

Experimental Climate Monitoring and Prediction

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Lareef Zubair and Michael Bell (FECT and IRI¹)

20 December 2012

FECT BLOG

Past reports available at
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PACIFIC SEAS STATE

December 6, 2012

Most of the ENSO prediction model 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.

(Text Courtesy IRI)

INDIAN OCEAN STATE

October 18, 2012

The tropical Indian Ocean shows unusually warm anomalies in the Arabian Sea and at the same latitudes to South of the Equator. The Indian Ocean Dipole shows a warm positive phase. These are likely to alter climate drastically.

Highlights

Monitoring and Predictions:

Rainfall accumulation of more than 135 mm is expected for the 19th-25th December in the eastern half of the island. The monthly predictions point to high rainfall for the period of 20th- 21st of December in the Western slopes and thereafter rainfall shall decrease with time in the Island but considerable amount of rainfall shall persists till 15th of January.

Summary

Monitoring

Weekly Monitoring: During 12th-17th December, rainfall ranged between 5-210 mm with highest amount of precipitation observed in Nuwara Eliya district on the 16th December. During 15th-17th entire country received heavy rainfall compared to the rest of the days in the week.

Monthly Monitoring: In October, entire Sri Lanka received above average rainfall. Entire country received more than 100 mm of above average rainfall per month and except for South-eastern regions of the island; received 5-80 mm of above average rainfall per month.

Predictions

7-day prediction: During this week, eastern half of Sri Lanka shall receive more than 135 mm rainfall and rainfall shall spreads westward in a reducing pattern. However, entire Island shall receive rainfall of more than 95 mm.

IMD WRF Model Forecast & IRI forecast: For the 21st December, IMD WRF model predicts 36 mm-65 mm of rainfall for the coastal districts starts from Trincomalee to Ampara. For the same day rainfall shall spreads in a reducing pattern towards South-western, North and North-western regions of Sri Lanka. For the same day less than 1 mm of rainfall is predicted for the Central, South, South-western and Western regions of Sri Lanka. On 22nd, IMD WRF model predicts 65 mm-125 mm for coastal regions starts from Batticaloa and Ampara and, spreads as 21st and remaining regions shall receive less than 1 mm of rainfall. NOAA models forecast heavy rainfall for the entire country except for Jaffna Peninsula (mild rainfall) and few patch in Ampara (very heavy rainfall).

1 Month Prediction: Overall- Rainfall shall decrease during 20th-30th with an insignificant fluctuation during 23rd-24th. Thereafter rainfall shall increase gradually till 4th January 2013 and remain constant thereafter till 11th January. **Western Slopes-** Rainfall shall decrease drastically during 21st-23rd. There onwards rainfall shall increase gradually till 25th and remain constant during 25th-28th. Rainfall shall decrease drastically during 28th-31st. Rainfall shall increase drastically during 1st-4th and thereafter it shall reduce gradually. **Eastern slopes-** Rainfall shall decrease gradually during 22nd December-1st January. Rainfall is not predicted for 1st-3rd and 8th-13th. During 3rd-5th rainfall shall gradually increase and shall decrease gradually during 5th-8th. **Northern-** Rainfall shall decrease drastically during 20th-22nd. Rainfall shall increase drastically during 22nd-24th. Thereafter rainfall shall decrease drastically during 24th-27th. Rainfall is not predicted for 27th December 2012-6th January 2013.

Seasonal Prediction: As per IRI Multi Model Probability Forecast for November 2012 to January 2013, issued in October 2012, 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

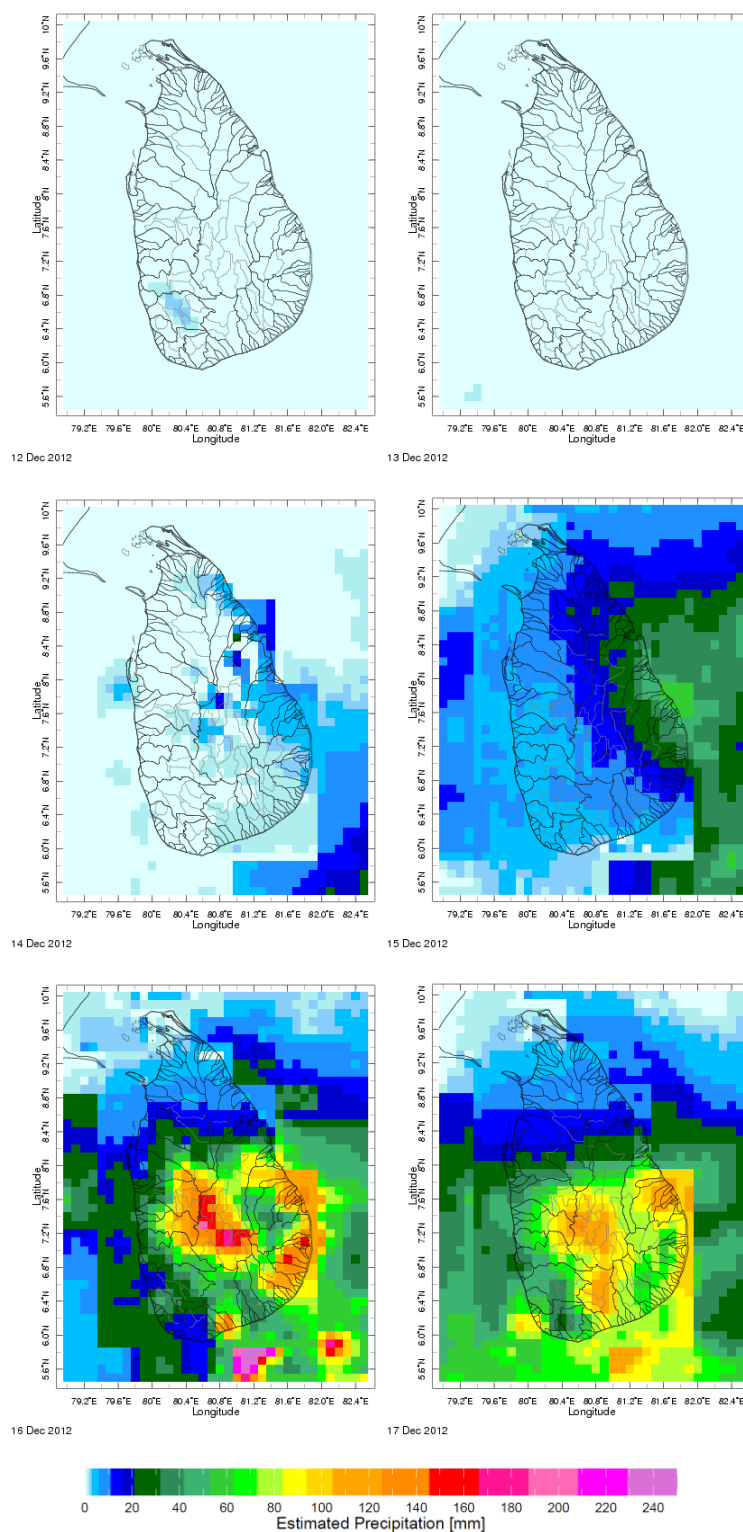
- NCEP GFS Ensemble 1-7 day predictions
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

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

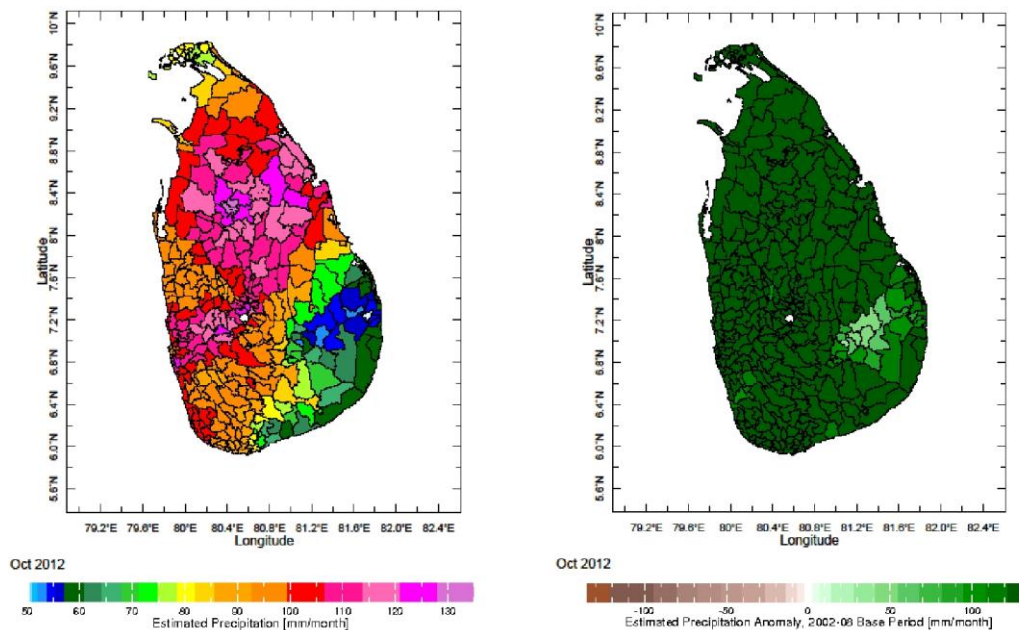
² These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

1. Monitoring

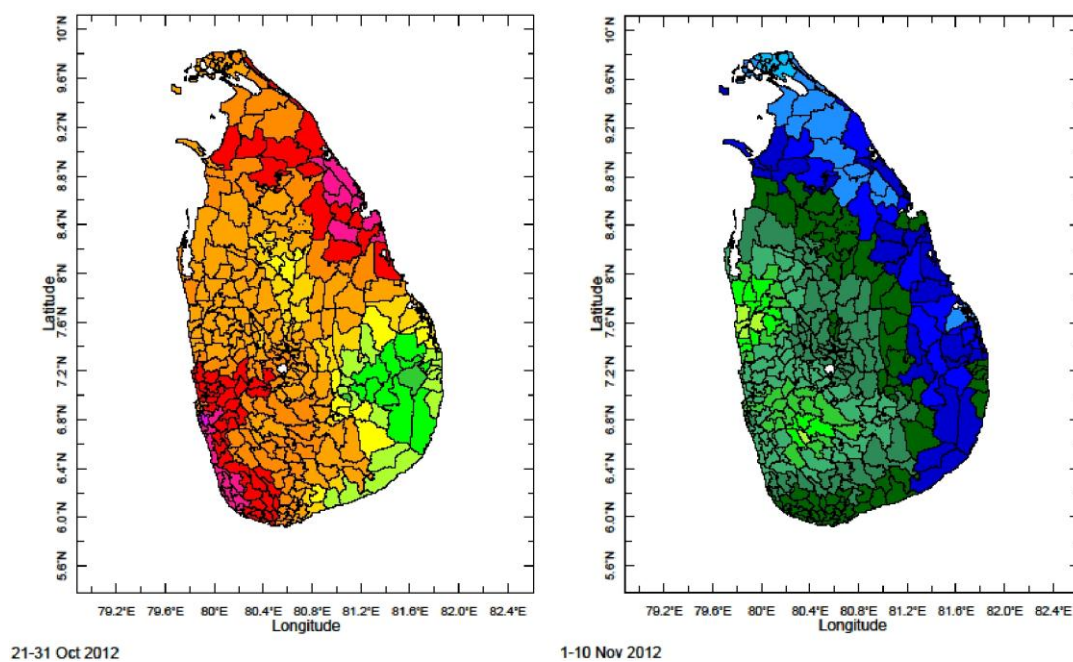
a) Daily Satellite Derived Rainfall Estimate Maps: 12th December – 17th December, 2012 (Left-Right, Top-Bottom)



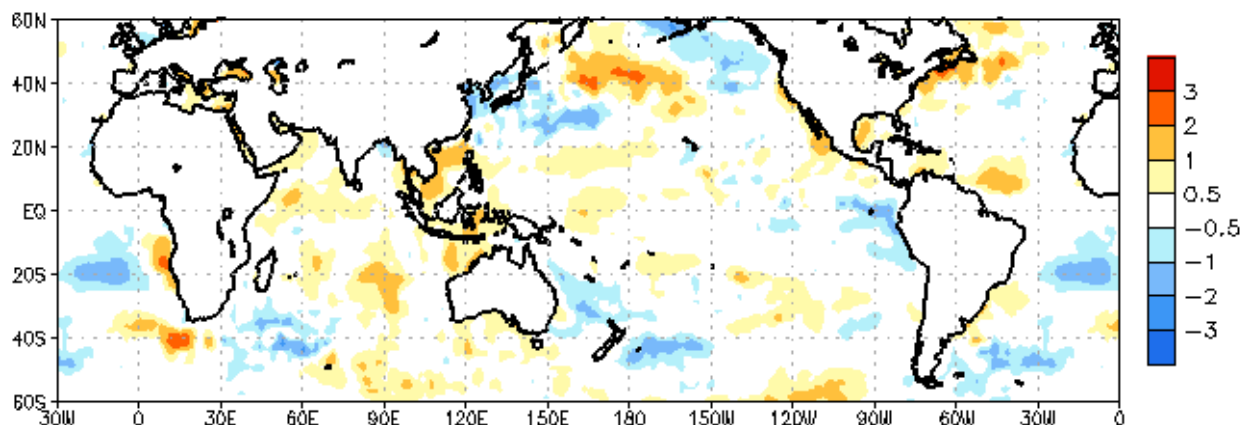
b) Monthly Satellite Derived Rainfall Estimates for October 2012 (Total – Left and Anomaly -Right)



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



d) Weekly Average SST Anomalies

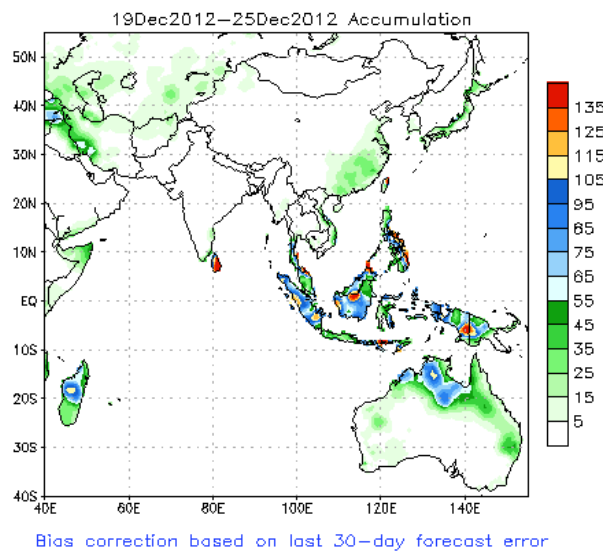


Weekly Average SST Anomalies ($^{\circ}\text{C}$), 12th December, 2012

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

2. Predictions

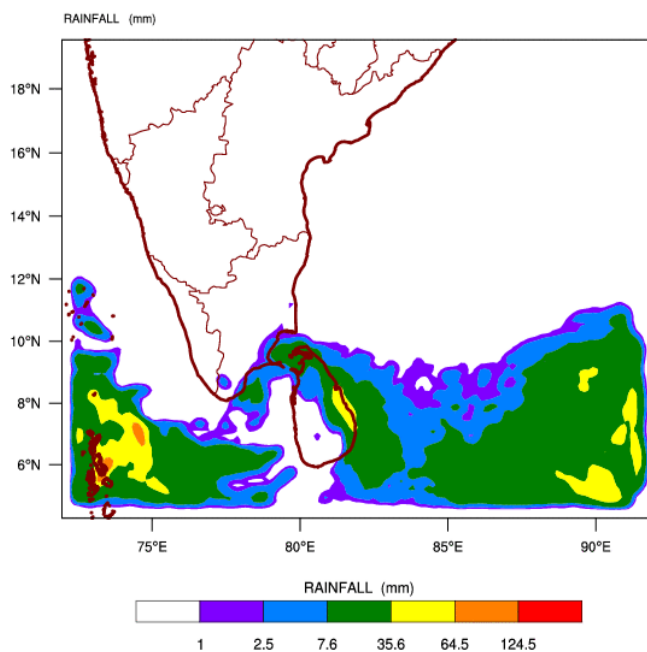
a) NCEP GFS Ensemble 1-7 day predictions, NOAA, Climate Prediction Centre, USA.



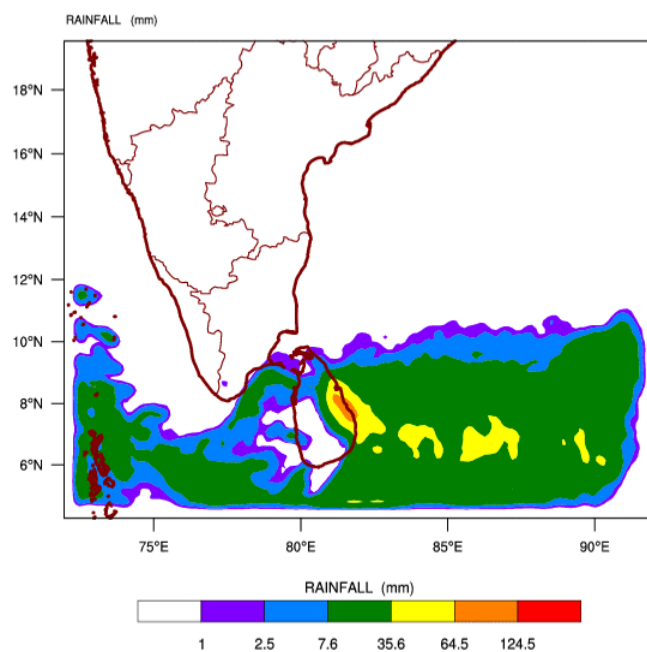
Source – NOAA Climate Prediction Center

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

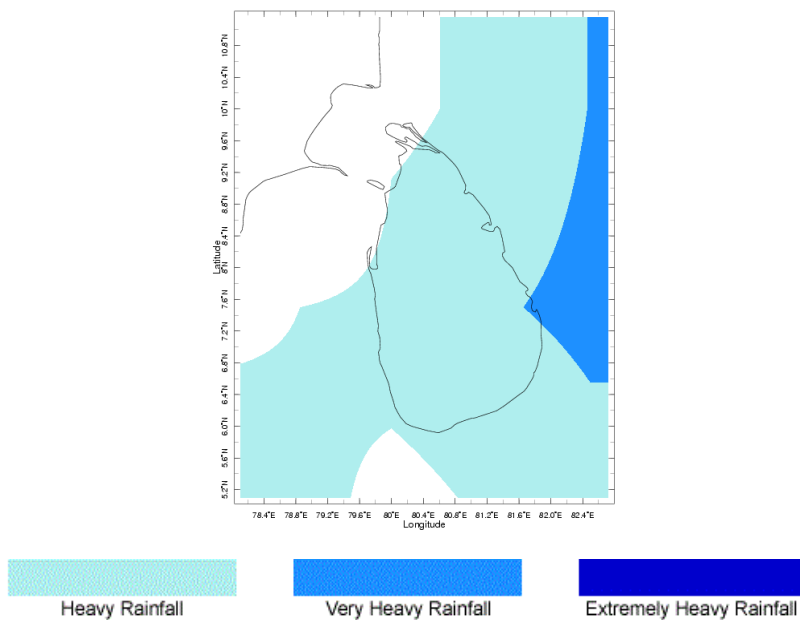
WRF MODEL FORECAST (48 HR.) RAINFALL(mm)\
based on 00 UTC of 19-12-2012 valid for 03 UTC of 21-12-2012



WRF MODEL FORECAST (72 HR.) RAINFALL(mm)\
based on 00 UTC of 19-12-2012 valid for 03 UTC of 22-12-2012



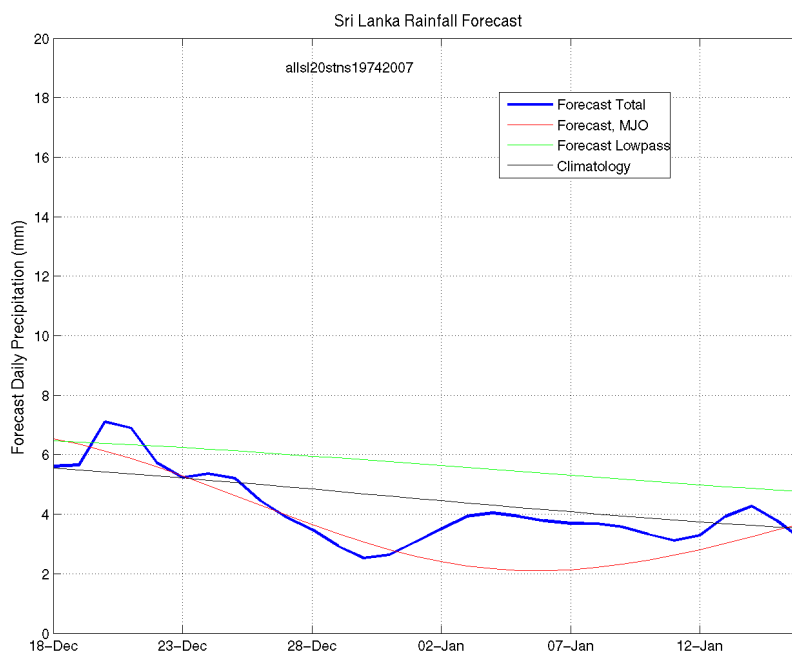
c) Weekly Precipitation Forecast for 18th-23rd December 2012 (Precipitation Forecast in Context Map Tool, IRI)



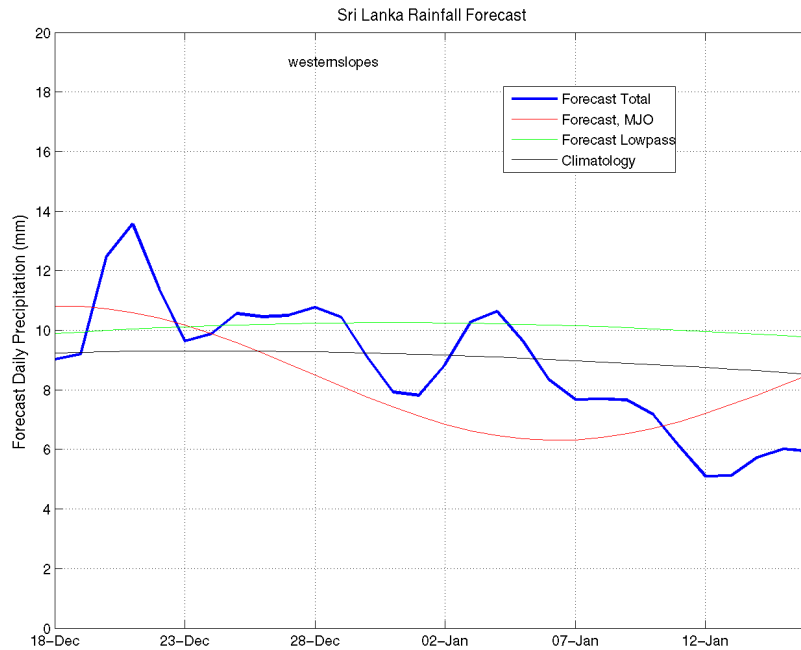
d) 1 month experimental predictions by Paul Roundy and L. Zubair

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

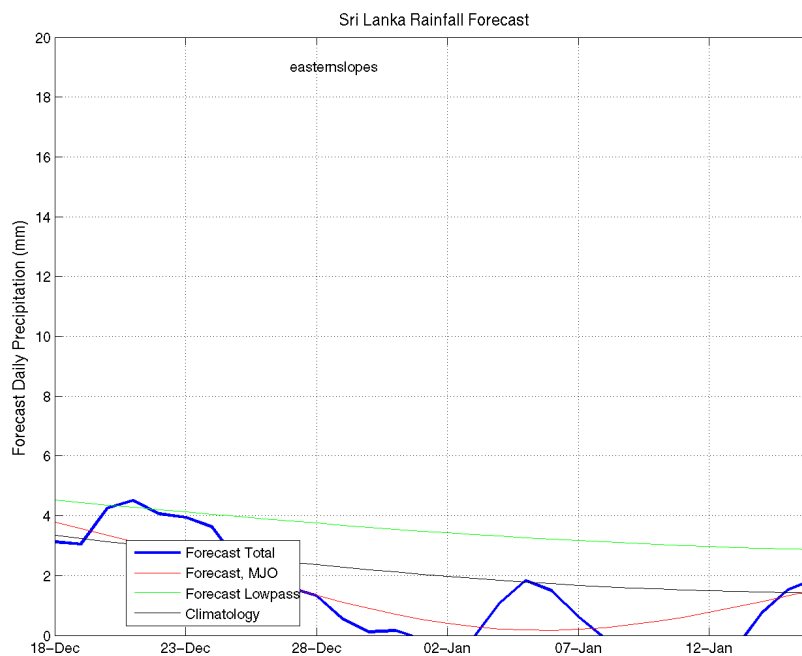
All Sri Lanka (Rainfall Scale from 0-20mm/day)



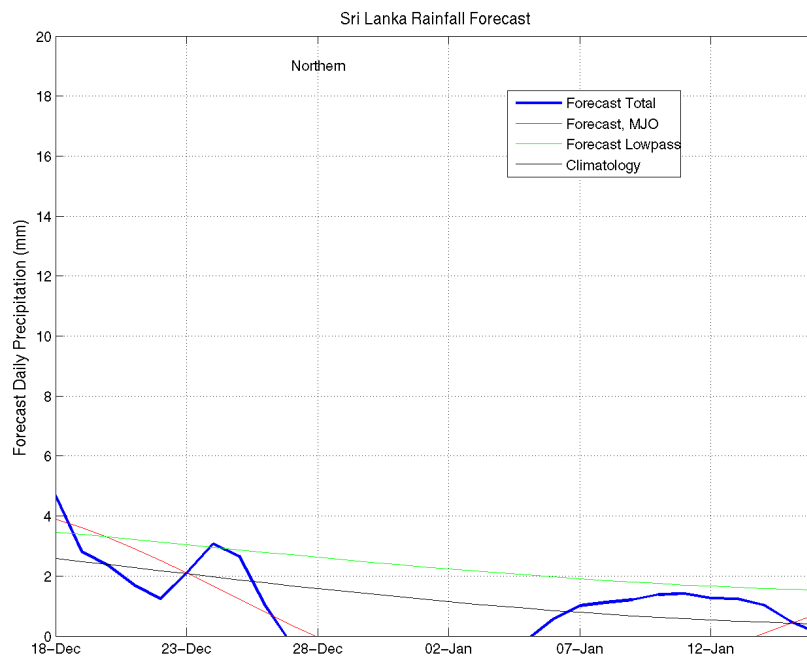
Western Slopes (Rainfall Scale from 0-20 mm/day)



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

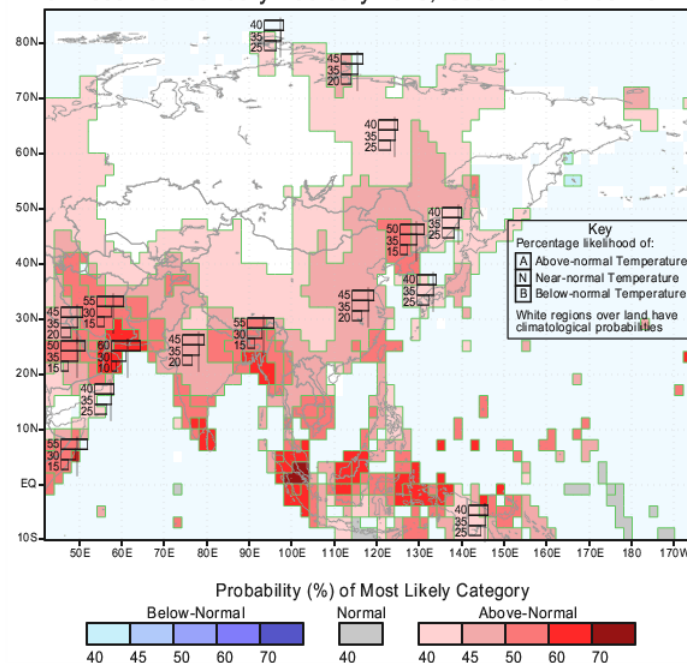


Northern Region (Rainfall Scale- from 0-20 mm/day)



e) Seasonal Rainfall and Temperature Predictions from IRI

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



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

