

## Experimental Climate Monitoring and Prediction

(Prepared for the Water Management Secretariat of the Mahaweli Authority)

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

22 November 2012

### FECT BLOG

Past reports available at  
<http://fectsl.blogspot.com/>

### FECT WEBSITES

<http://www.climate.lk>

and

<http://www.tropicalclimate.org/>

### Pacific Seas State

#### 15 November 2012

Most of the ENSO prediction models predict a warm-neutral ENSO condition for the coming few months, lasting into early 2013. During early November the observed SST conditions have been above average, but in the ENSO-neutral range. The Central Pacific Ocean has a significant warm anomaly which shall have regional and global consequences.  
**(IRI and FECT)**

### Indian Ocean State

Very Warm SST persists in the Equatorial Indian Ocean close to Sri Lanka. The pattern is consistent with the El Nino SST pattern in the Pacific and with the positive Indian Ocean Dipole (IOD) Mode. Often the above two phenomenon go together (with a lag of a month) – now it appears that IOD+ phase is strong while El Nino is weakening.

### Highlights

#### Monitoring and Predictions

**Monitoring:** Heavy rains have persisted in Sri Lanka since the start of October – this as expected during an El Nino phase and a positive Indian Ocean Dipole mode phase (with warmer sea surfaces in the Arabian seas). **Prediction:** Rainfall shall be higher than normal for the rest of November. During December, since the El Nino state tends toward neutral and the IOD influence is minimal, the rainfall is likely to be near normal. Warmer than normal temperatures persist due to the warm Arabian sea surface anomalies.

### Summary<sup>2</sup>

#### Monitoring

**Weekly Monitoring:** On the 15<sup>th</sup> of November 0-50 mm of rainfall was observed in Eastern and Southern regions of the country. The rest of the country received rainfall upto 20 mm. On the 16<sup>th</sup>, Southern region received upto 50 mm of rainfall while rainfall on the rest of the country was diminished. Rainfall continued to persist in the Southern half of the island on the 17<sup>th</sup> while no rainfall was observed in any other part of the country. During 18<sup>th</sup>- 20<sup>th</sup>, light rainfall was observed in Southern regions.

**Monthly Monitoring:** In October, a high positive rainfall anomaly was observed on the entire country. Surplus rainfall upto 150 mm was observed in all parts of the country with the exception of Uva region which received less rainfall than the rest of the country.

#### Predictions

**7-day prediction:** During this week, an accumulated rainfall around 85 mm is predicted over the entire country.

**IMD WRF Model Forecast & IRI forecast:** No updates available for WRF model forecasts. NOAA models forecast 20 mm rainfall for the entire country.

**1 Month Prediction: Overall-** Rainfall shall increase until the 3<sup>rd</sup> of December and then shall decrease thereafter. **Western Slopes-** Rainfall shall increase until 24<sup>th</sup> November and then shall decrease during the next 3 days. Then once again an increase of rainfall is expected until the 10<sup>th</sup> of December. Thereafter rainfall shall decrease. **Eastern slopes & Northern-** Rainfall shall follow a similar pattern to the overall rainfall on the island. In these regions peak amounts of rainfall are observed on the 15<sup>th</sup> and 2<sup>nd</sup> December respectively.

**Seasonal Prediction:** As per IRI Multi Model Probability Forecast for December 2012 to February 2013, issued in November 2012, there is a 60%-70% 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

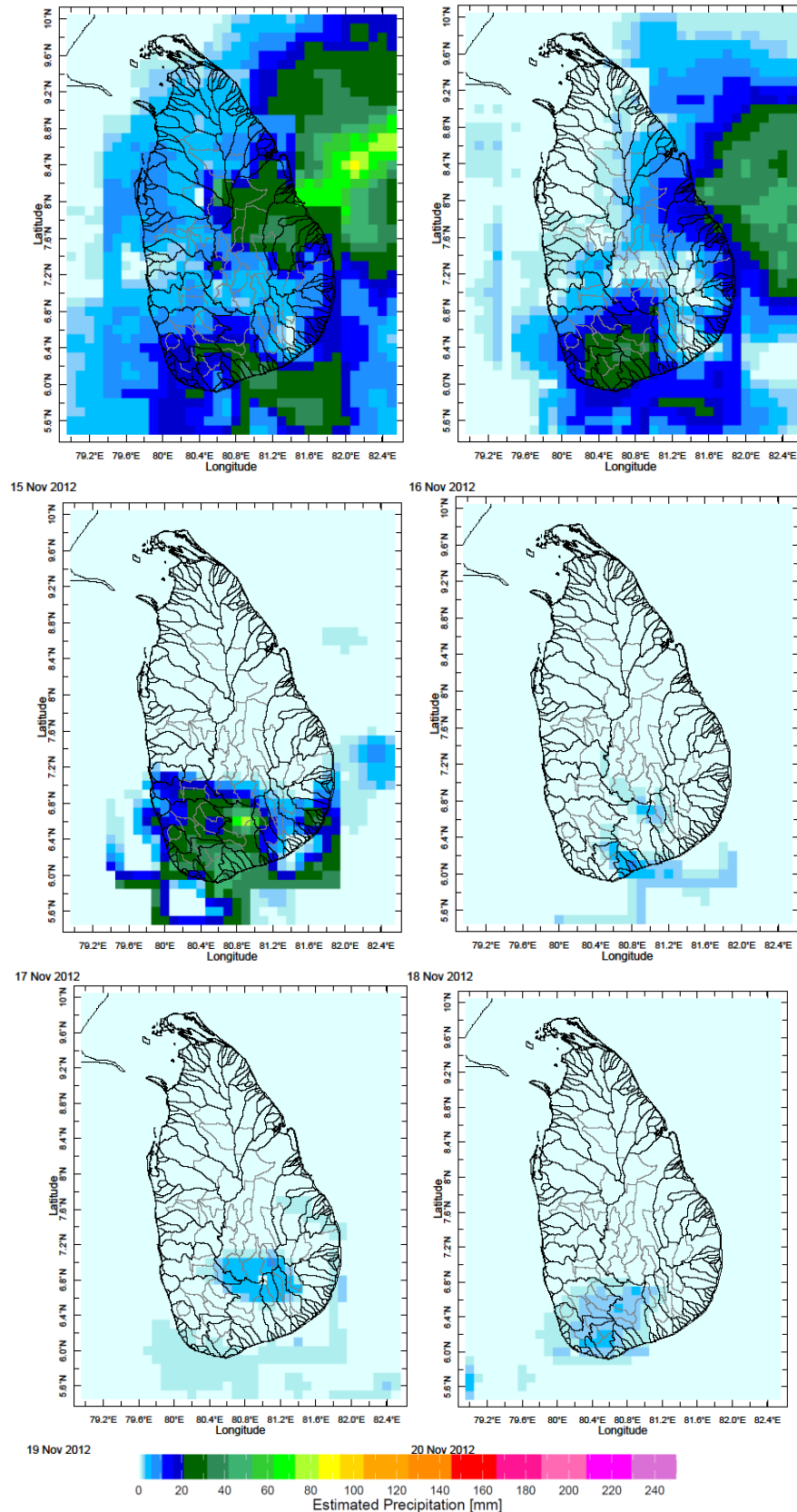
- NCEP GFS Ensemble 1-7 day predictions
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

<sup>1</sup> International Research Institute for Climate and Society.

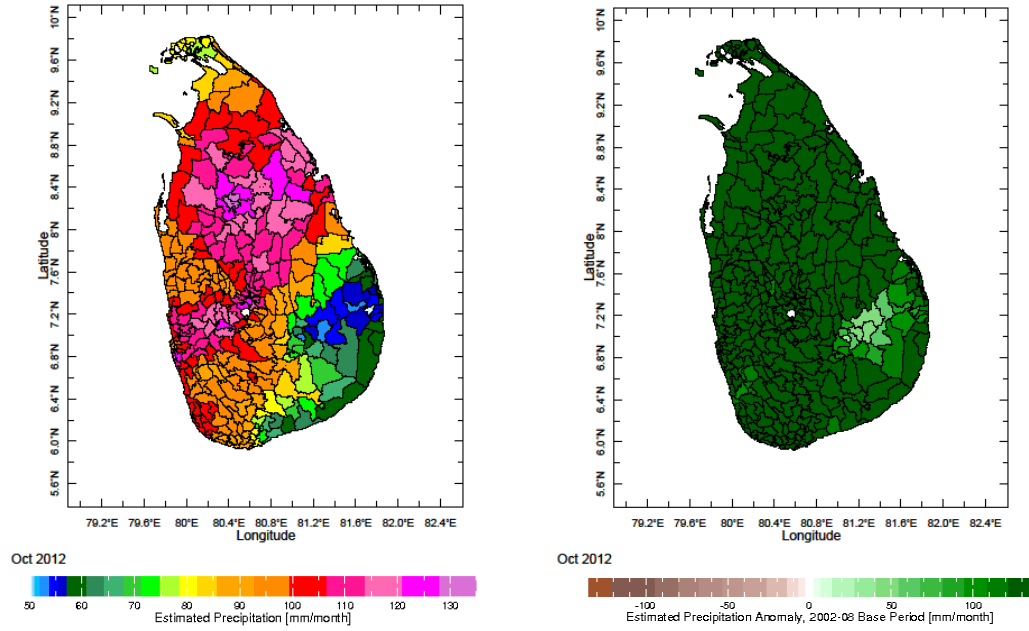
<sup>2</sup> These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

## 1. Monitoring

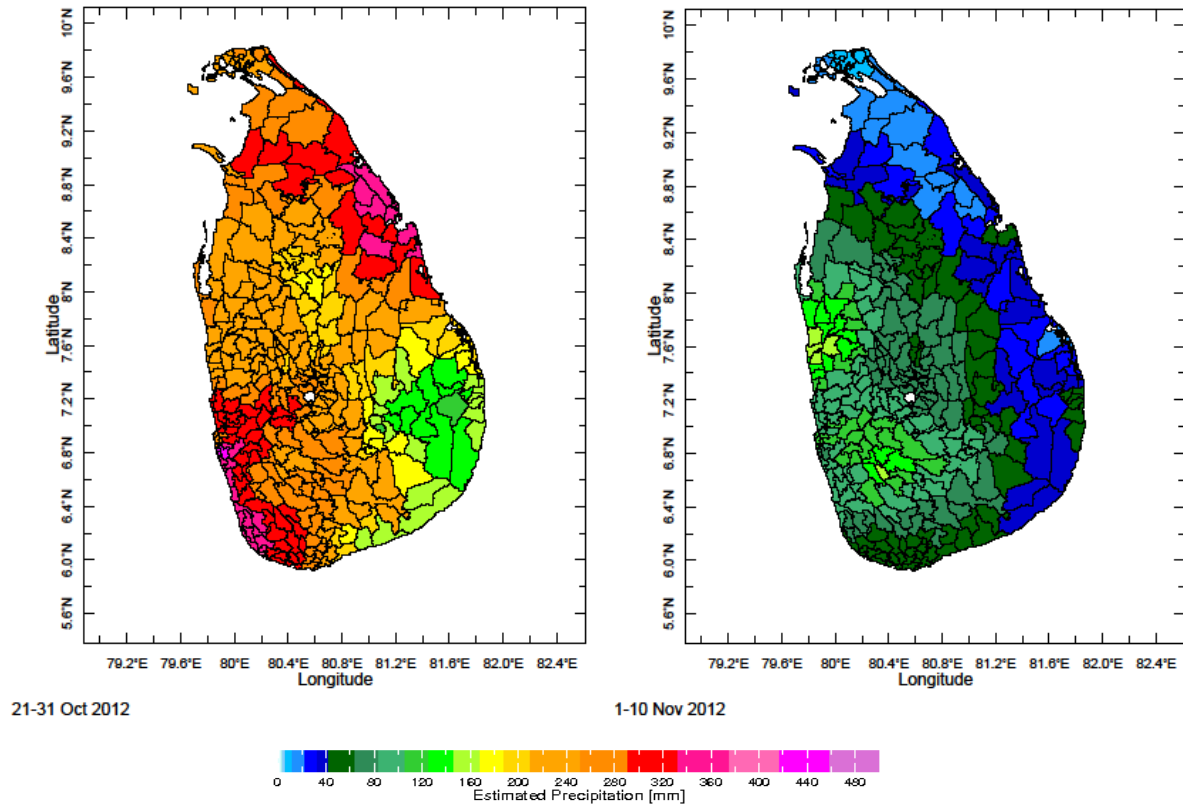
### a) Daily Satellite Derived Rainfall Estimate Maps: 15<sup>th</sup> -20<sup>th</sup> November, 2012 (Left-Right, Top-Bottom)



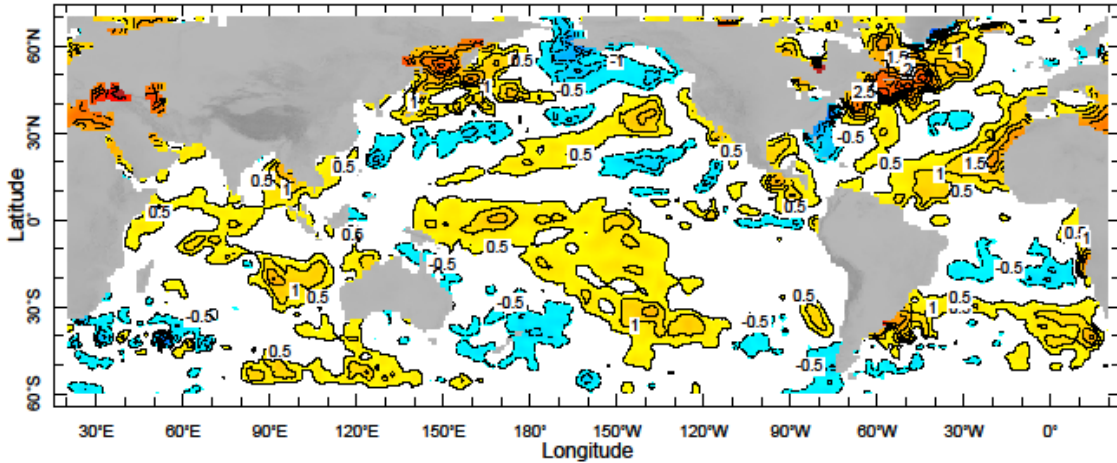
**b) Monthly Satellite Derived Rainfall Estimates for October 2012 (Total – Left and Anomaly -Right)**



**c) Dekadal (10 Day) Satellite Derived Rainfall Estimates (21-31 October & 1-10 November, 2012)**



**d) Weekly Average SST Anomalies**



4-10 Nov 2012



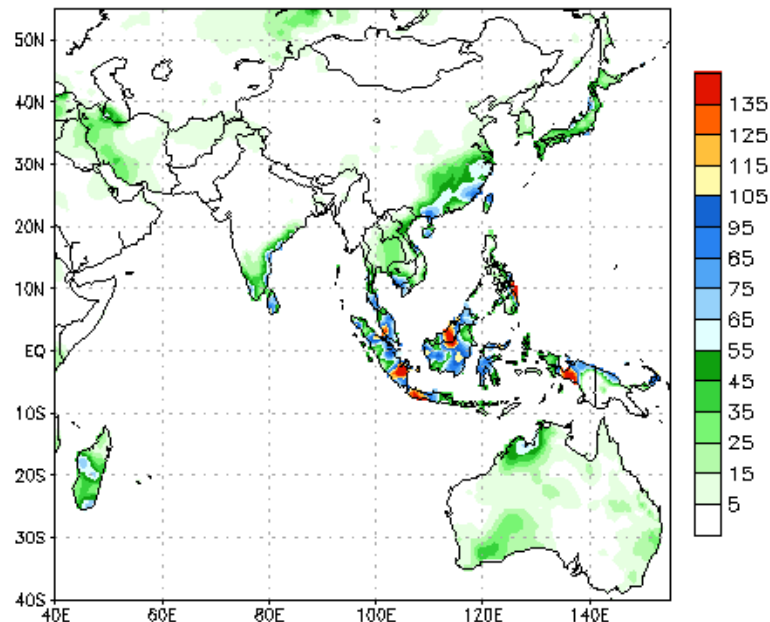
Weekly Average SST Anomalies ( $^{\circ}C$ ), 4<sup>th</sup>- 10<sup>th</sup> Oct, 2012

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

**2. Predictions**

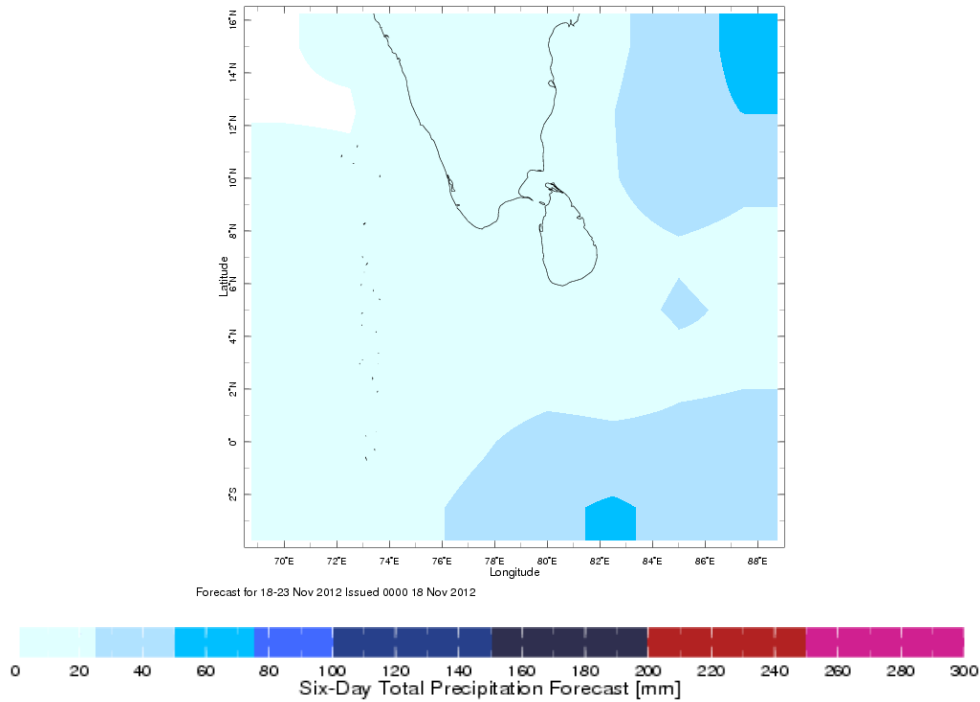
**a) NCEP GFS Ensemble 1-7 day predictions, NOAA, Climate Prediction Centre, USA.**

NCEP GFS Ensemble Forecast 1-7 Day Precipitation (mm)  
from: 21Nov2012  
21Nov2012-27Nov2012 Accumulation



Bias correction based on last 30-day forecast error

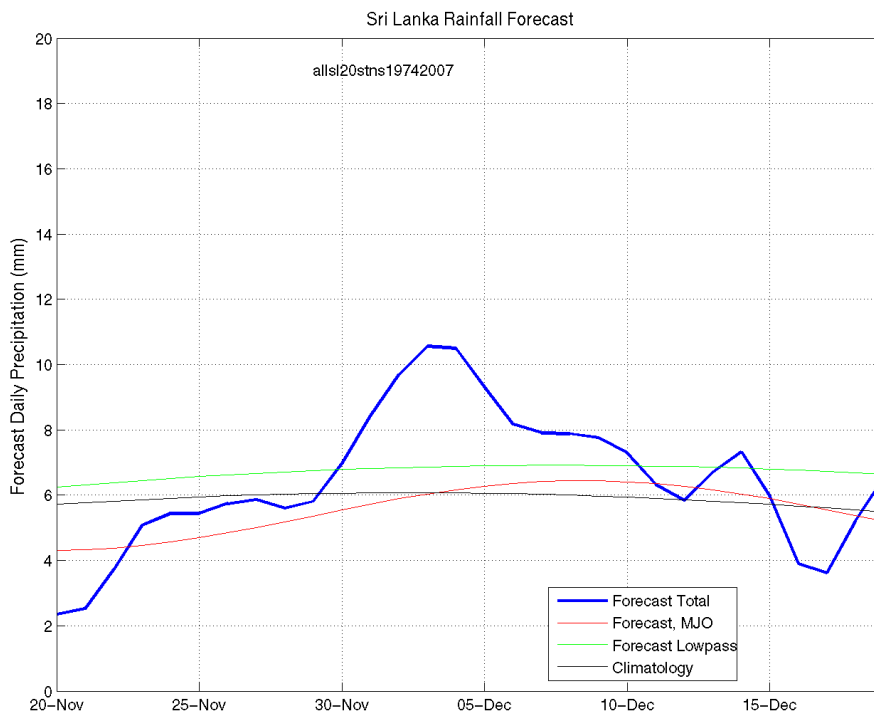
**b) Weekly Precipitation Forecast for 18<sup>th</sup>-23<sup>rd</sup> Nov 2012 (Precipitation Forecast in Context Map Tool, IRI)**



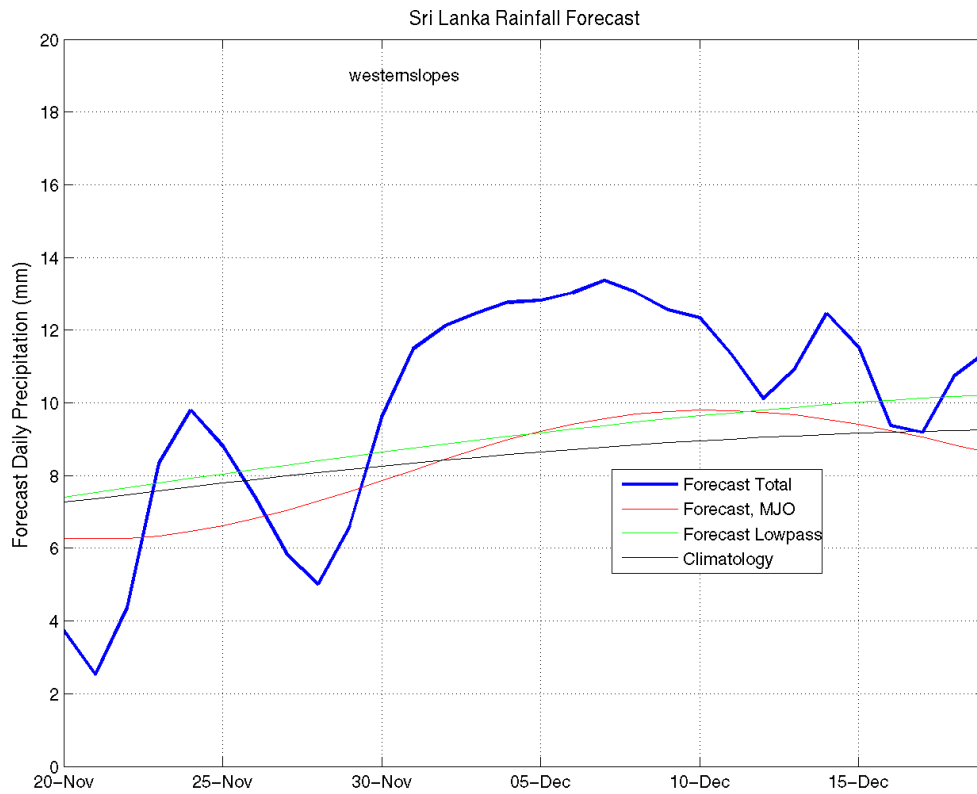
**d) 1 month experimental predictions by Paul Roundy and L. Zubair**

Predictions based on observed cloud cover and atmospheric waves. Issued 22<sup>nd</sup> November, 2012

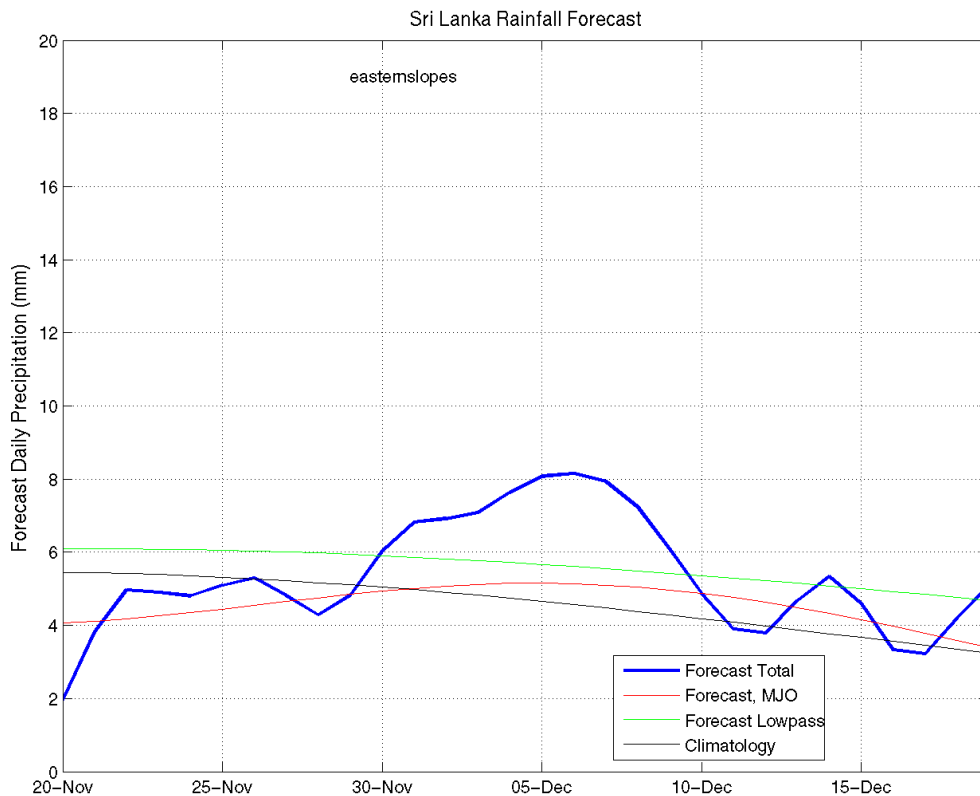
**All Sri Lanka (Rainfall Scale from 0-20mm/day)**



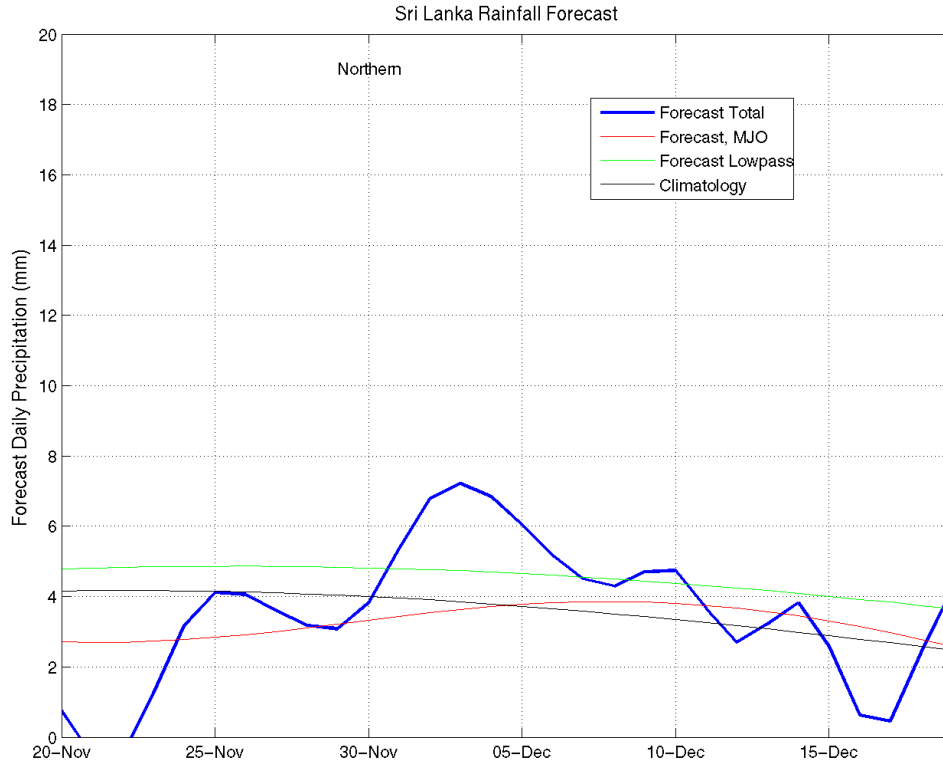
**Western Slopes (Rainfall Scale from 0-20 mm/day)**



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

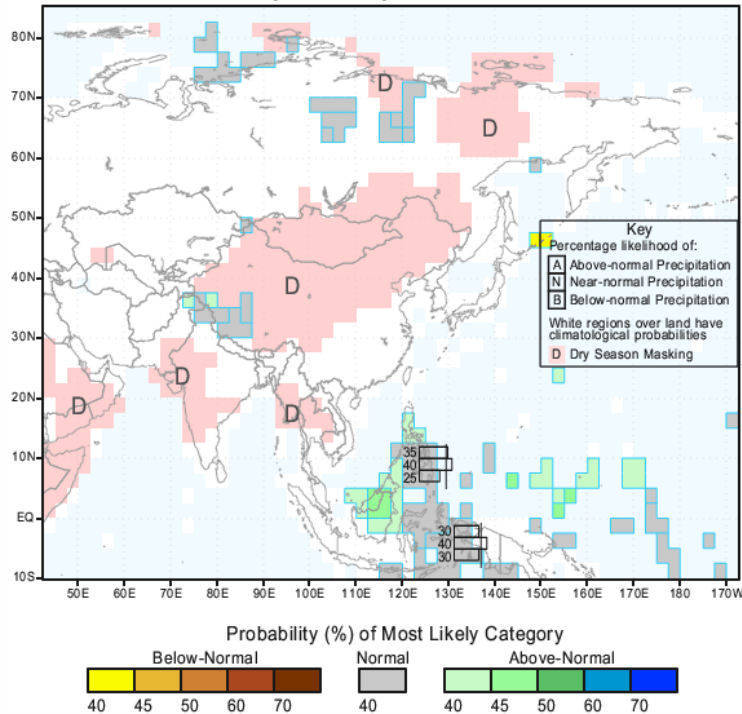


**Northern Region (Rainfall Scale- from 0-20 mm/day)**



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

IRI Multi-Model Probability Forecast for Precipitation  
for December-January-February 2013, Issued November 2012



*d) Seasonal Rainfall and Temperature Predictions from IRI Cntd...*

IRI Multi-Model Probability Forecast for Temperature  
for December-January-February 2013, Issued November 2012

