

Experimental Climate Monitoring and Prediction

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Lareef Zubair and Michael Bell (FECT and IRI¹)

18 July 2013

FECT BLOG

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

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

FECT WEBSITES

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

June 5, 2013 PACIFIC SEAS STATE

During May through June observed ENSO conditions remained neutral.

Most of the ENSO prediction models indicate a continuation of neutral ENSO into northern autumn. However few models, mainly but not exclusively statistical models, call for cooling towards borderline or weak La-Nina conditions during the coming northern summer season into the latter part of the 2013.

(Text Courtesy IRI)

INDIAN OCEAN STATE

The sea surface temperature around Sri Lanka was anomalously cold during 7th-13th July 2013.

MJO STATE

MJO is entering phase 4 and is likely to enter phase 5 both of which not influences Sri Lanka rainfall.

Highlights

Monitoring and Predictions:

Rainfall was quite heavy in June in the Southern half of Sri Lanka, and July is predicted to be lower although with wetter Southwestern regions in the next week. Compared to the rest of the island, the coastal belts of Gampaha to Galle is likely to receive heavier rainfall on coming two days (19th and 20th of July). Ongoing rainfall shall decrease gradually till 21st-23rd July & increase thereafter till 26th. However, relatively less rainfall event around 20th (trough) shall be expected for western coasts.

Summary

Monitoring

Weekly Monitoring: Rainfall ranged between 5-40 mm during 9th-15th July 2013. Maximum rainfall observed for small region in Ratnapura district on 10th July. However, entire country experienced lower rainfall throughout the week compared to month of June 2013.

Monthly Monitoring: Southern half of the Sri Lanka received an above average rainfall during the month of June. The entire country received less than 15 mm of daily rainfall, with Ratnapura district receiving the highest rainfall during the month (14mm/day).

Predictions

7-day prediction: Southwestern and central hill regions shall receive 5-45 mm of rainfall and during 17th-23rd July 2013.

IMD WRF Model Forecast & IRI forecast: For 19th of July, IMD WRF model predicts less than 65 mm of rainfall for coastal regions of Galle district and it shall spread towards North-South directions of coasts & central hills in a reducing manner. For the 20th of July, coastal regions of Gampaha to Galle districts shall receive less than 35 mm of rainfall and it shall spread as previous day in a reducing manner. NOAA model predicts more rainfall for the Colombo to Galle districts during 15th-20th July compared to rest of the regions of Sri Lanka.

30 Days Prediction: Overall- Ongoing rainfall shall decrease gradually till 21st July & rainfall is likely to increase gradually thereafter. Significant rainfall events are not expected during next week period (19th-25th July). **Western Slopes** – The rainfall pattern persisting in the entire country shall be observed in this region, but rate of increase shall be higher than the entire country. **Western Coast** – The rainfall pattern persisting in the entire country shall be observed in this region. However, relatively less rainfall event is likely to be observe around 20th July. **Eastern Slopes**– The rainfall pattern persisting in the entire country shall be observed in this region. **Eastern Coast** – The rainfall pattern persisting in the entire country shall be observed in this region. But predicted average rainfall is higher compared to month of June. **Northern region-** The rainfall pattern persisting in the entire country shall be observed in this region. **Southern Region-** The rainfall pattern persisting in the entire country shall be observed in this region, but rate of decreasing shall vary with time. Rainfall is not predicted for 23rd-25th July.

Seasonal Prediction: As per IRI Multi Model Probability Forecast issued on June 2013; for July 2013 to September 2013, 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

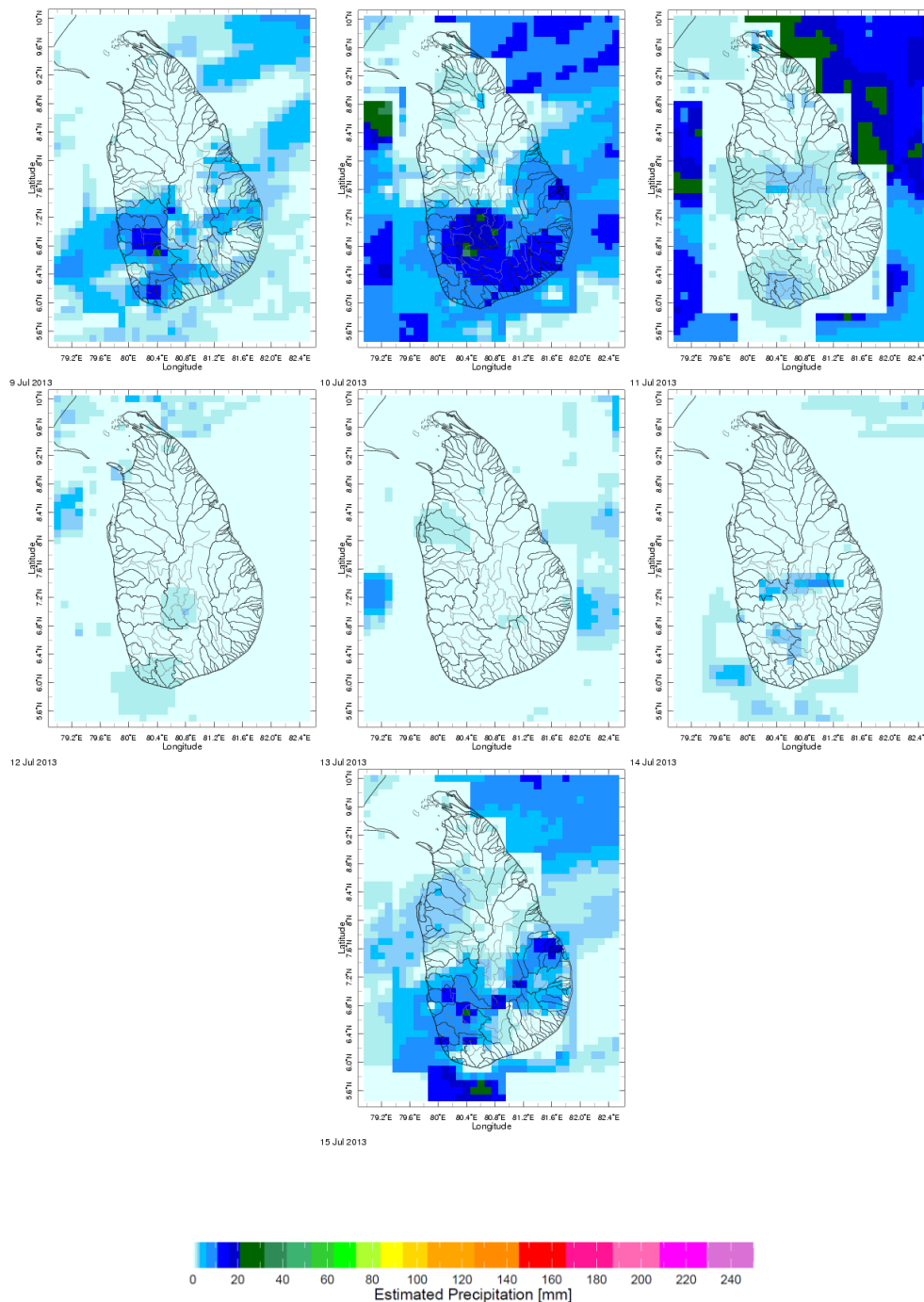
- NCEP GFS Ensemble 1-7 day predictions
- WRF model forecast Regional Meteorological Center, Chennai, Indian Meteorological Department)
- Weekly precipitation forecast (IRI)
- 1 month experimental predictions by Paul Roundy and L. Zubair
- Seasonal Predictions from IRI

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

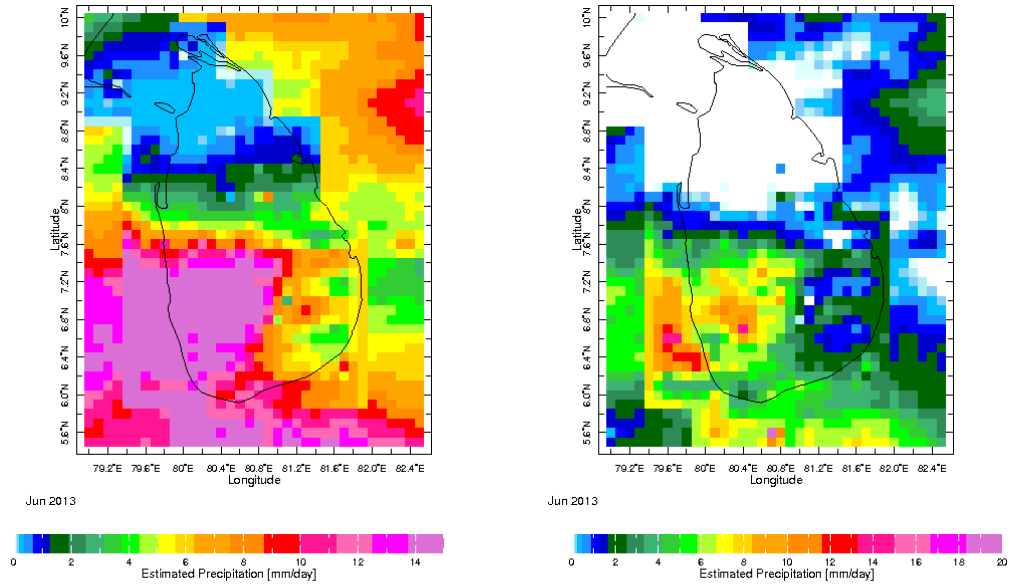
² These interpretations of hydro-meteorological conditions for the Mahaweli basins are provided for the use of the WMS/MASL.

1. Monitoring

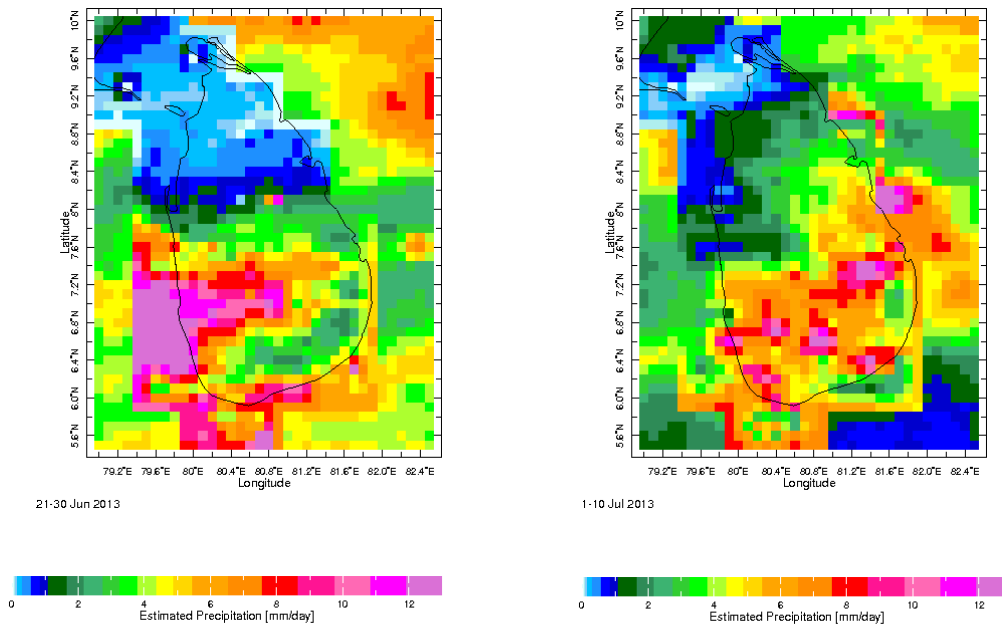
a) Daily Satellite Derived Rainfall Estimate Maps: 9th-15th July 2013 (Left-Right, Top-Bottom)



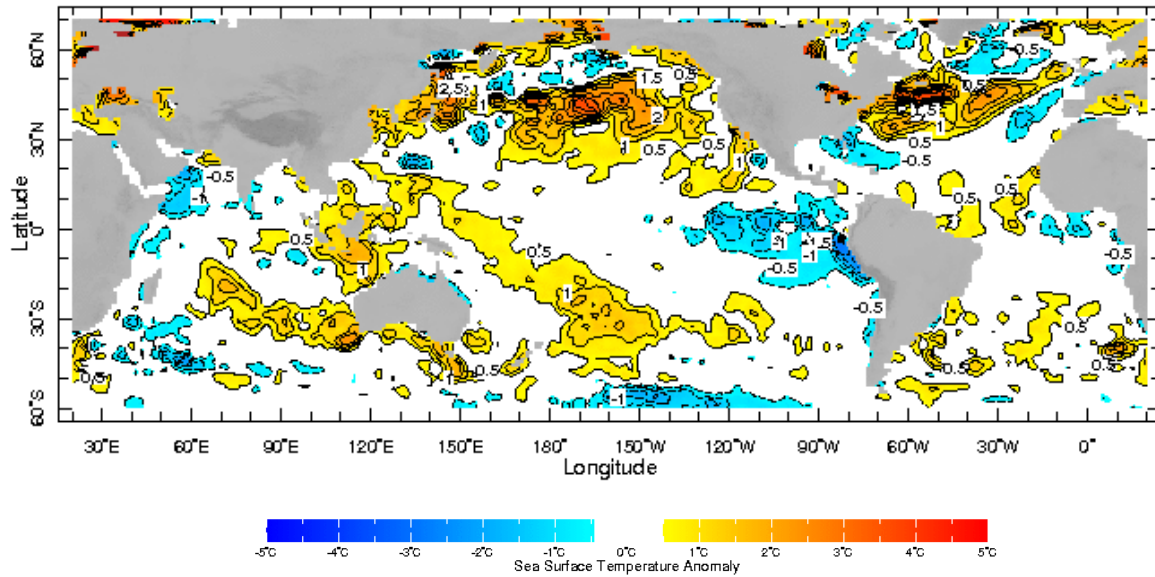
b) Monthly Satellite Derived Rainfall Estimates for June 2013 (Total – Left and Anomaly -Right)



c) Dekadal (10 Day) Satellite Derived Rainfall Estimates (21-30 June & 1-10 July, 2013)



b) Weekly Average SST Anomalies

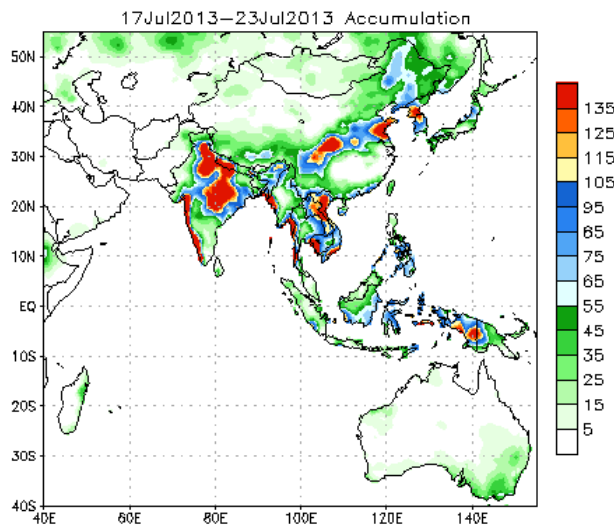


Weekly Average SST Anomalies ($^{\circ}\text{C}$), 7th-13th July, 2013

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

2. Predictions

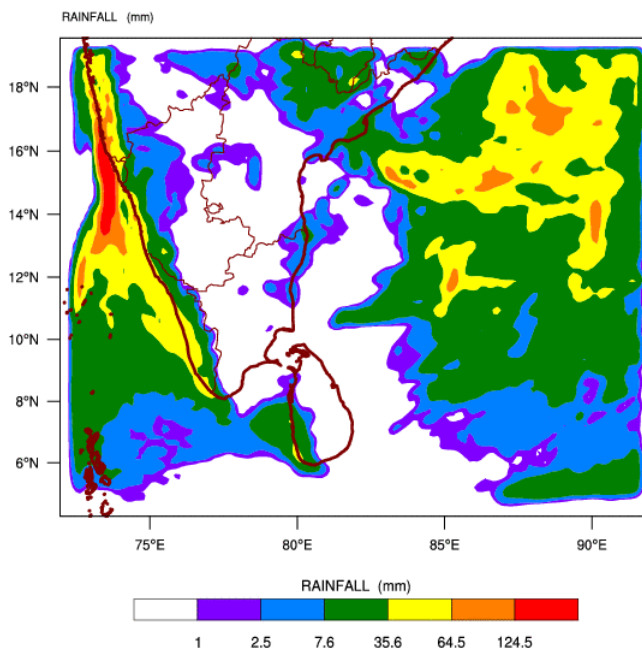
a) NCEP GFS Ensemble 1-7 day predictions, NOAA, Climate Prediction Centre, USA.



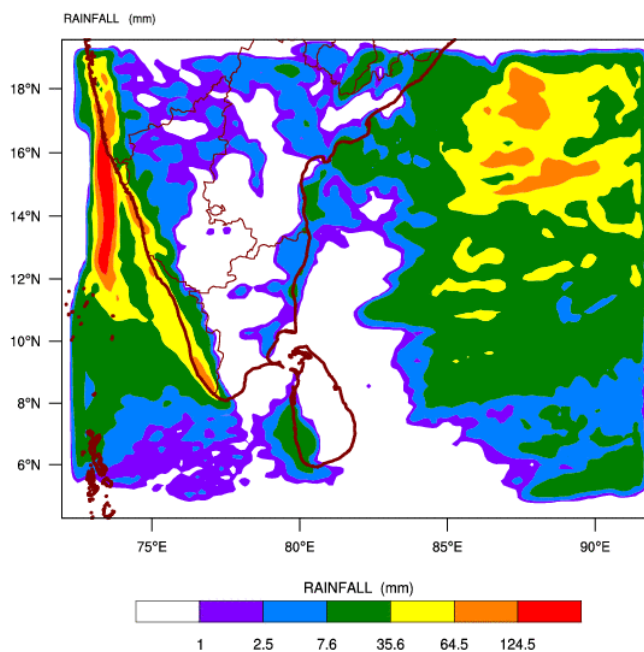
Bias correction based on last 30-day forecast error

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

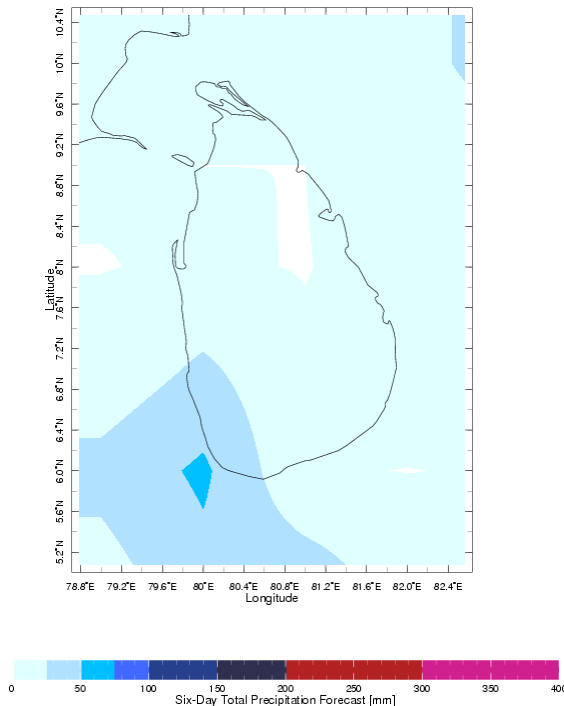
WRF MODEL FORECAST (48 HR.) RAINFALL(mm)
based on 00 UTC of 17-07-2013 valid for 03 UTC of 19-07-2013



WRF MODEL FORECAST (72 HR.) RAINFALL(mm)
based on 00 UTC of 17-07-2013 valid for 03 UTC of 20-07-2013



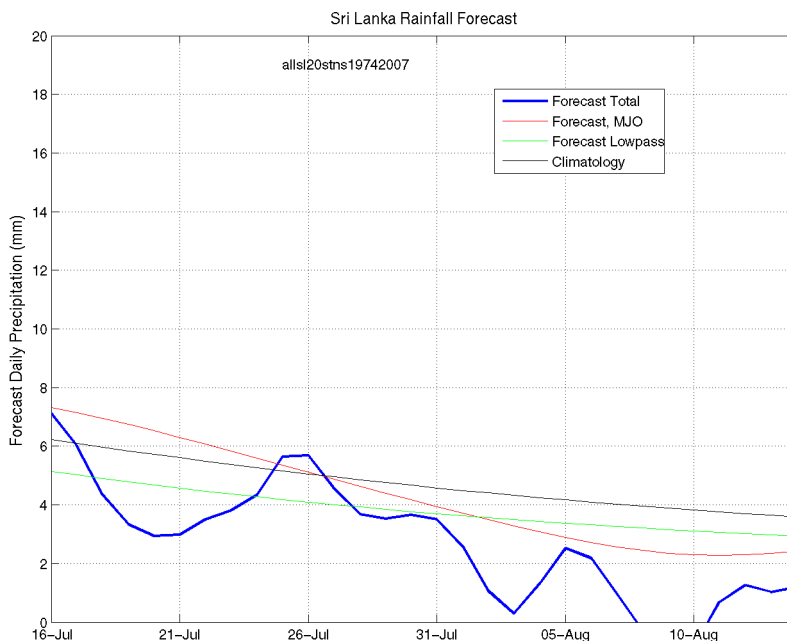
c) Weekly Precipitation Forecast for 15th-20th July 2013 (Precipitation Forecast in Context Map Tool, IRI)



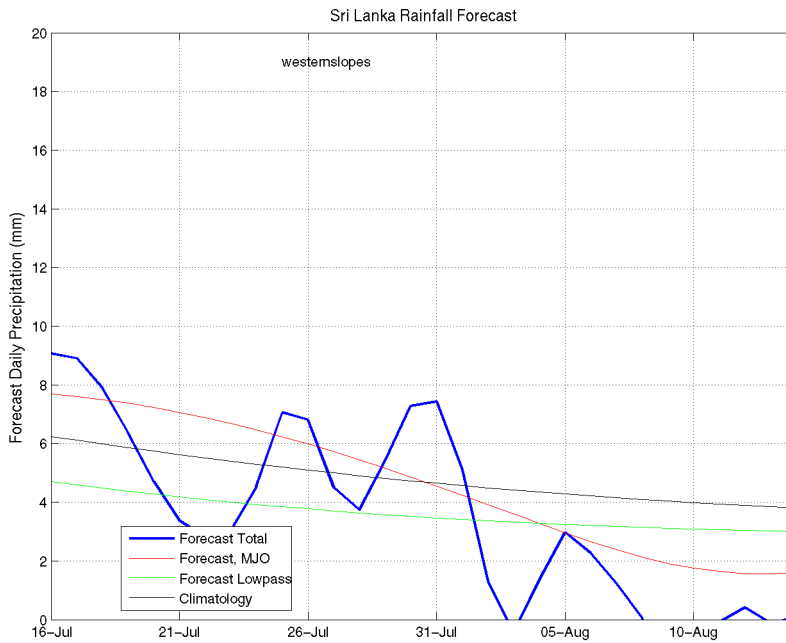
d) 1 month experimental predictions by Paul Roundy and L. Zubair

Predictions based on observed cloud cover and atmospheric waves. Issued 18th July, 2013

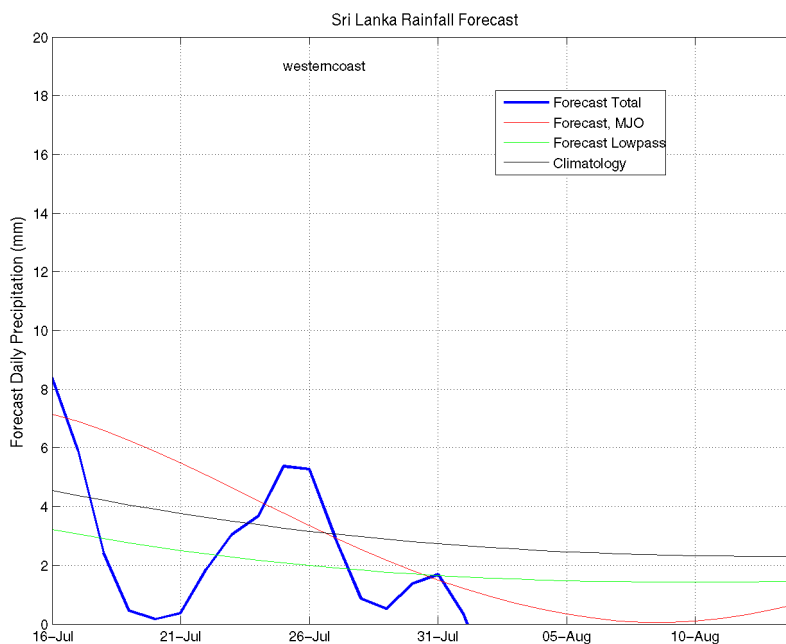
All Sri Lanka (Rainfall Scale from 0-20mm/day)



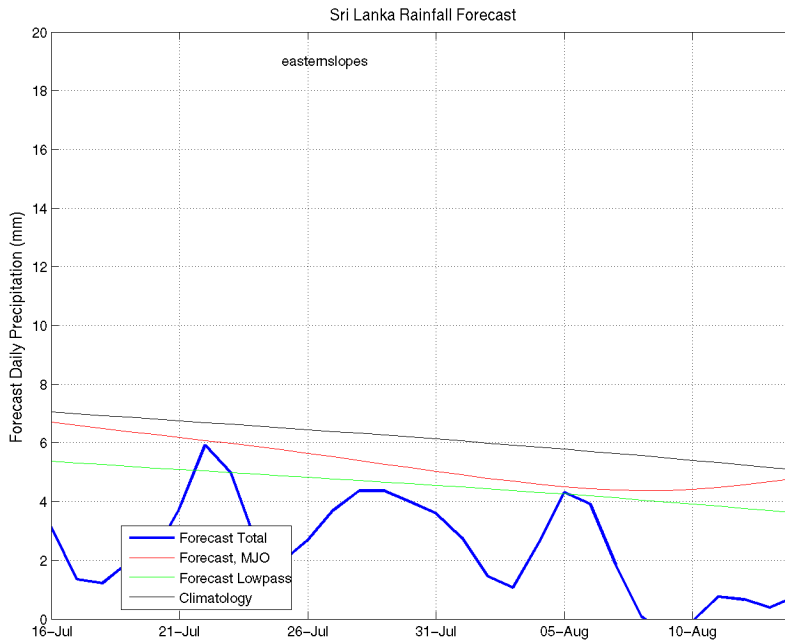
Western Slopes (Rainfall Scale from 0-20 mm/day)



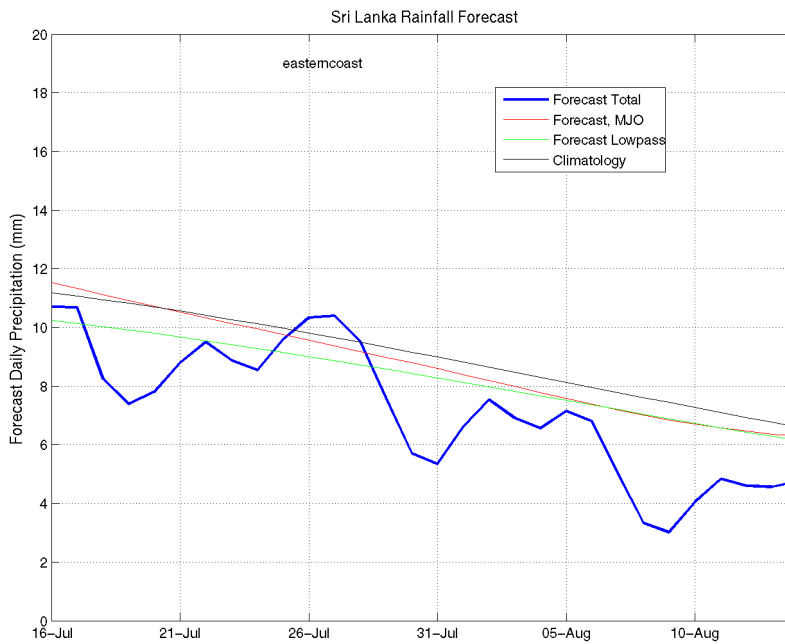
Western Coast (Rainfall Scale from 0-20 mm/day)



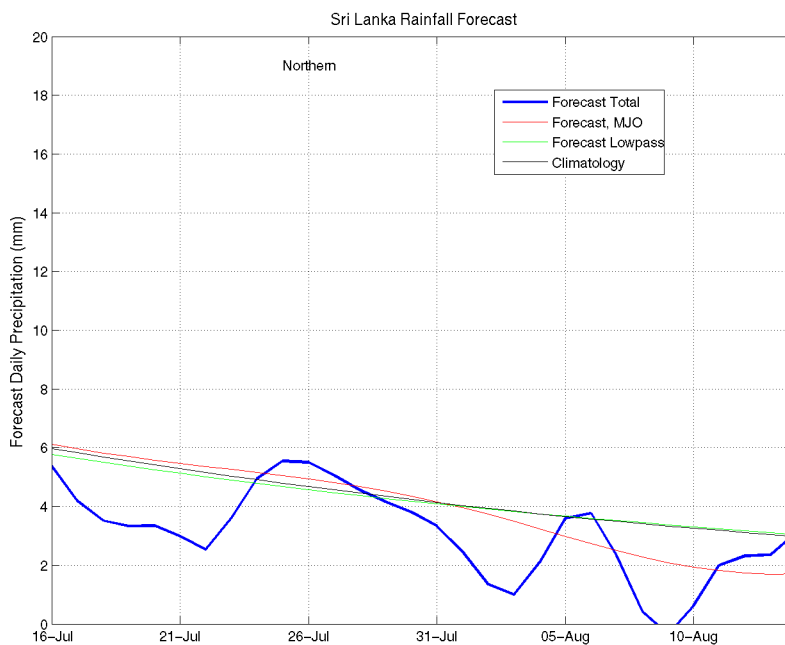
Eastern Slopes (Rainfall Scale- from 0-20 mm/day)



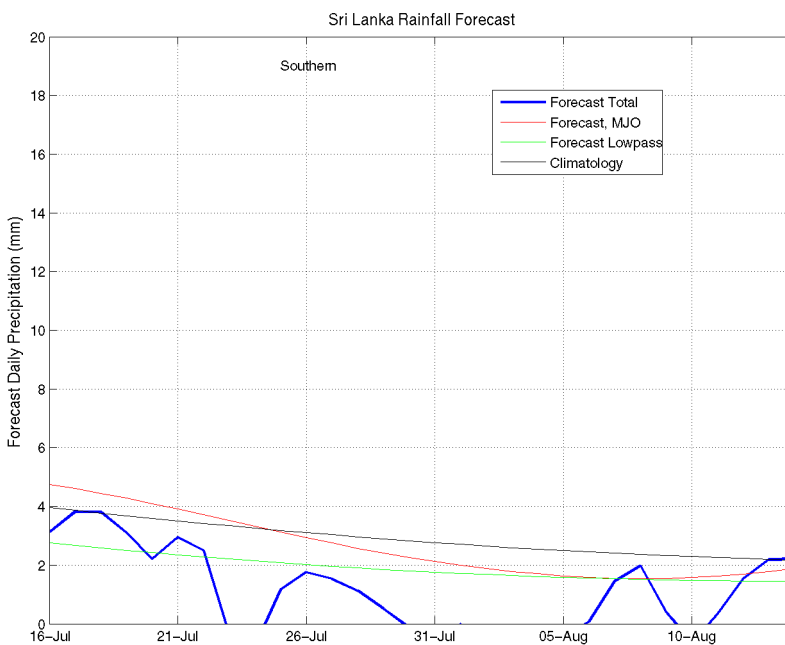
Eastern Coast (Rainfall Scale- from 0-20 mm/day)



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

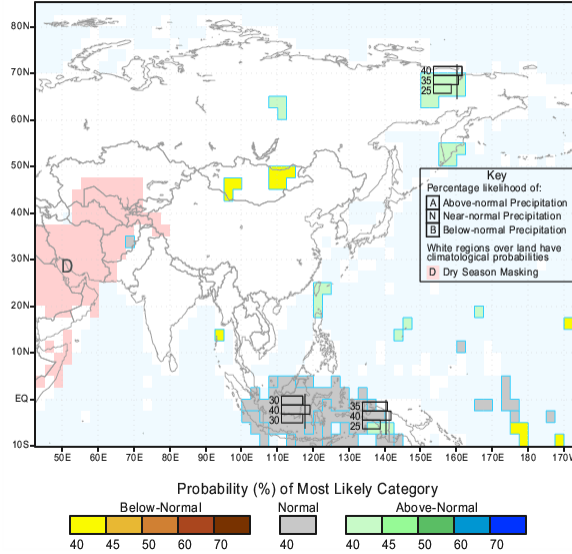


Southern Region (Rainfall Scale- from 0-20 mm/day)



e) Seasonal Rainfall and Temperature Predictions from IRI

IRI Multi-Model Probability Forecast for Precipitation
for July-August-September 2013, Issued June 2013



IRI Multi-Model Probability Forecast for Temperature
for July-August-September 2013, Issued June 2013

