

## Experimental Climate Monitoring and Prediction

by: Revathy, M.S., Sewwandhi Chandrasekara, Prabodha Agalawatte, Zeenas Yahiya,  
Lareef Zubair and Michael Bell (FECT and IRI<sup>1</sup>)

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### FECT BLOG

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

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

### FECT WEBSITES

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

## 19 December, 2013 PACIFIC SEAS STATE

During November through early December the observed ENSO conditions remained neutral.

Most of the ENSO prediction models indicate a continuation of neutral ENSO into early 2014.

During northern spring and Summer a warming tendency is seen in both dynamical and statistical models.

(Text Courtesy IRI)

## INDIAN OCEAN STATE

Northern sea of Sri Lanka showed neutral sea surface temperature and -1°C anomaly for rest of the seas around Sri Lanka during 5<sup>th</sup> - 11<sup>th</sup> January 2014.

### MJO STATE

MJO state is neutral.

### Highlights

#### Monitoring and Predictions:

During 7<sup>th</sup> January North central province of the island received heavy rainfall ranging up to 30 mm/day. In the coming week Models predicts heavy rainfall conditions for eastern, central and western provinces of the country ranging up to 35mm/week.

### Summary

#### Monitoring

**Weekly Monitoring:** During 7<sup>th</sup> January North central province of the country received heavy rainfall ranged up to 30 mm/day. During 8<sup>th</sup> January northern districts received moderate rainfall less than 10mm/day. During 12<sup>th</sup> and 13<sup>th</sup> January over the eastern SriLankan Sea rainy conditions ranged up to 180mm/day was observed.

**Monthly Monitoring:** Ampara, Batticaloa, Badulla, Monaragala and Jaffna districts received highest average rainfall during the month of December 2013.

#### Predictions

**7-day prediction:** During 15<sup>th</sup> -21<sup>st</sup> January 2014, Sri Lanka shall experience moderate rainy condition with rainfall less than 5 mm/day. A cumulative total of between 15-35 mm is expected over this week. .

**IMD WRF & IRI Model Forecast:** For 17<sup>th</sup> of January, IMD WRF model predicts heavy rainfall all over the country except the northern most parts. Rainfall ranges between 2.5mm and 64.5mm/day. Central, Uva and Eastern provinces are expected to get heavy rainfall more than 35.5mm/day. For 18<sup>th</sup> of January, IMD WRF model predicts heavy rainfall more than 7.5 mm for Gampaha, Colombo and Matara districts. Kandy and Batticaloa districts shall receive rainfall more than 2.5 mm during the day. IRI model predicts rainfall less than 50mm/day for the eastern, central and western parts of the country.

**30 Days Prediction: Overall-** Rainfall shall increase gradually from 19<sup>th</sup> to 26<sup>th</sup> of January. The rainfall shall vary less than 4mm/day. **Western Slopes** –Rainfall shall increase gradually from about 5 to 10mm/day during 19<sup>th</sup> - 24<sup>th</sup> January. For **Western Coast, Northern, Southern and Eastern** parts continuous data is not available till 24<sup>th</sup> of January.

**Seasonal Prediction:** As per IRI Multi Model Probability Forecast issued on December 2013; for December 2013 to March 2014, there is a 50-60% probability for temperature to be above normal in the country while the rainfall is to be climatological.

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#### Monitoring

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

#### 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

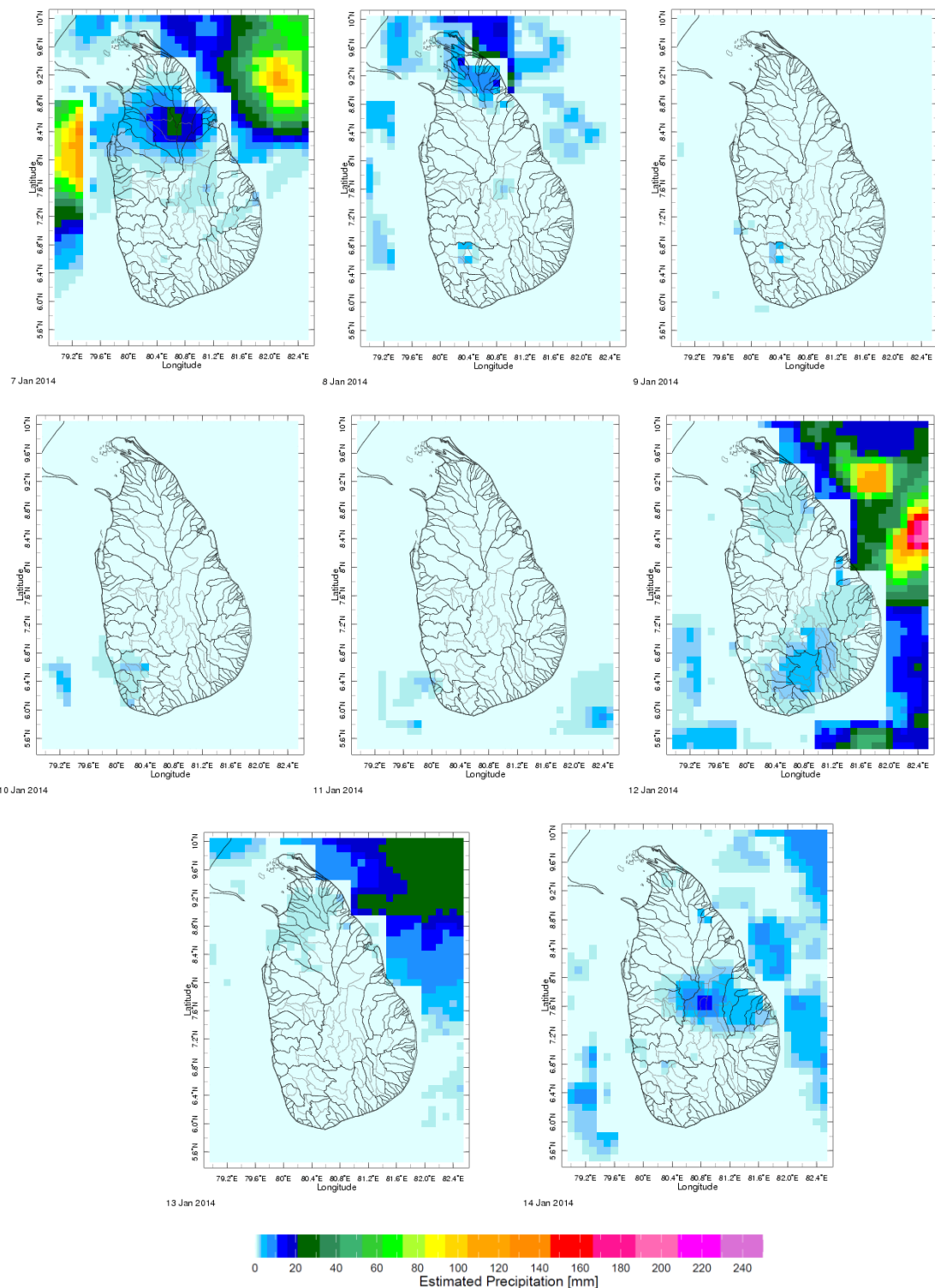
<sup>1</sup> International Research Institute for Climate and Society, Earth Institute at Columbia University, New York.

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

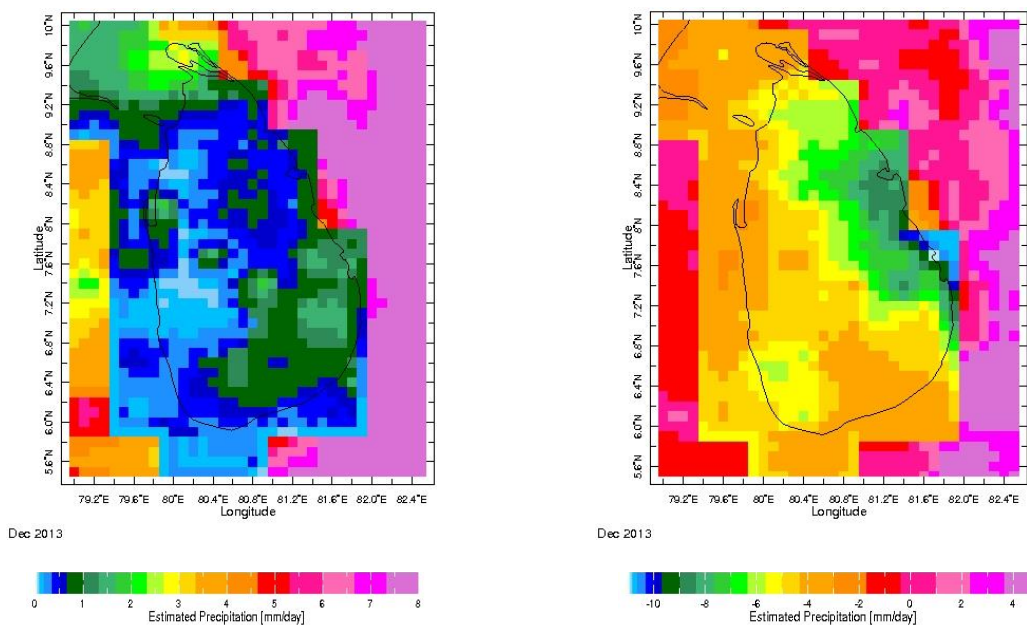
Official hydro-meteorological statements are provided by the Sri Lanka Department of Meteorology and Department of Irrigation.

## 1. Monitoring

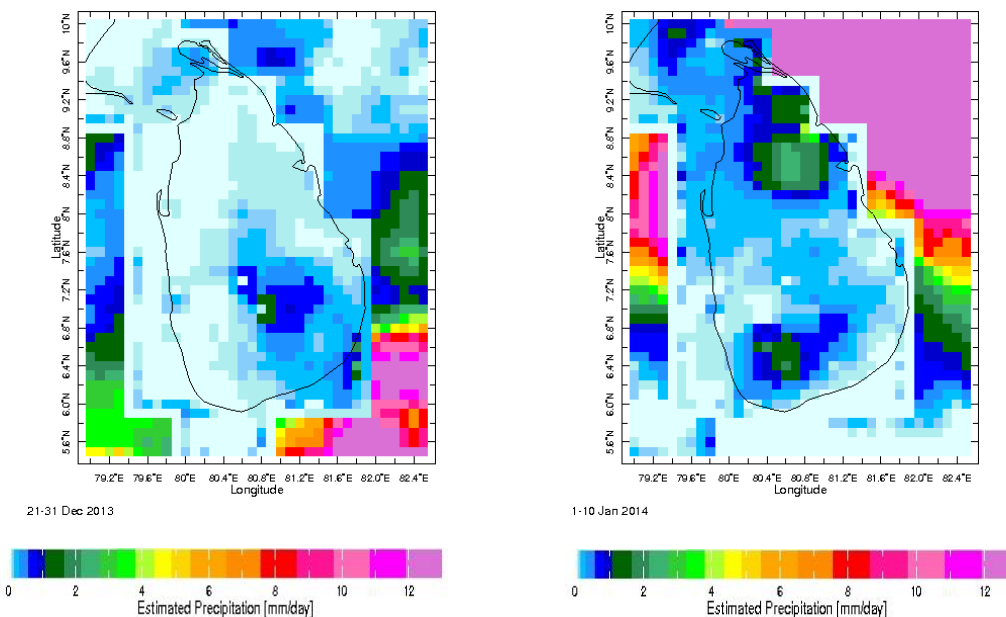
### a) Daily Satellite Derived Rainfall Estimate Maps: 7<sup>th</sup>-14<sup>th</sup> January 2014 (Left-Right, Top-Bottom)



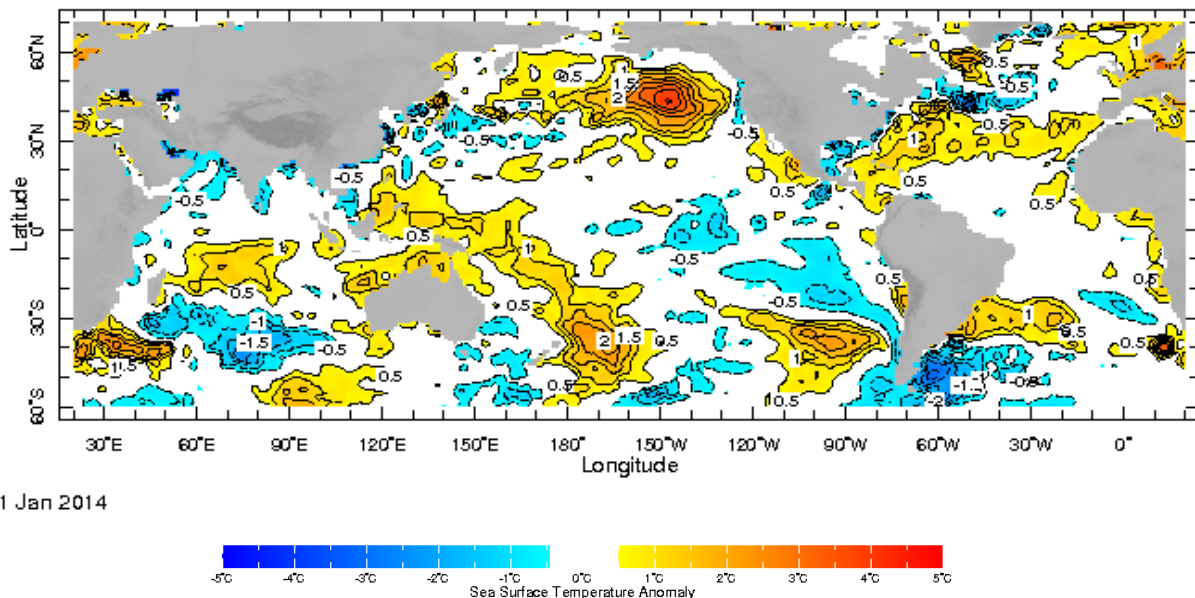
**b) Monthly Satellite Derived Rainfall Estimates for December 2013 (Total – Left and Anomaly - Right)**



**c) Dekadal (10 Day) Satellite Derived Rainfall Estimates (21-31 December, 2013 & 1-10 January, 2014)**



## d) Weekly Average SST Anomalies

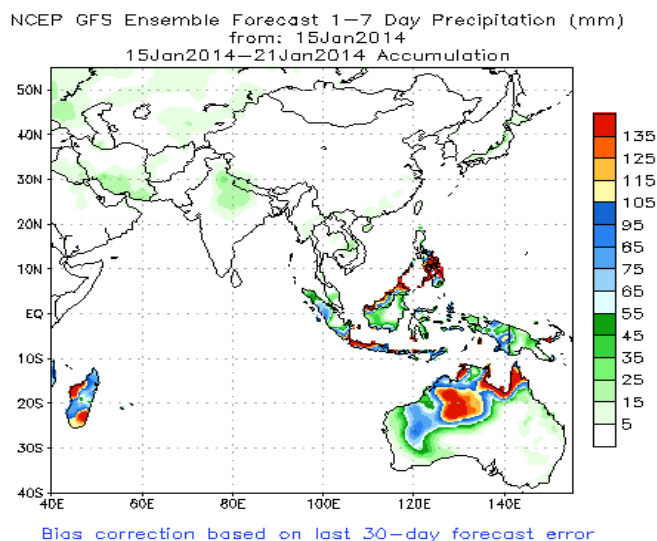


Weekly Average SST Anomalies ( $^{\circ}\text{C}$ ), 29<sup>th</sup> December, 2013 - 4<sup>th</sup> January, 2014

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

## 2. Predictions

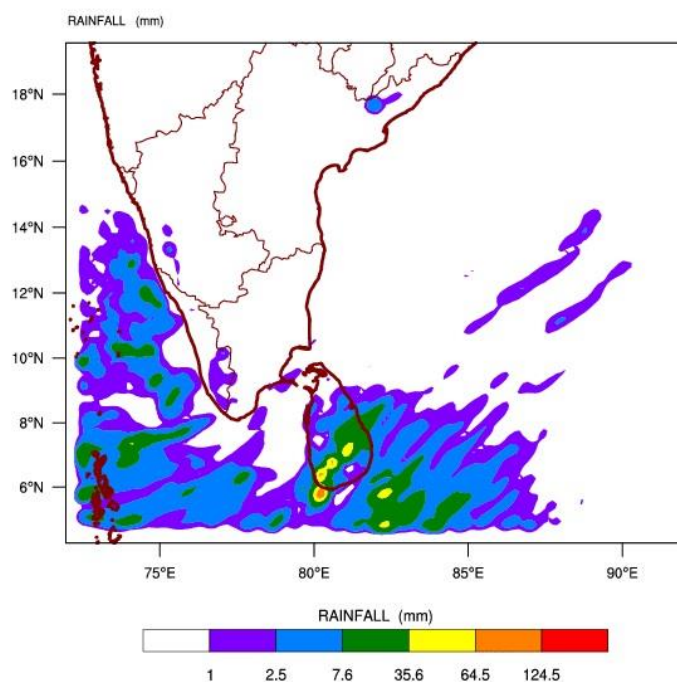
### a) NCEP GFS Ensemble 1-7 day predictions, NOAA, Climate Prediction Centre, USA.



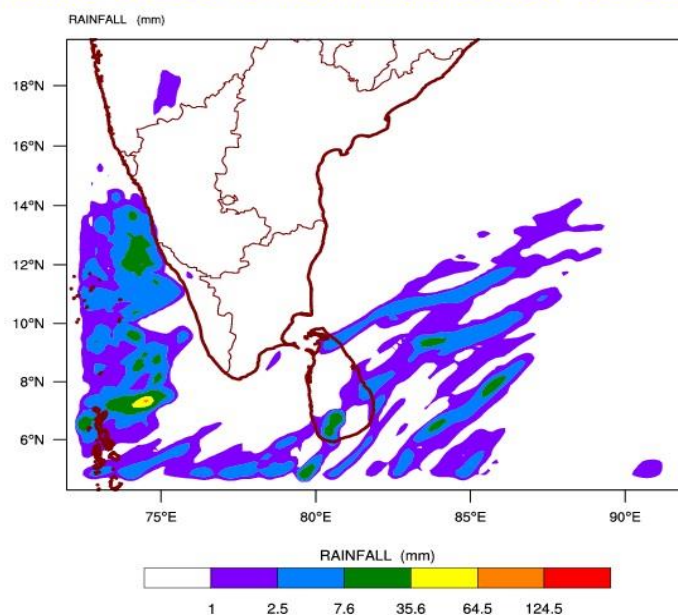
Source – NOAA Climate Prediction Center

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

WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\  
based on 00 UTC of 15-01-2014 valid for 03 UTC of 17-01-2014

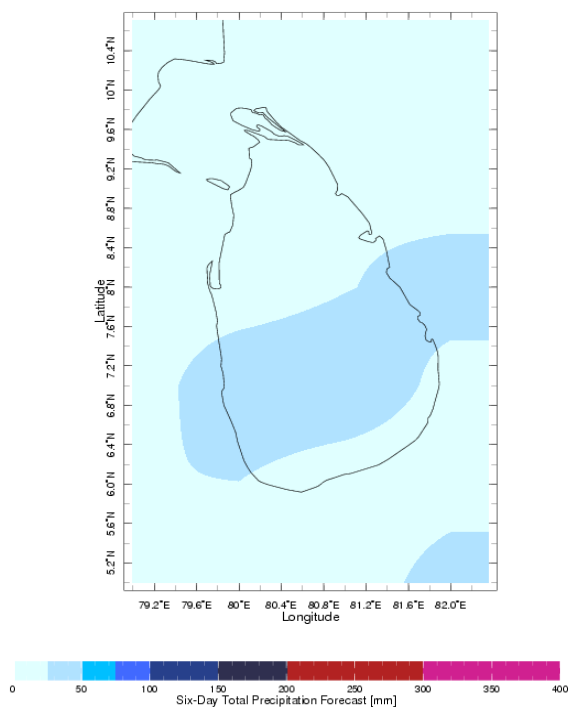


WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\  
based on 00 UTC of 15-01-2014 valid for 03 UTC of 18-01-2014



**c) Weekly Precipitation Forecast for 15<sup>th</sup> -20<sup>th</sup> January 2014 (Precipitation Forecast in Context Map Tool, IRI)**

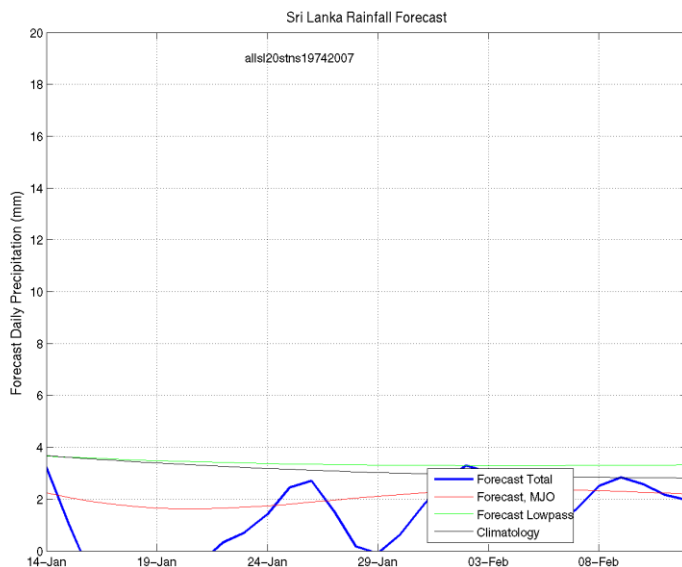
Forecast for 15-20 Jan 2014 Issued 0000 15 Jan 2014



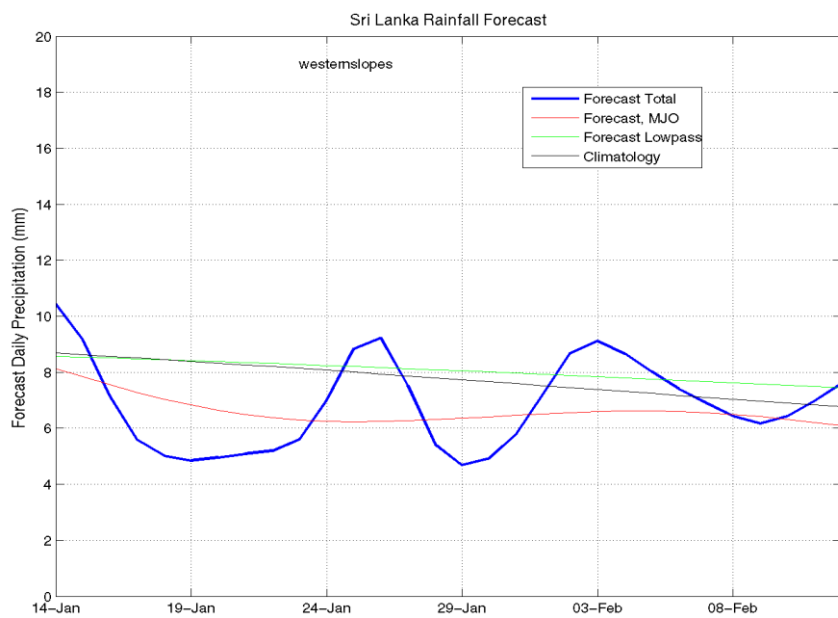
**d) 1 month experimental predictions by Paul Roundy and L. Zubair**

Predictions based on observed cloud cover and atmospheric waves. Issued 15<sup>th</sup> January, 2014

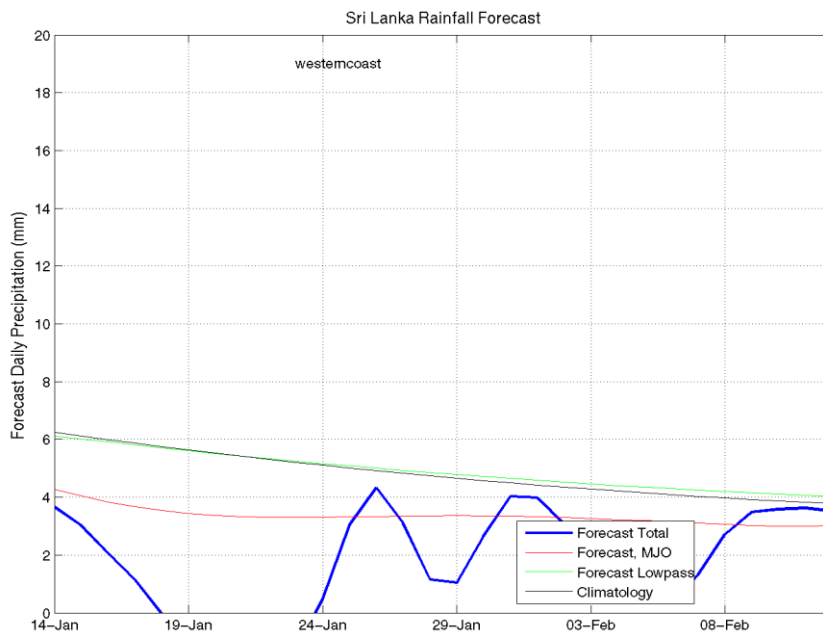
**All Sri Lanka (Rainfall Scale from 0-20 mm/day)**



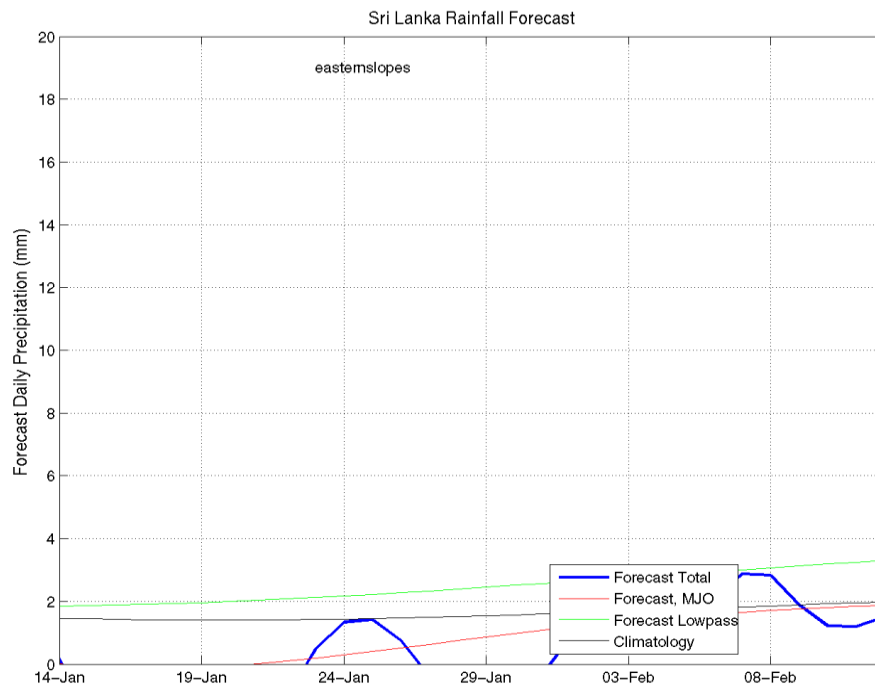
## Western Slopes (Rainfall Scale from 0-20 mm/day)



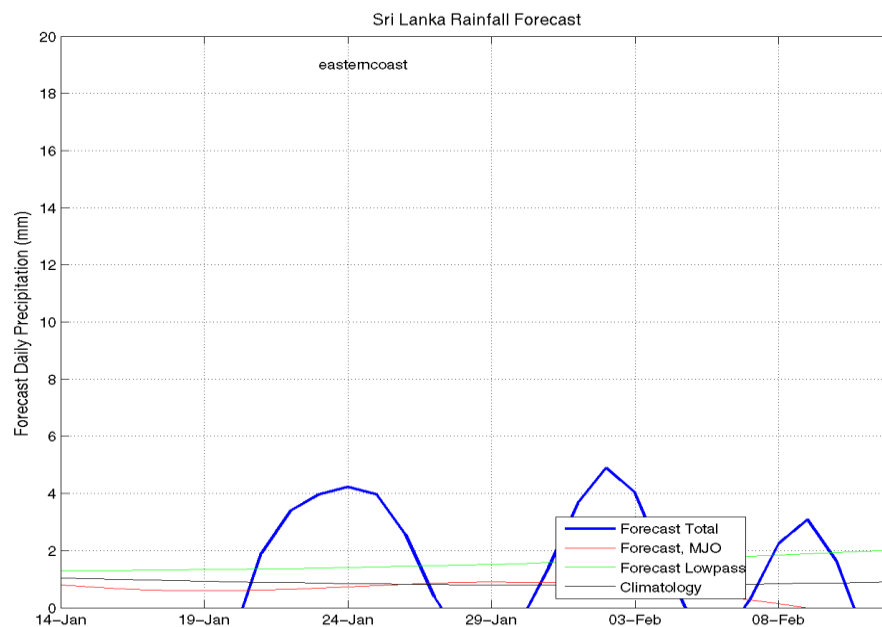
## Western Coast (Rainfall Scale from 0-20 mm/day)



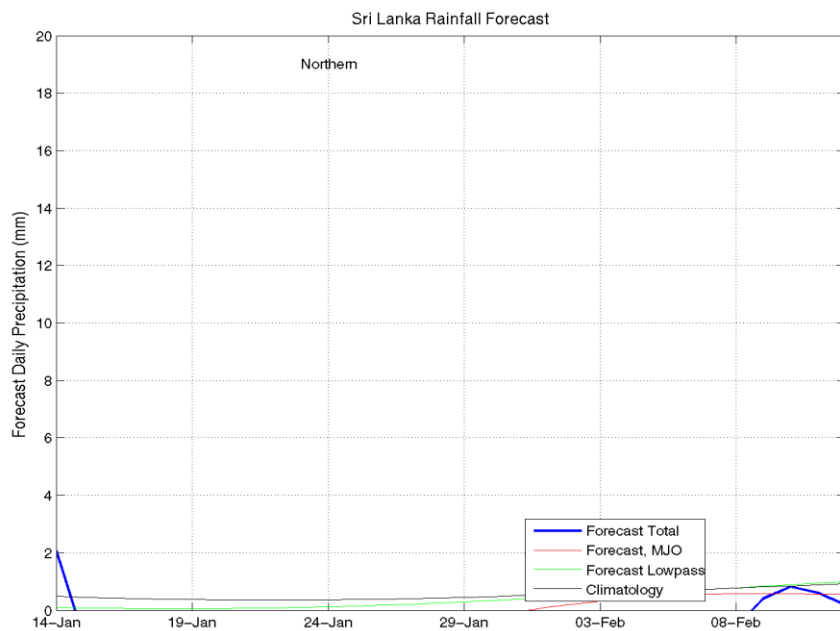
## Eastern Slopes (Rainfall Scale- from 0-20 mm/day)



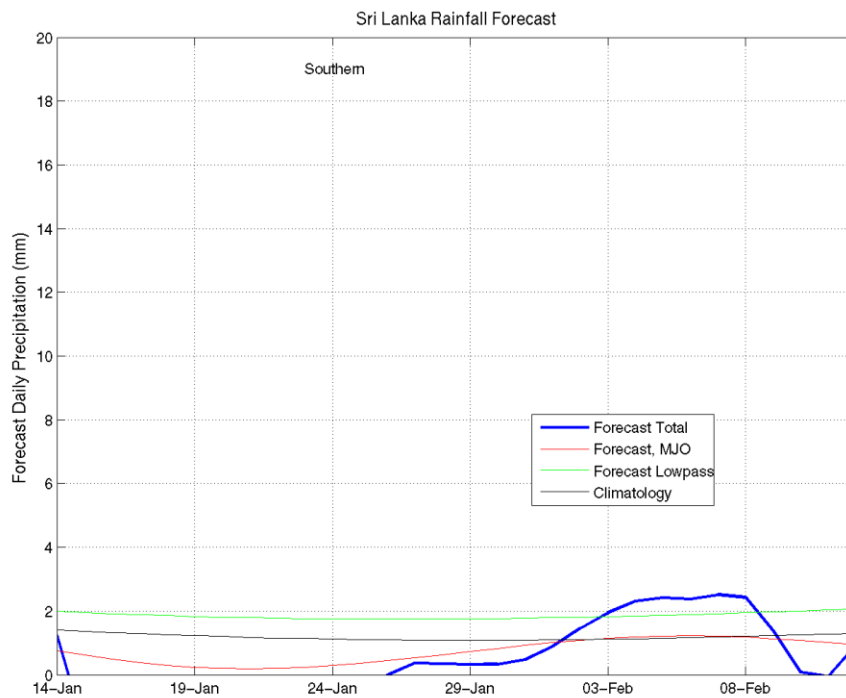
## Eastern Coast (Rainfall Scale- from 0-20 mm/day)



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

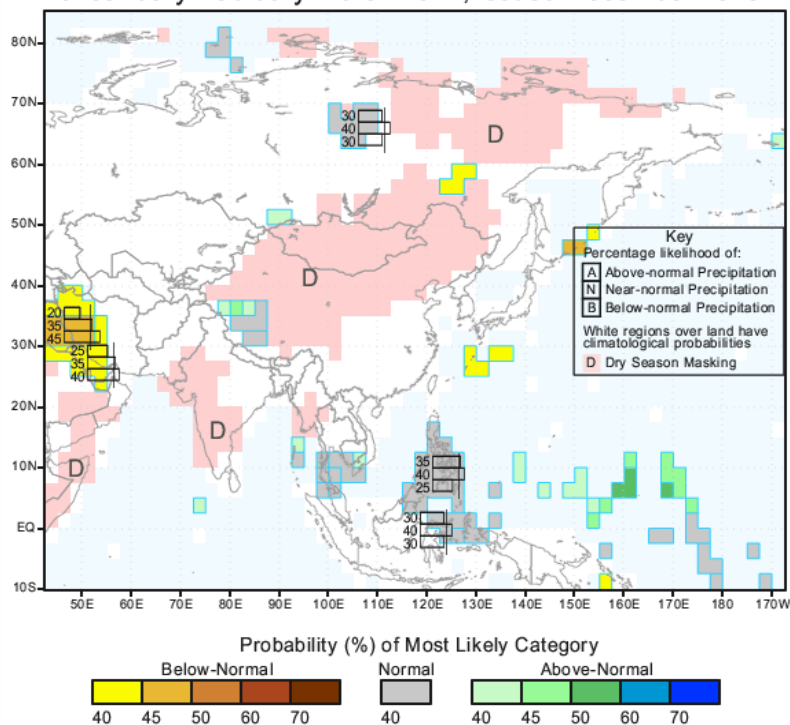


## Southern Region (Rainfall Scale- from 0-20 mm/day)



## e) Seasonal Rainfall and Temperature Predictions from IRI

IRI Multi-Model Probability Forecast for Precipitation  
for January-February-March 2014, Issued December 2013



IRI Multi-Model Probability Forecast for Temperature  
for January-February-March 2014, Issued December 2013

