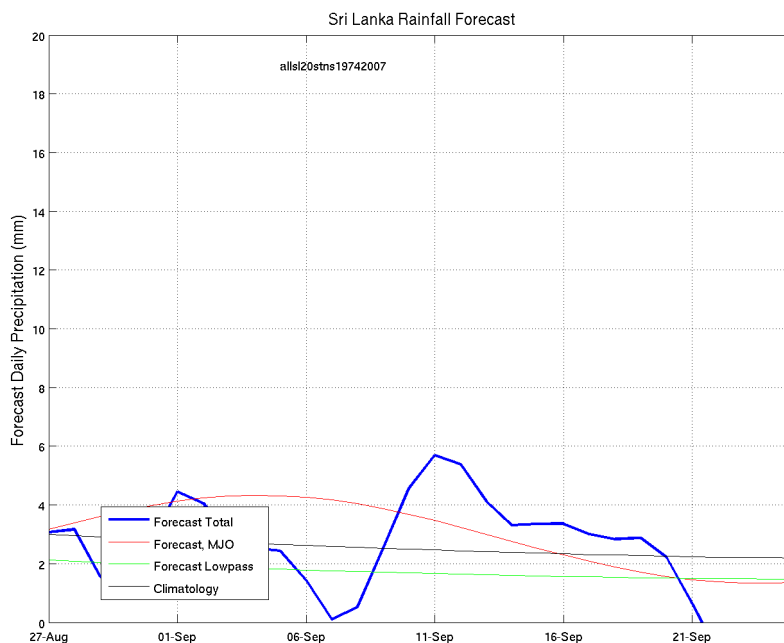
**c) Weekly Precipitation Forecast for 27<sup>th</sup> August-1<sup>st</sup> September 2013 (Precipitation Forecast in Context Map Tool, IRI)**



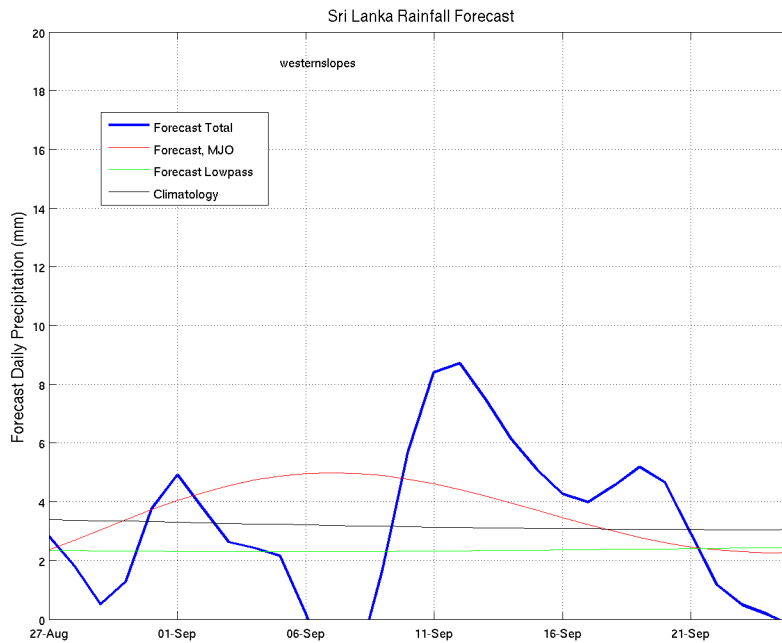
**d) 1 month experimental predictions by Paul Roundy and L. Zubair**

Predictions based on observed cloud cover and atmospheric waves. Issued 29<sup>th</sup> August, 2013

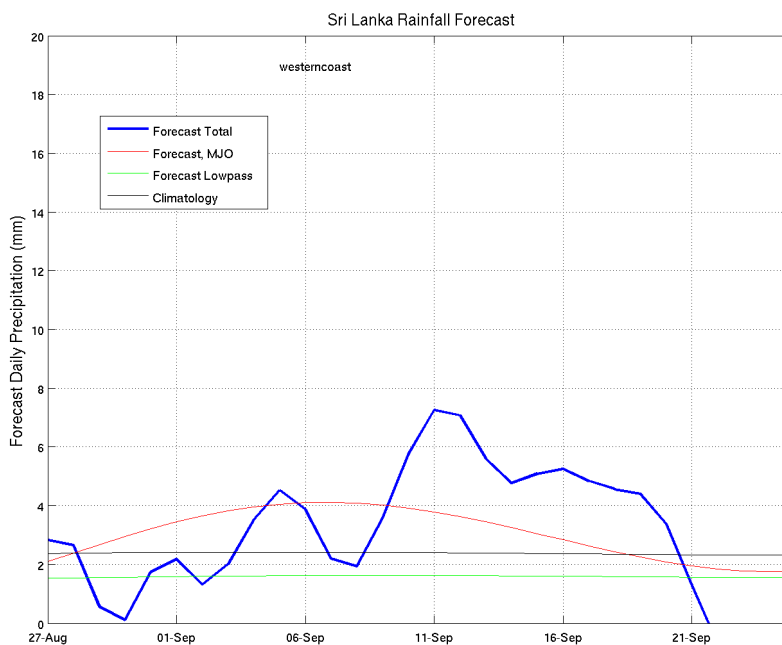
**All Sri Lanka (Rainfall Scale from 0-20mm/day)**



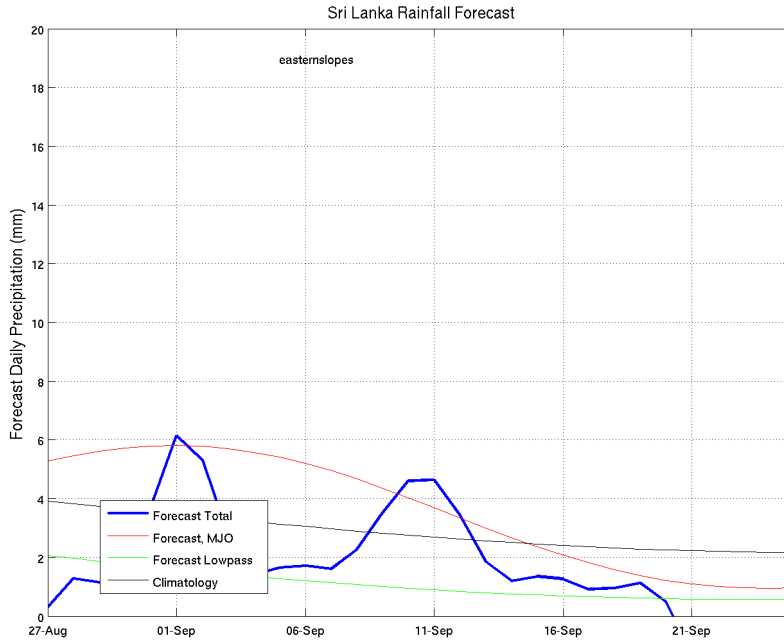
**Western Slopes (Rainfall Scale from 0-20 mm/day)**



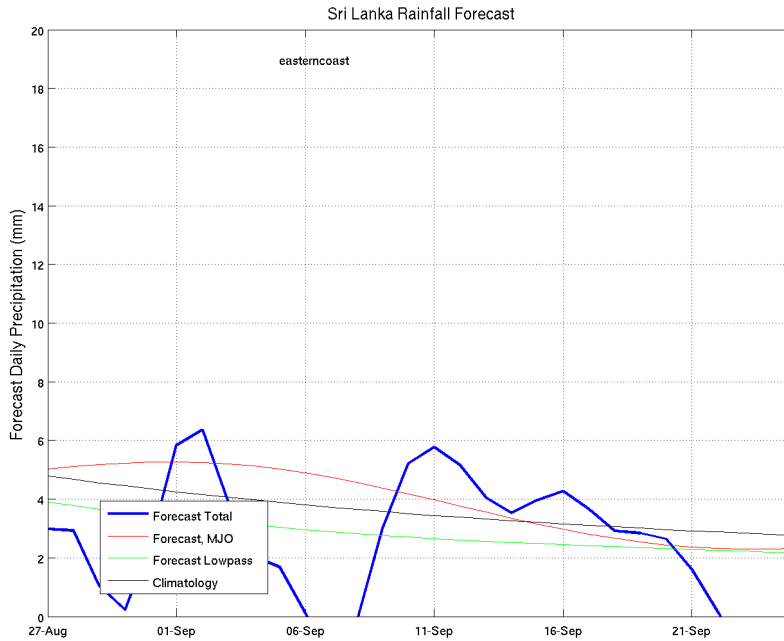
**Western Coast (Rainfall Scale from 0-20 mm/day)**



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

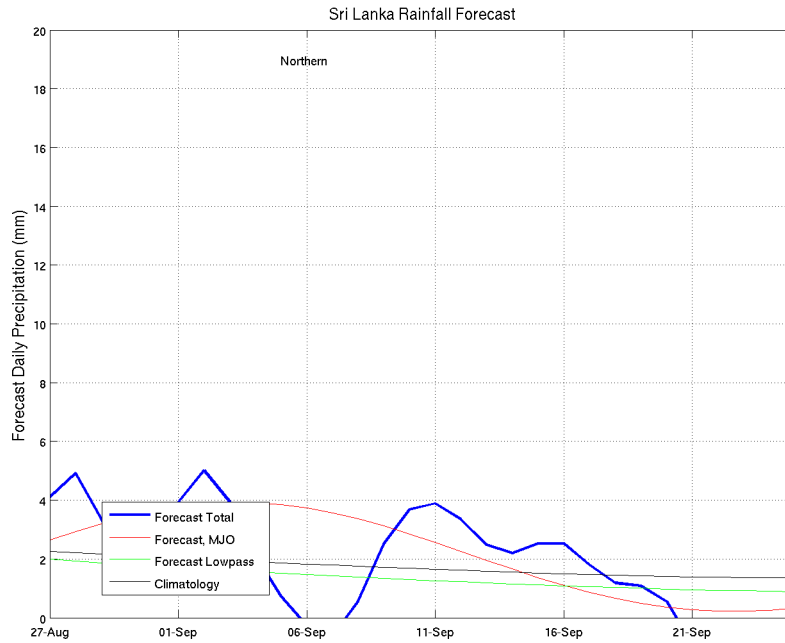


**Eastern Coast (Rainfall Scale- from 0-20 mm/day)**

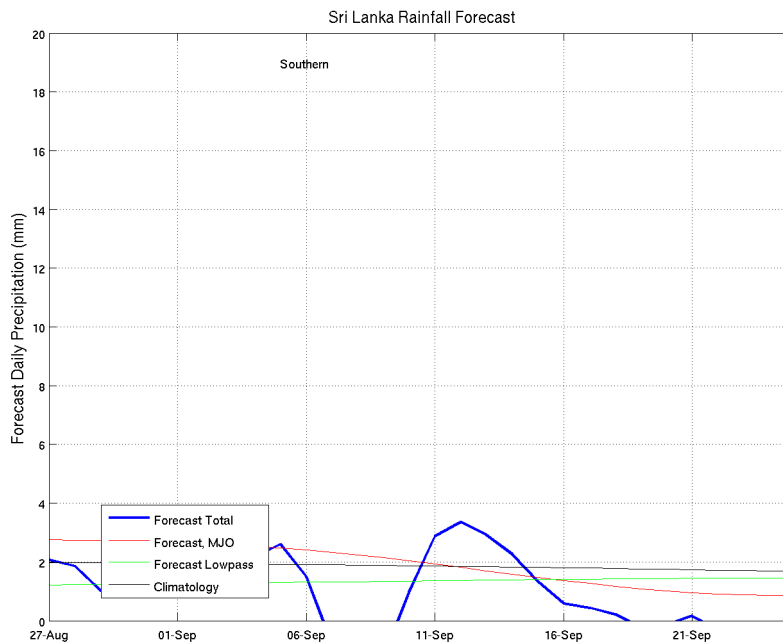




**Northern Region (Rainfall Scale- from 0-20 mm/day)**

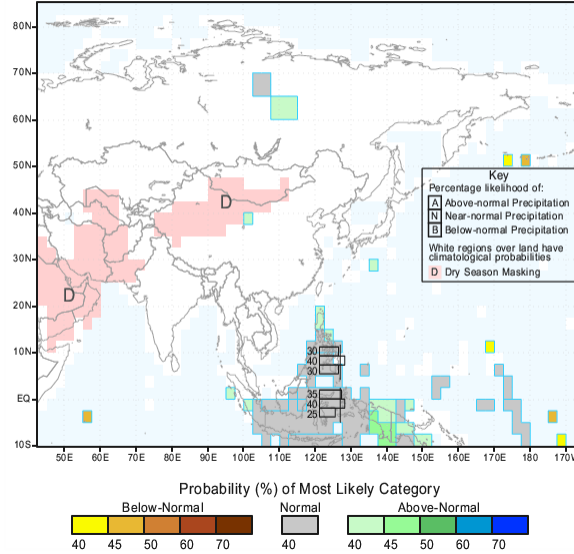


**Southern Region (Rainfall Scale- from 0-20 mm/day)**



**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

