

Experimental Climate Monitoring and Prediction

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

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Lareef Zubair and Michael Bell (FECT and IRI¹)

20 November 2012

FECT BLOG

Past reports available at
<http://fects.l.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.

Summary²

Monitoring

Weekly Monitoring: During 13th - 16th of November rainfall was observed on the entire island, with maximum rainfall within this period observed on the 15th. On the 17th, no rainfall was observed on the Northern half of Sri Lanka while heavy rains continued on the Southern half of the country. By the 18th rainfall desisted completely with the exception of some areas in the south which received light rainfall. Maximum rainfall (around 90 mm) for the week was observed on the 17th in Uda-Walawe region.

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 over 65 mm is predicted on the South western region of the island. The rest of the country shall receive rainfall upto 65 mm.

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 3rd of December and then shall decrease thereafter. **Western Slopes-** Rainfall shall increase until 24th November and then shall decrease during the next 3 days. Then once again an increase of rainfall is expected until the 10th 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 15th and 2nd 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.

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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

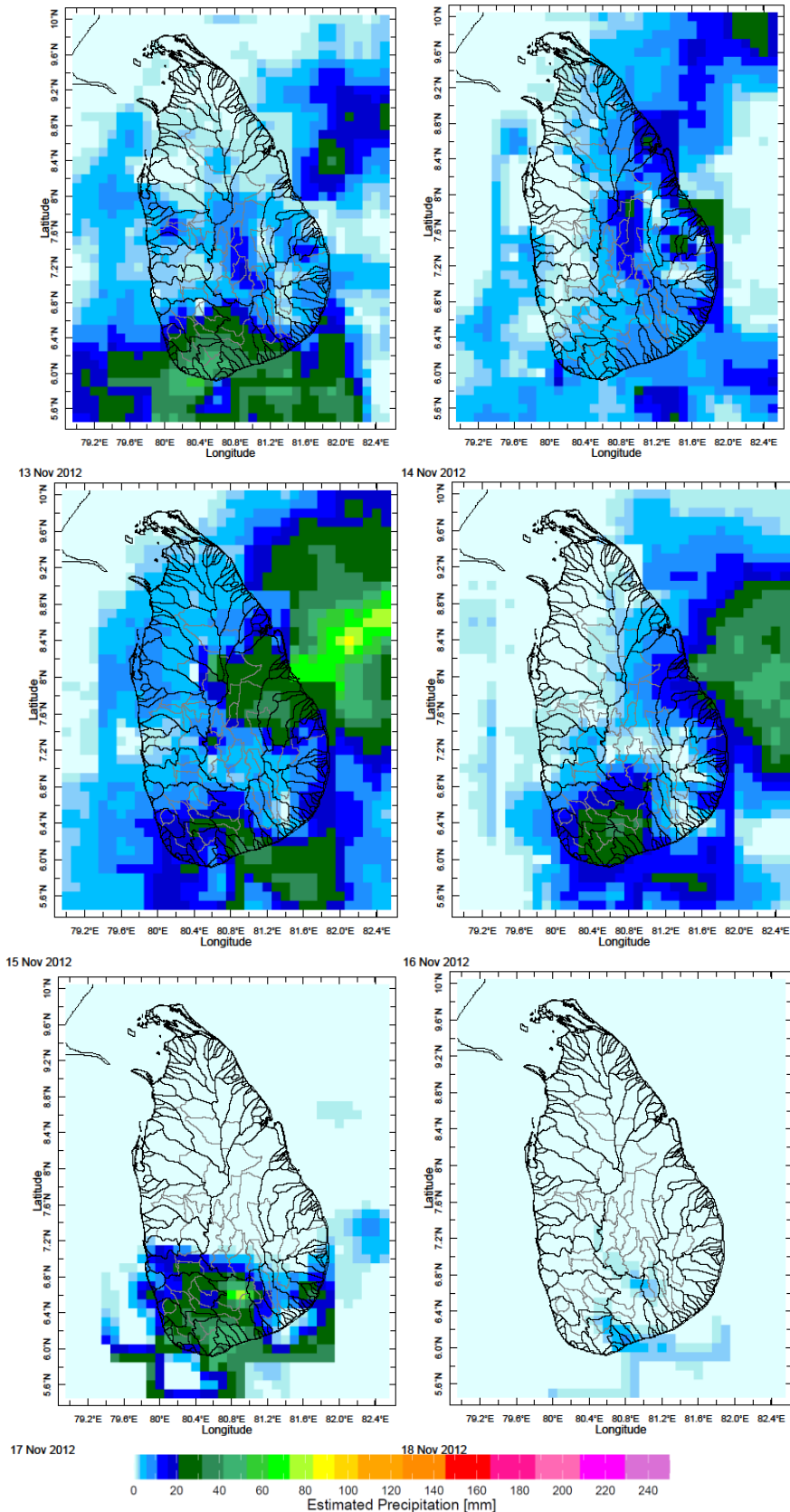
- NCEP GFS Ensemble 1-7 day predictions
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

¹ International Research Institute for Climate and Society.

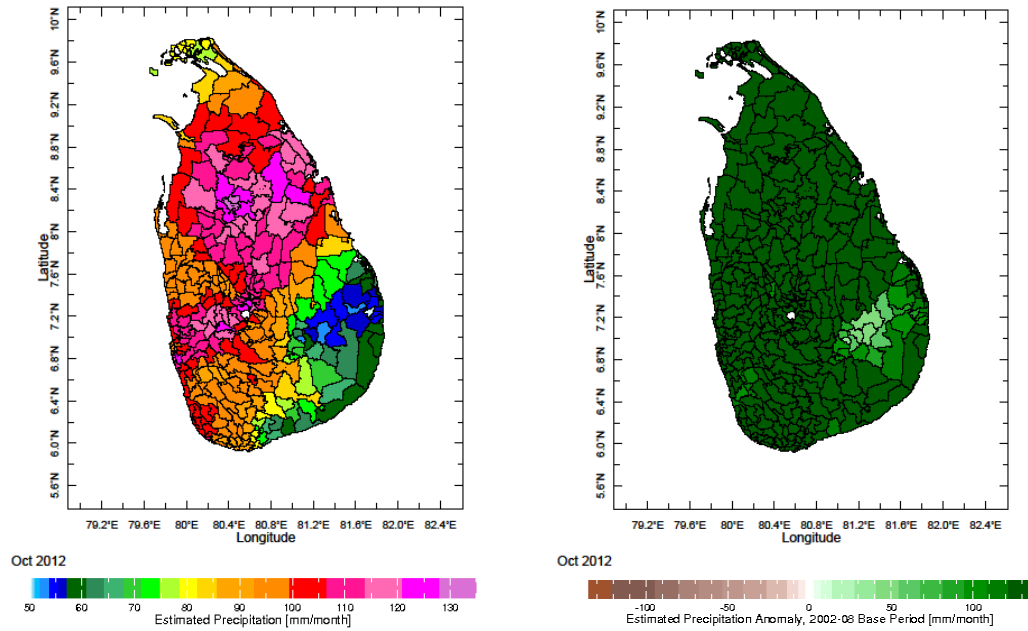
² These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

1. Monitoring

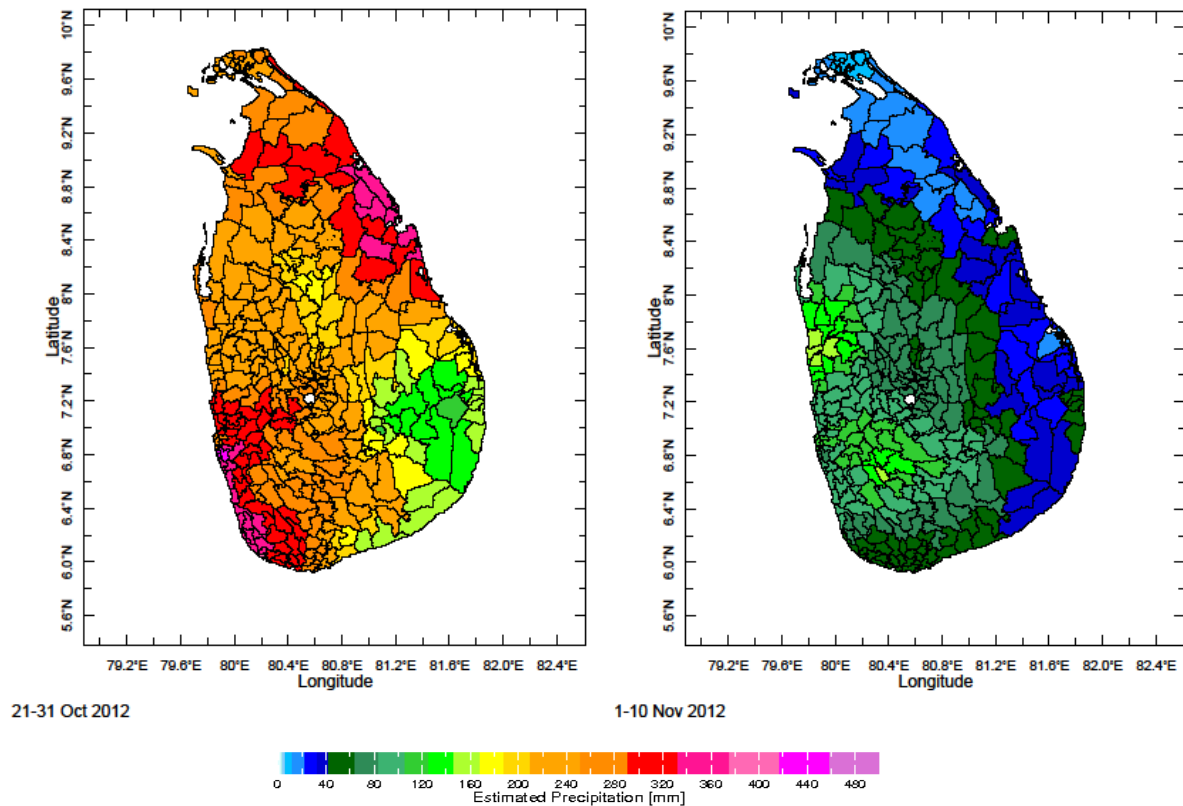
a) Daily Satellite Derived Rainfall Estimate Maps: 13th -18th November, 2012 (Left-Right, Top-Bottom)



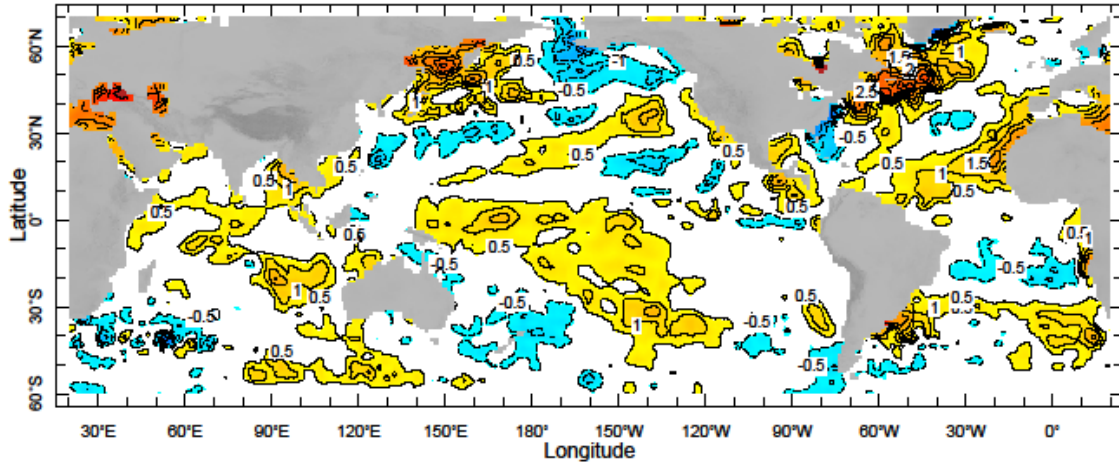
b) Monthly Satellite Derived Rainfall Estimates for October 2012 (Total – Left and Anomaly -Right)



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



d) Weekly Average SST Anomalies



4-10 Nov 2012



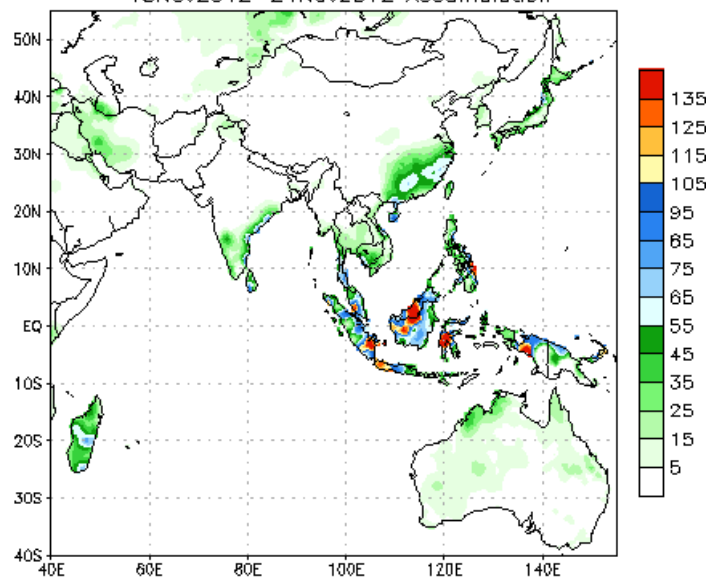
Weekly Average SST Anomalies ($^{\circ}$ C), 4th - 10th Oct, 2012

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

2. Predictions

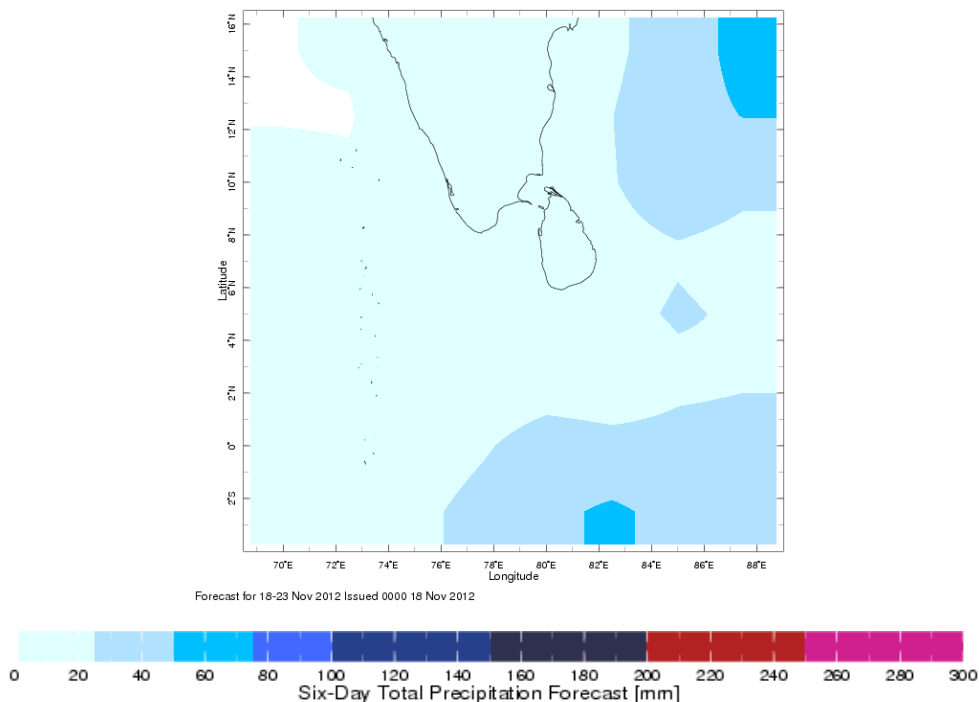
a) NCEP GFS Ensemble 1-7 day predictions, NOAA, Climate Prediction Centre, USA.

NCEP GFS Ensemble Forecast 1-7 Day Precipitation (mm)
from: 18Nov2012
18Nov2012-24Nov2012 Accumulation



Bias correction based on last 30-day forecast error
Source - NOAA Climate Prediction Center

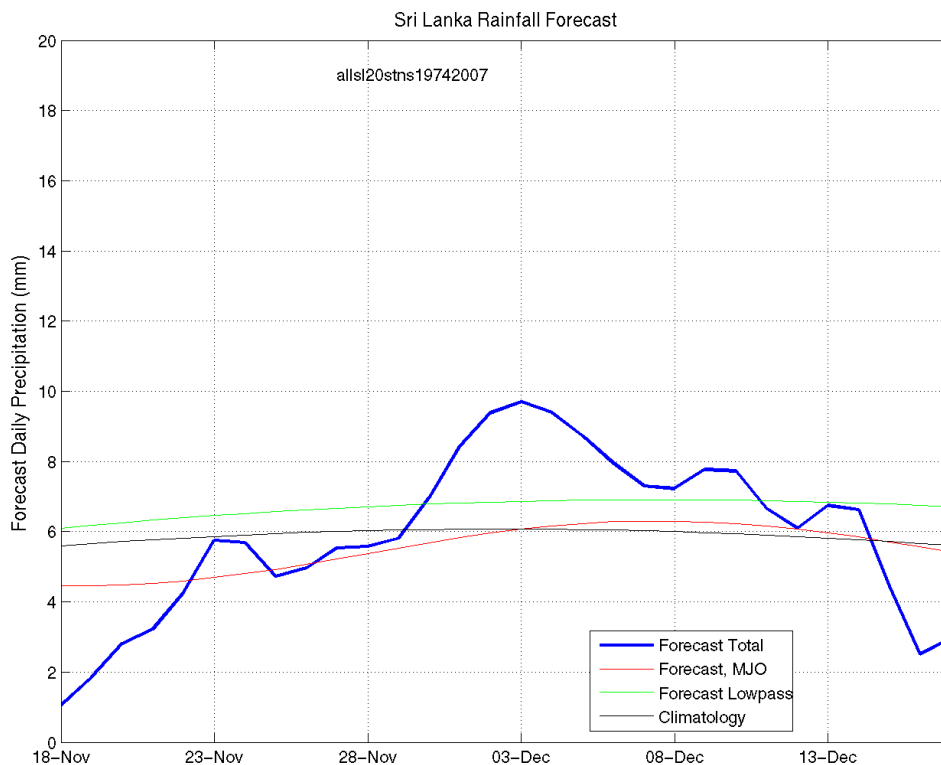
b) Weekly Precipitation Forecast for 18th-23rd Nov 2012 (Precipitation Forecast in Context Map Tool, IRI)



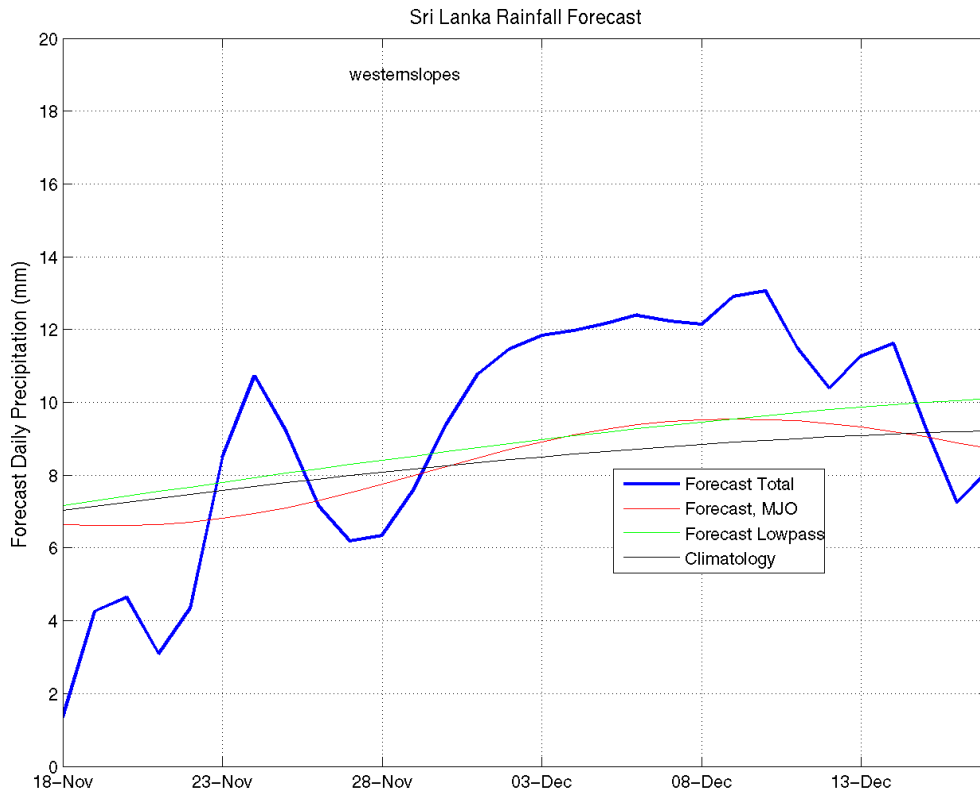
d) 1 month experimental predictions by Paul Roundy and L. Zubair

Predictions based on observed cloud cover and atmospheric waves. Issued 20th November, 2012

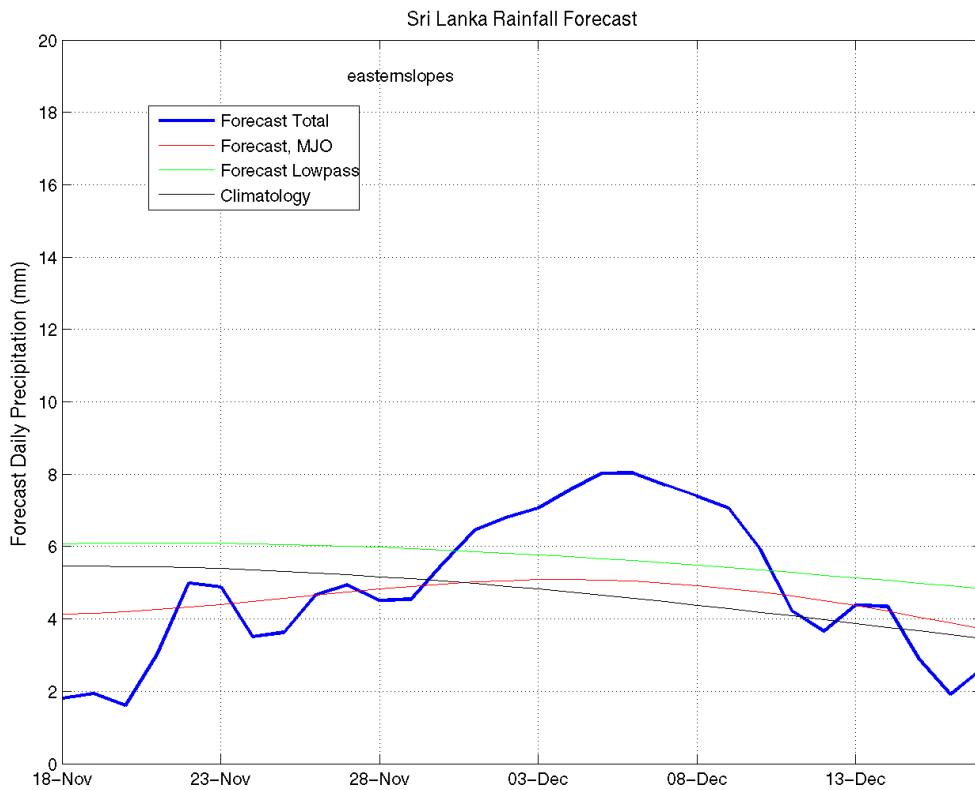
All Sri Lanka (Rainfall Scale from 0-20mm/day)



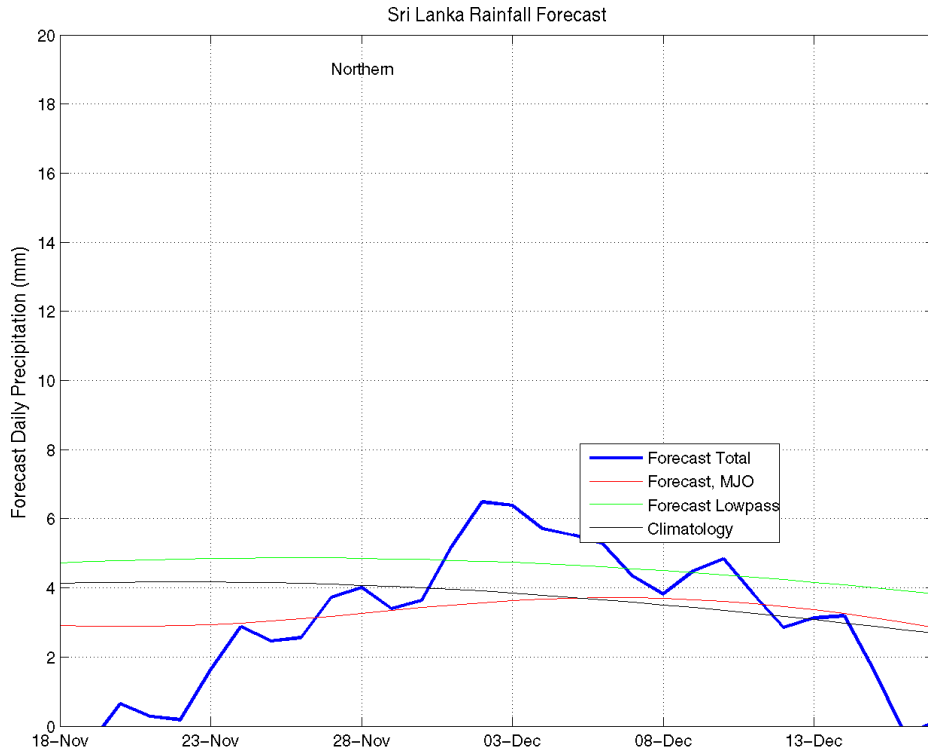
Western Slopes (Rainfall Scale from 0-20 mm/day)



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

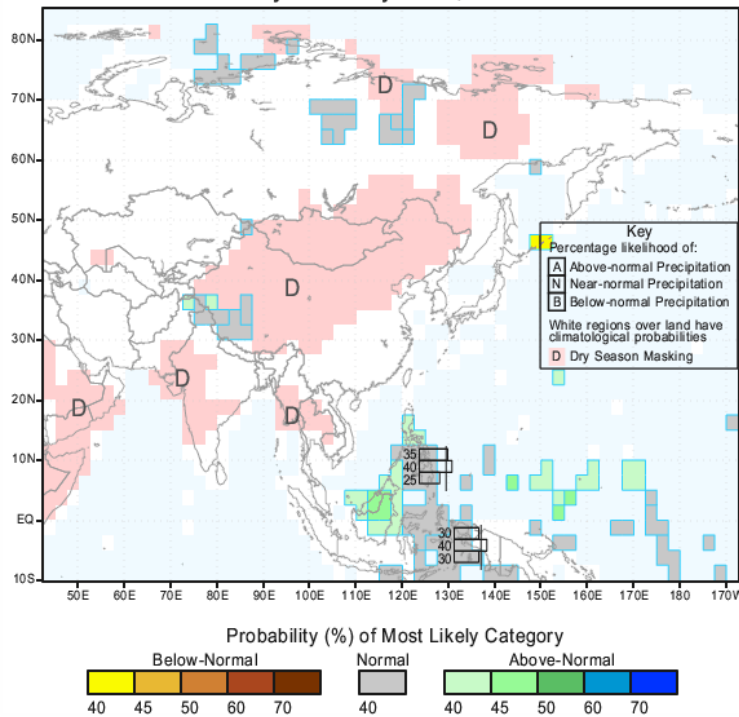


Northern Region (Rainfall Scale- from 0-20 mm/day)



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

