

## Experimental Climate Monitoring and Prediction

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

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

28 June 2012

### FECT BLOG

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

and

<http://fectsl.wordpress.com/>

### FECT WEBSITE

<http://www.climate.lk>

and

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

### ENSO Update

21 June 2012

Slightly more than half of the ENSO prediction models predict El Nino conditions developing around the August-October season, continuing through the rest of 2012. However over 40% of the models indicate persistence of ENSO neutral conditions. Currently, no models indicate a re-emergence of La Nina conditions.

(IRI)

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

**Weekly Monitoring:** During last week (19<sup>th</sup> - 26<sup>th</sup> June) rainfall ranged between 5 mm - 20 mm. On the 21<sup>st</sup> the entire country received rainfall. Maximum 20 mm of daily rainfall was recorded at Matara, Kalutara, Galle on 23<sup>rd</sup>, 24<sup>th</sup> and Batticaloa on 25<sup>th</sup>-26<sup>th</sup> respectively. On the remaining days less than 20 mm of rainfall was scattered in different places of Sri Lanka.

**Monthly Monitoring:** During the month of May some parts of Galle, Matara, Ratnapura and Hambantota districts experienced above average rainfall, but the surplus is below 30 mm. Below average rainfall was experienced in rest of the country.

### Predictions

**7 Day Prediction:** For the coming week, accumulated rainfall of 5 mm - 75 mm is predicted for the Southwestern regions of the island. An accumulated rainfall 5 mm - 55 mm of rainfall is predicted for the entire island.

**IMD WRF Model Forecast & IRI forecast:** WRF Model Predicts 1 mm - 36 mm rainfall particularly for the Kalutara, Colombo, Gampaha, Puttalam, Kegalle and parts of Kurunegala & Ratnapura districts on the 29<sup>th</sup> of June, and rainfall shall drop while spreading towards eastward. For the same day less than 8 mm of rainfall is predicted for some parts of Trincomalee, Batticaloa, Ampara, Monaragala and Badulla districts. For the 30<sup>th</sup> of June, the Model Predicts 1 mm - 65 mm rainfall for Colombo, Kalutara and Gampaha districts, and rainfall shall decrease towards North, South and eastward directions, and no rainfall is predicted for the eastern side of the island. IRI models forecast up to 25 mm of rainfall for the entire island with fluctuations

**1 Month Prediction:** Overall a rapid increase in rainfall shall be observed during the period of 27<sup>th</sup>-29<sup>th</sup> of June. Then it shall decrease gradually till the 12<sup>th</sup> of July with minor fluctuations during 6<sup>th</sup>- 9<sup>th</sup> July. There onwards it shall increase gradually. *Western slopes*- Nearly the same pattern shall be expected with increased rainfall. Rainfall shall decrease gradually till 13<sup>th</sup> July with minor fluctuations between 1<sup>st</sup>-3<sup>rd</sup> & 6<sup>th</sup>-8<sup>th</sup> July. Thereafter it shall increase gradually. *Eastern slopes*- During 27<sup>th</sup>-28<sup>th</sup> June rainfall shall increase. From 28<sup>th</sup> June - 11<sup>th</sup> July rainfall shall gradually decrease with fluctuations. Thereafter rainfall shall increase drastically. *Northern region*- Rainfall shall increase during 27<sup>th</sup>-28<sup>th</sup> June, and shall decrease with a same rate as previous till 2<sup>nd</sup> July. Rainfall shall decrease gradually till 9<sup>th</sup> July. Thereafter rainfall shall increase gradually with fluctuations during 11<sup>th</sup>-12<sup>th</sup> & 16<sup>th</sup>-18<sup>th</sup> July.

**Seasonal Prediction:** As per IRI Multi Model Probability Forecast for July 2012 to September 2012, issued in June 2012, there is a 45%-50% probability for temperature to be above normal in the country. There is 40% probability for rainfall 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, NOAA, CPC,USA
- IMD WRF Model Forecast
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

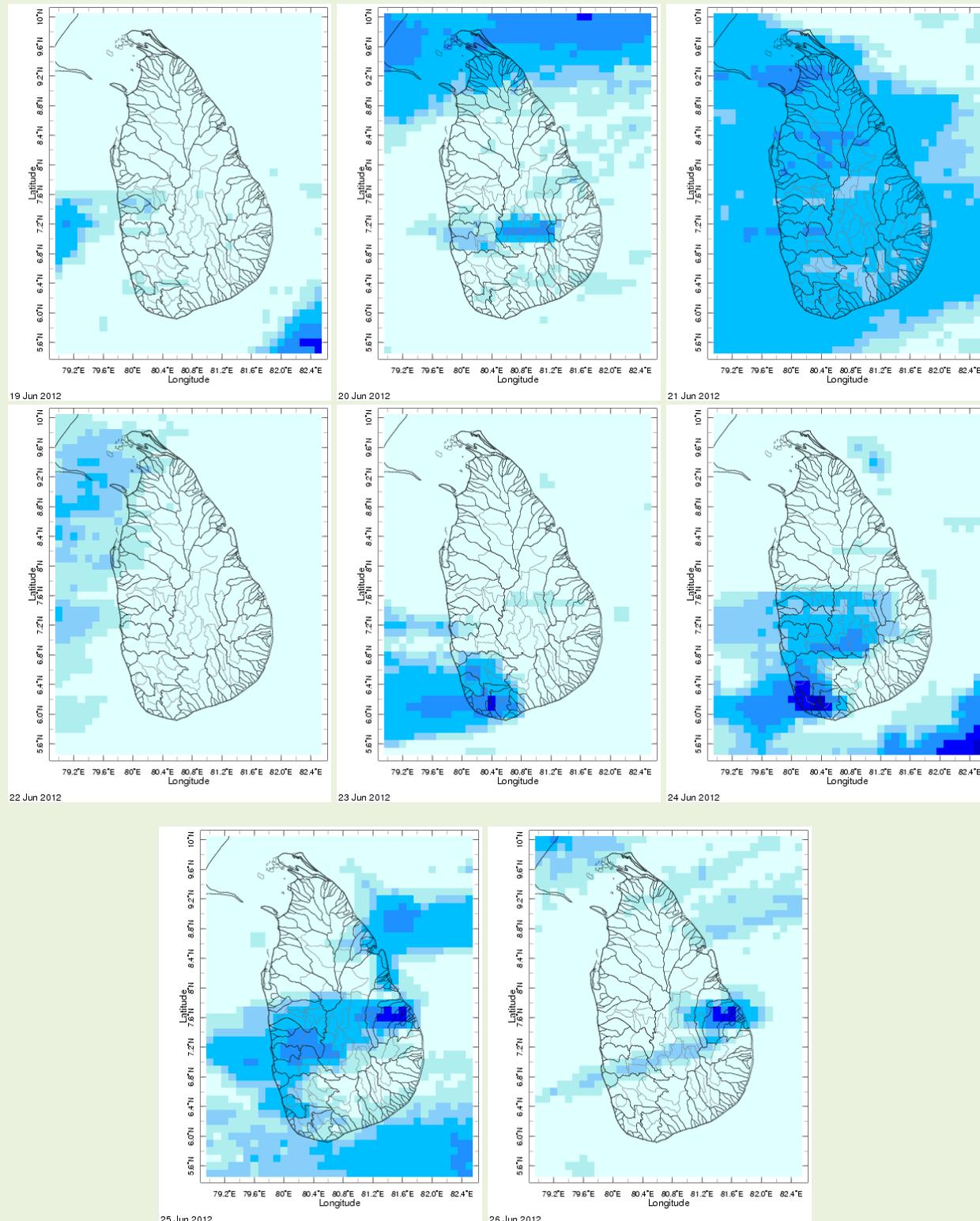
International Research Institute for Climate and Society.

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

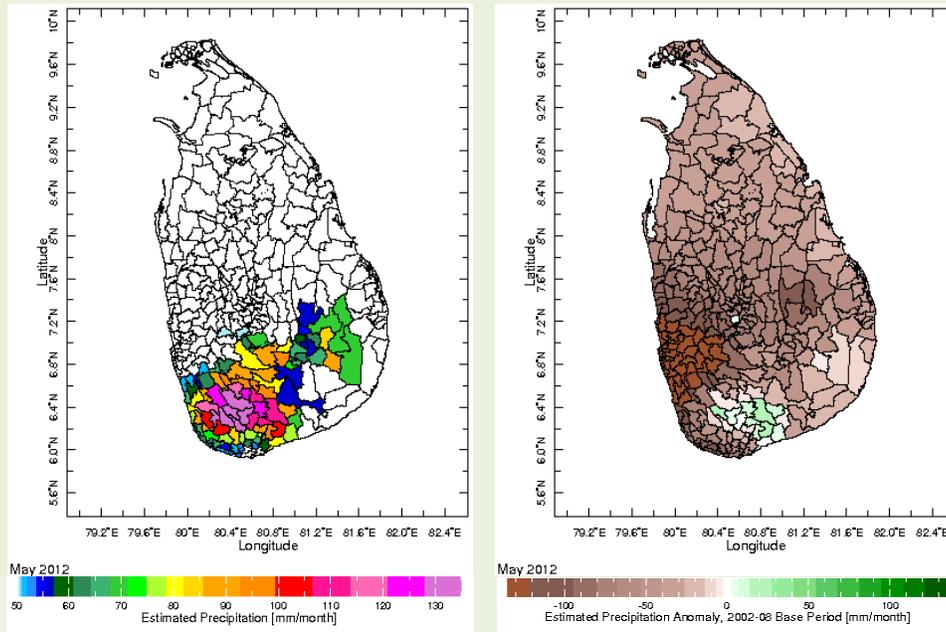
Official hydro-meteorological statements are provided by the Sri Lanka Department of Meteorology and Department of Irrigation.

## 1. Monitoring

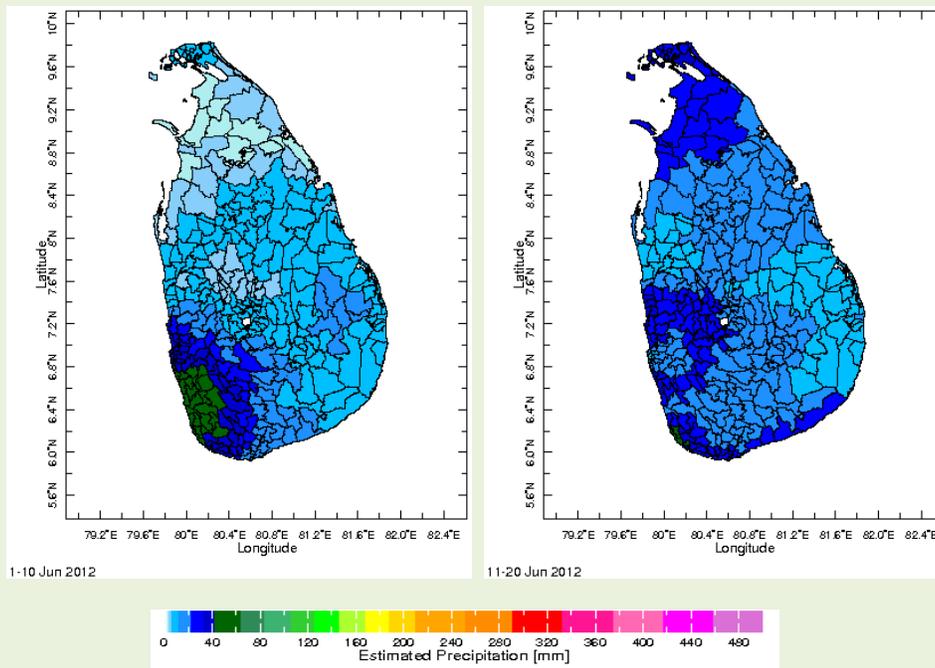
### a) Daily Satellite Derived Rainfall Estimate Maps: 19<sup>th</sup>–26<sup>th</sup> June, 2012 (Left-Right, Top-Bottom)



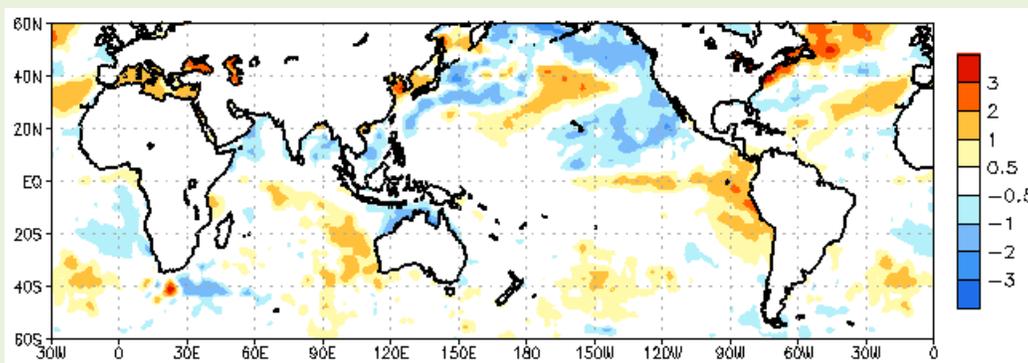
**b) Monthly Satellite Derived Rain fall Estimates for May 2012 (Total – Left and Anomaly -Right)**



**c) Dekadal (10 Day) Satellite Derived Rainfall Estimates (01-10 June & 11-20 June, 2012)**



**d) Weekly Average SST Anomalies**

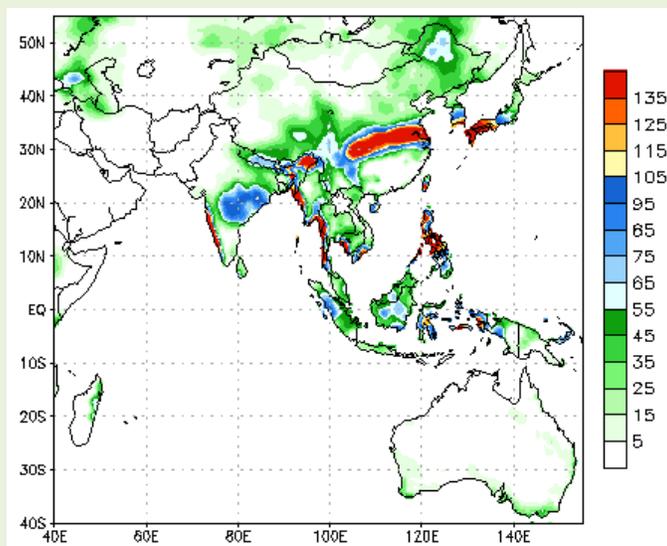


Weekly Average SST Anomalies ( $^{\circ}$ C), 20<sup>th</sup> June, 2012

Data Source: NCEP Global Sea Surface Temperature Analysis (Climatology 1981-2010)

**2. Predictions**

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



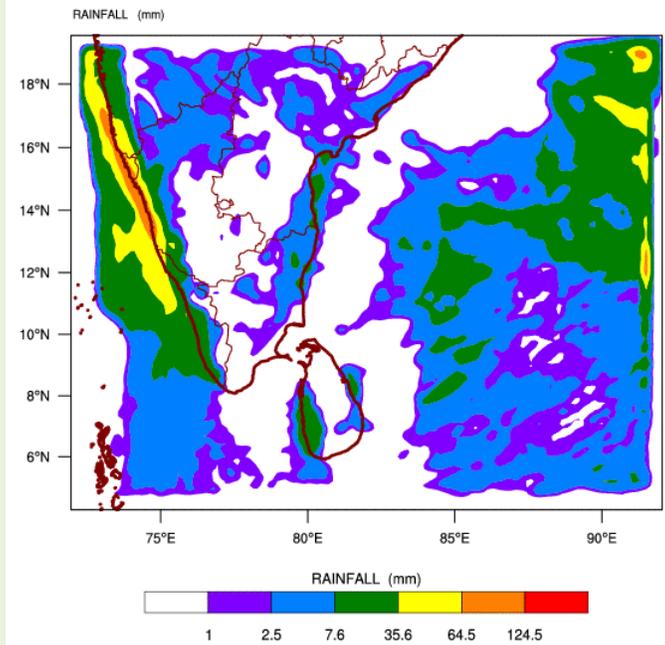
During next week, an accumulated rainfall of 5 mm - 75 mm is predicted for the southwestern regions of the island and 5 mm – 55 mm is predicted for the entire island.

Source – NOAA Climate Prediction Center

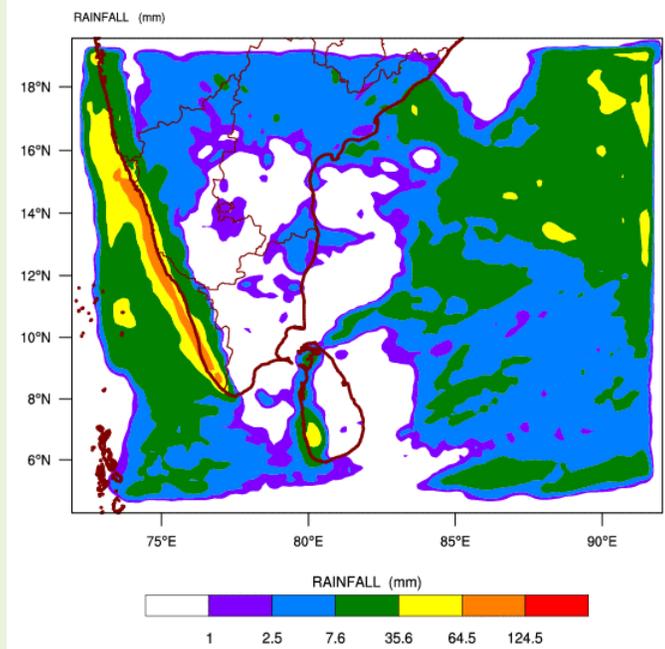
Map: Predicted accumulation of rainfall. (27<sup>th</sup> June – 03<sup>rd</sup> July, 2012 week)

**b) WRF Model Forecast (Regional Meteorological Center, Chennai, Indian Meteorological Department)**

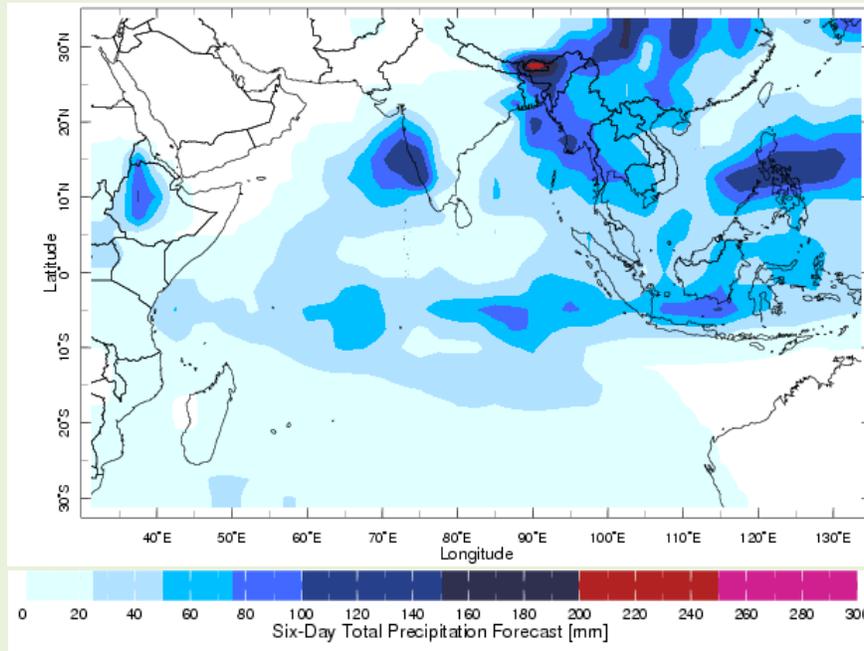
WRF MODEL FORECAST (48 HR.) RAINFALL(mm)  
based on 00 UTC of 27-06-2012 valid for 03 UTC of 29-06-2012



WRF MODEL FORECAST (72 HR.) RAINFALL(mm)  
based on 00 UTC of 27-06-2012 valid for 03 UTC of 30-06-2012



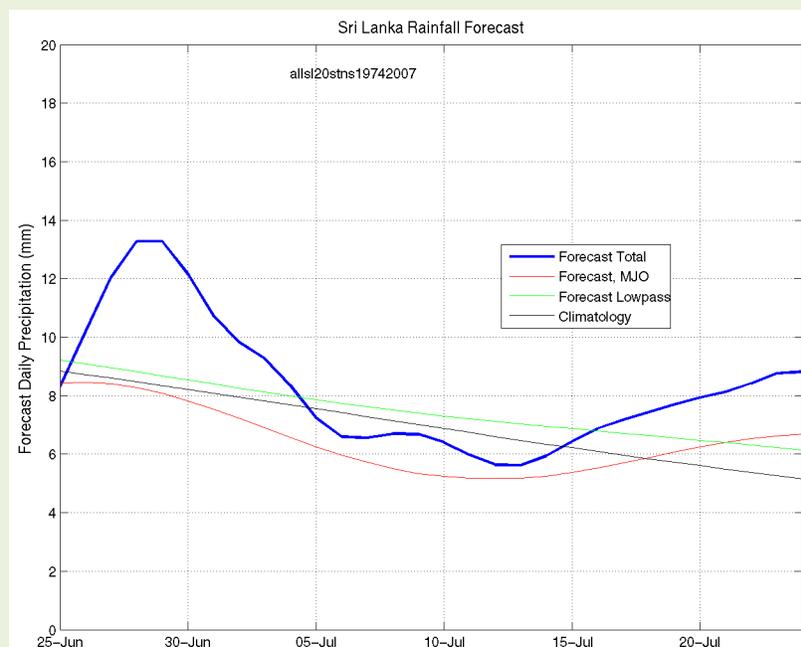
**c) Weekly Precipitation Forecast for 26 June -01 July 2012 (Precipitation Forecast in Context Map Tool, IRI)**



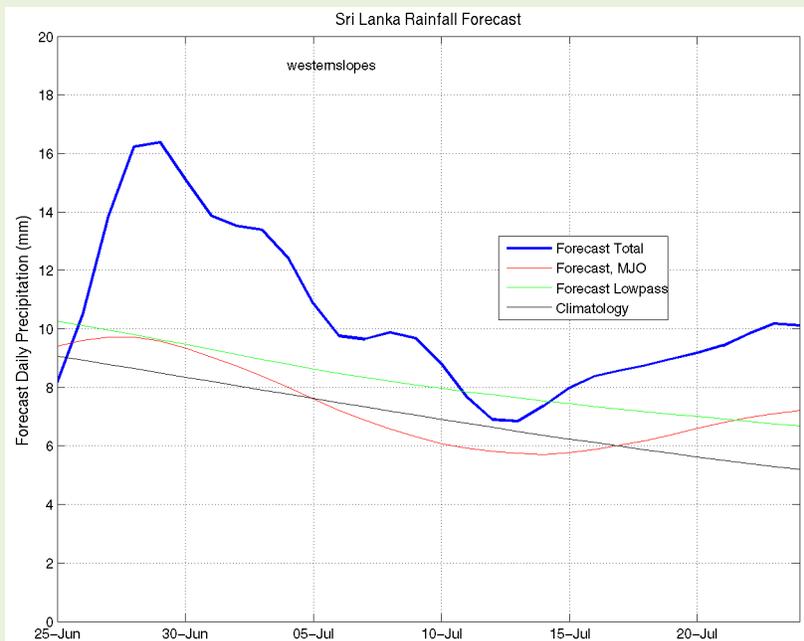
**d) 1 month experimental predictions by Paul Roundy and L. Zubair**

Predictions based on observed cloud cover and atmospheric waves. Issued 27<sup>th</sup> June, 2012

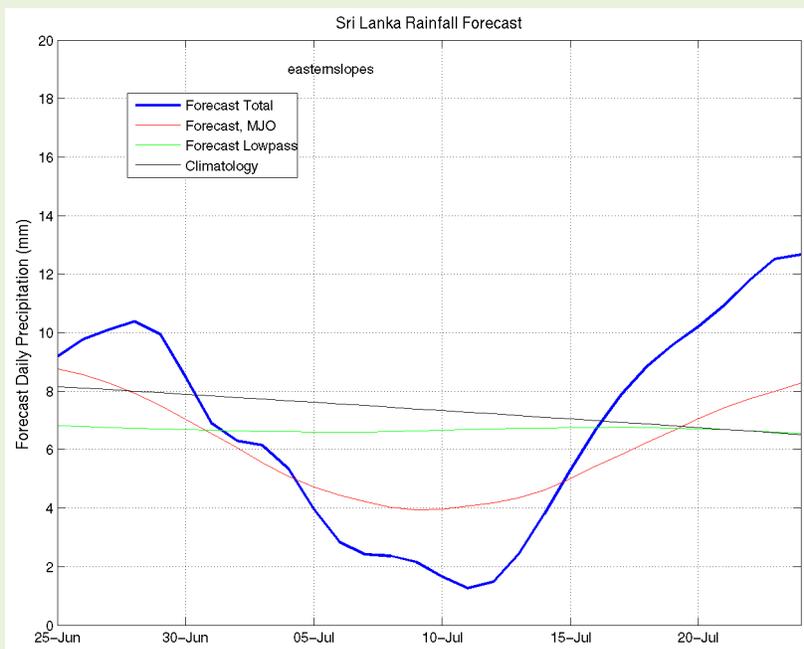
**All Sri Lanka (Rainfall Scale from 0-20 mm/day)**



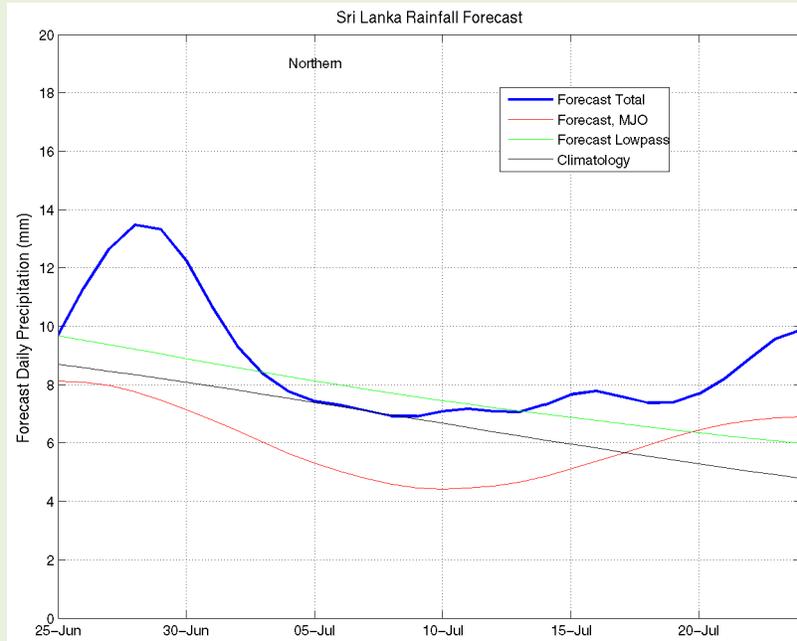
**Western Slopes (Rainfall Scale from 0-20 mm/day)**



**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

