

Climate over Sri Lanka during 2011

Lareef Zubair, Madhura Weersekera, Sumudu Adhikari, Zeenas Yahiya, and Michael Bell

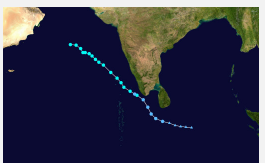
February 2012

TC5/ARB-04

Tropical Storm ARB5 also called Tropical Cyclone 5 devastated Southern Sri Lanka at the end of November. Approximately 50 were dead or missing and 9000 were affected.

Further details are available [here](#)

We are reviewing the global and climatic



Summary

Overall, Sri Lanka's total annual rainfall for 2011 was near-normal – however, there were large seasonal and regional variations with sustained regional deficits during March, February, June, July, August and September. Five episodes of intense rainfall peaking on January 6th, January 29th, February 4th, October 28th, November 24th and December 25-30th compensated for this drop. The heavy rainfall over the Eastern Coastal region peaking on January 6th and the impacts of a tropical depression that led to heavy rainfall around November 24th over the Southern Coast led to loss of life and damage to fisheries and other coastal infrastructure and brought sustained attention to meteorological services.

During 2011, La Nina conditions prevailed from January to April and from September to December. Usually rainfall in Sri Lanka is augmented modestly during La Nina episodes from January to April, there is a slight increase during June to September and there is a decline from October to December. During 2011, there were significant departures from this pattern of anomalies in part due to an unusual pattern of La Nina influences over the Indian Ocean region and due to heavy rainfall events related to storms and other weather events during January, February, October, November and December.

As is often the case, the La Nina was accompanied by a negative dipole mode (Zubair et al., 2003). The dipole mode index was strongly negative until April, subsided until September and became strongly negative until November. The influence of the negative dipole mode leads usually to a decrease in September to December rainfall. Thus the usual influence of the IOD on the Sri Lanka rainfall too would have complemented that of the La Nina event after September 2011.

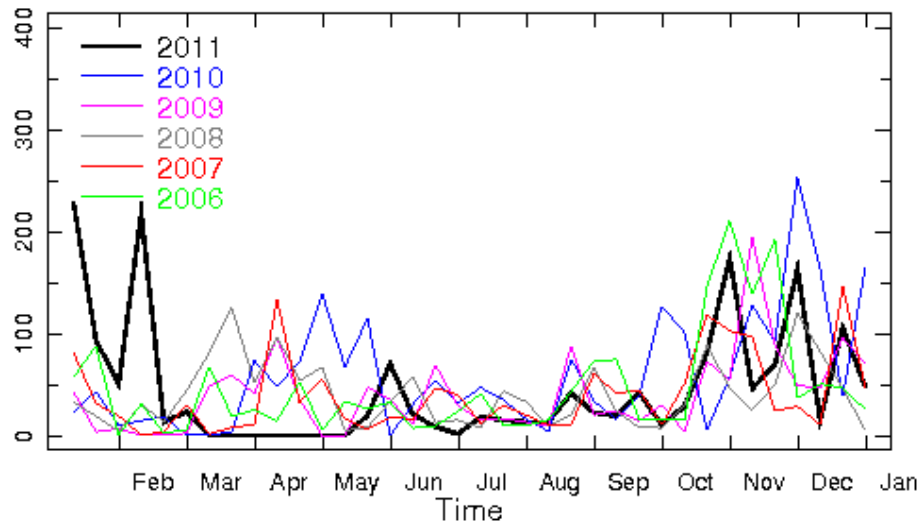
During the October-December season, there was near-normal rainfall in aggregate over Southern Peninsular India. The rainfall over the Sri Lanka, Southern-most Indian states of Tamil Nadu and Kerala and Northern Maldives were slightly enhanced.. There were two depressions that passed close to Sri Lanka in November and December. A tropical depression (ARB 04) initiated to the South-East of Sri Lanka and made its way towards the Northern Arabian sea during November 22-December 5th. Although, this depression was as close as 100 km to Sri Lanka around the 25th, it led to extremely high rainfall and winds that led to more than 30 deaths and much damage to fisheries and coastal infrastructure in Sri Lanka. Another depression formed around the 24th of December about a 1000 km to the East of Sri Lanka and made its way North-East in the Bay of Bengal. This depression intensified to a tropical storm before making land in northern Tamil Nadu on December 30th before dissipating as it reached Kerala. There was intense rainfall during this event particularly towards Northern Tamil Nadu and in the North of Sri Lanka.

Inside this Issue

1. Climate Summary in 2010
2. Global Climate Highlights in 2011 from NOAA
3. Climate Indices

1. Climate Summary in 2011

a) Satellite Derived Rainfall Estimates



Data from NOAA

Figure 1: The average rainfall every dekad (approximately 10-days) over Sri Lanka during 2011 (black line) is compared with the average rainfall during 2010, 2009, 2008, 2007 and 2006. The rainfall over Sri Lanka is estimated from satellite data and ground based observations. The satellite estimates underestimate rainfall by 10-20% but this affect is uniform across the island and across seasons.

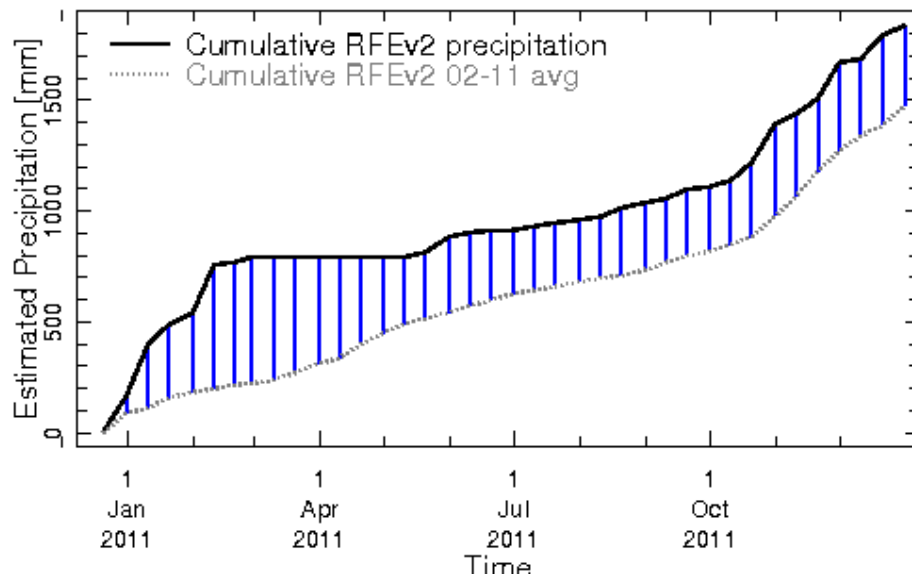


Figure 2: The cumulative rainfall over Sri Lanka starting in Jan 2011 until December 2011 in comparison with average of the previous 6 years. This graph shows that the total rainfall was near the 6 year average. RFE is an area averaged Rain Fall Estimate from satellite and ground based sources.

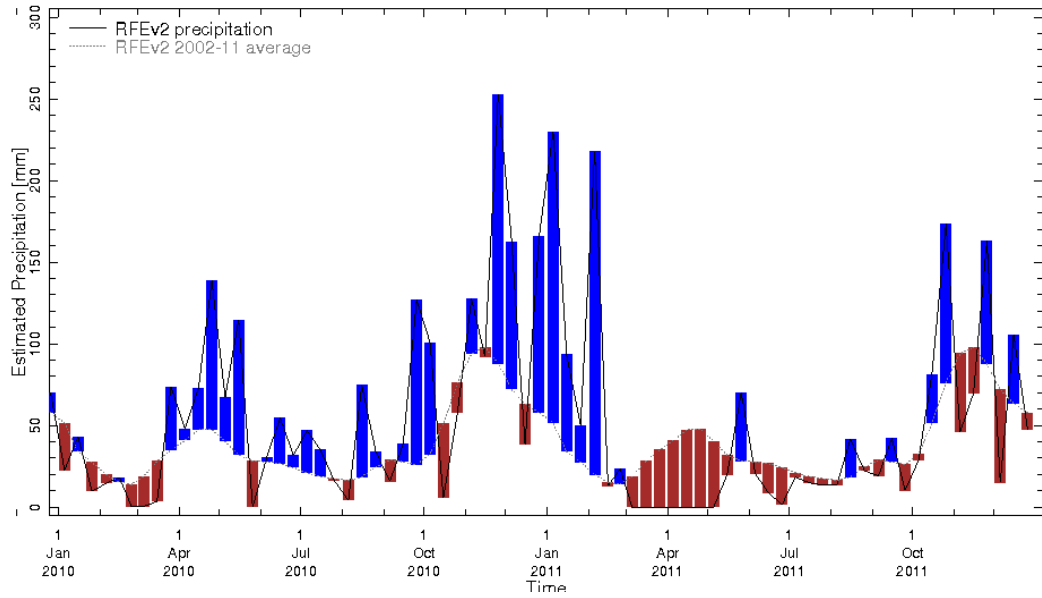


Figure 3: Comparison of estimated Precipitation during year 2010 and 2011

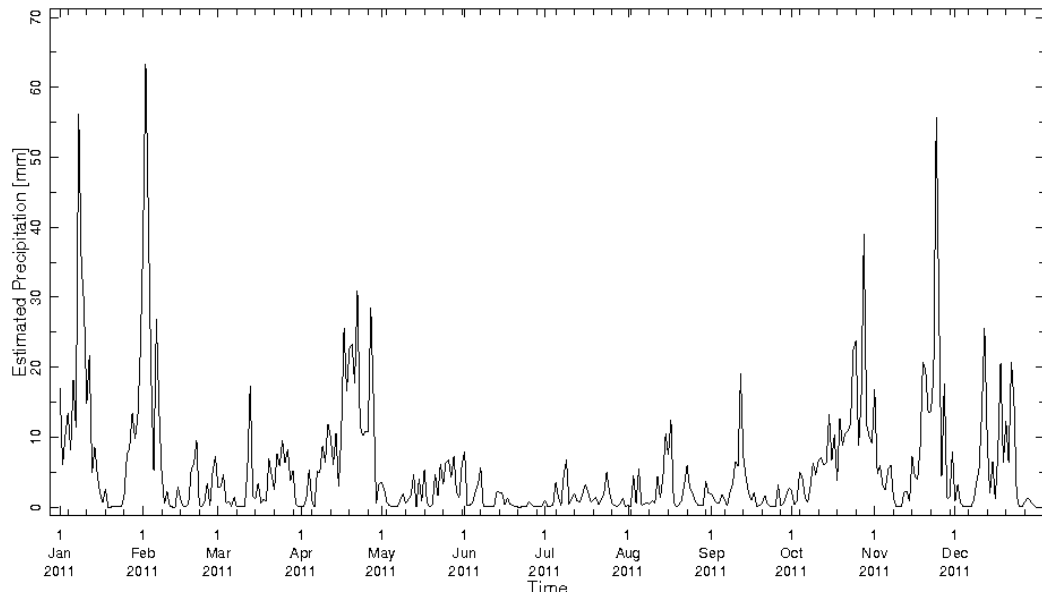
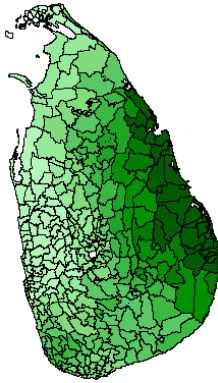
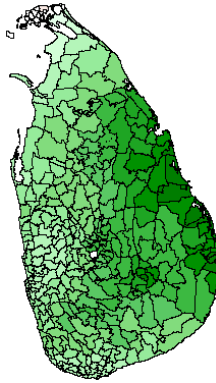


Figure 4: Monthly Estimated precipitation in 2011

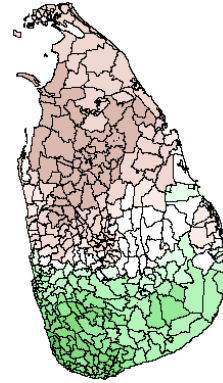
January



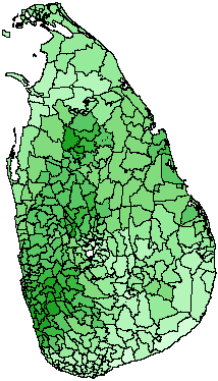
February



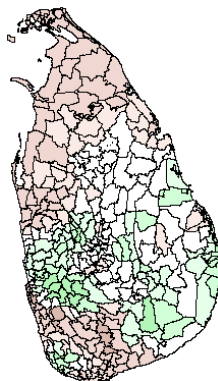
March



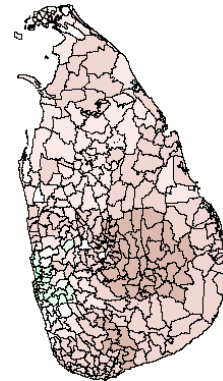
April



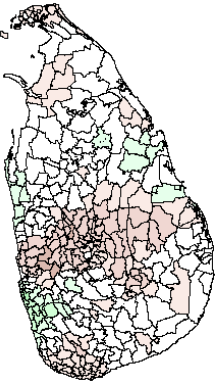
May



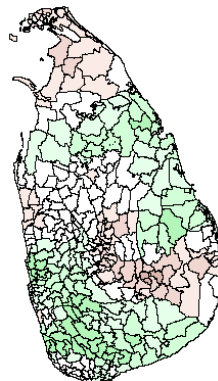
June



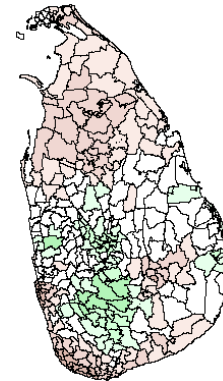
July



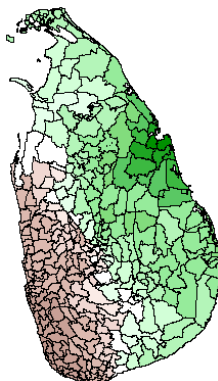
August



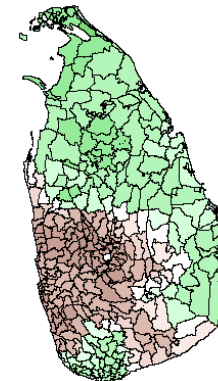
September



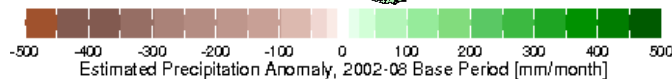
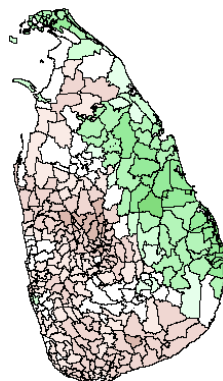
October



November



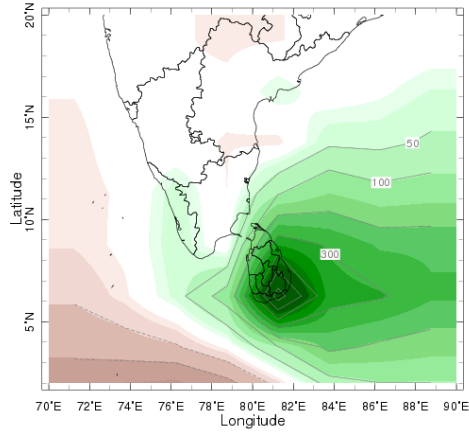
December



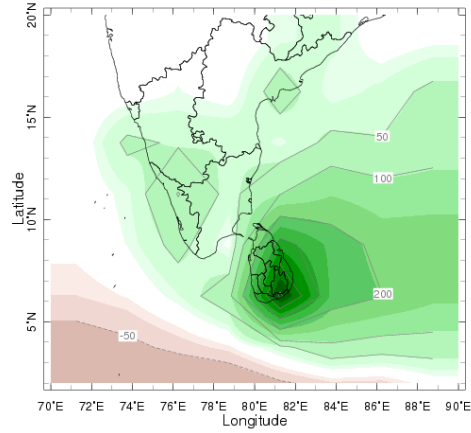
Estimated Precipitation Anomaly, 2002-08 Base Period [mm/month]

Figure 5: Monthly Anomalies of Rainfall in mm/month during 2011 from January to December from average rainfall during the 2002-2008 base period.

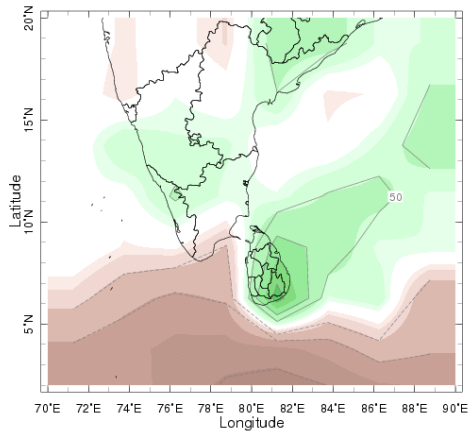
c) Quarterly Rainfall Anomaly in 2011



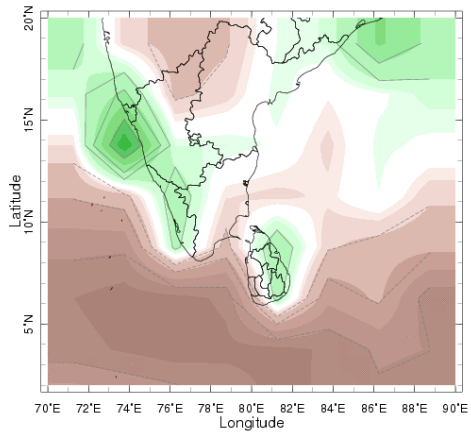
Jan-Mar 2011



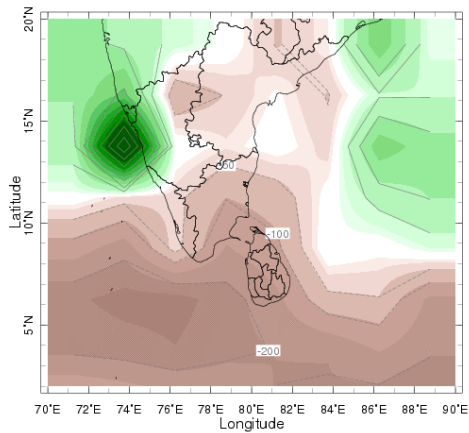
Feb-Apr 2011



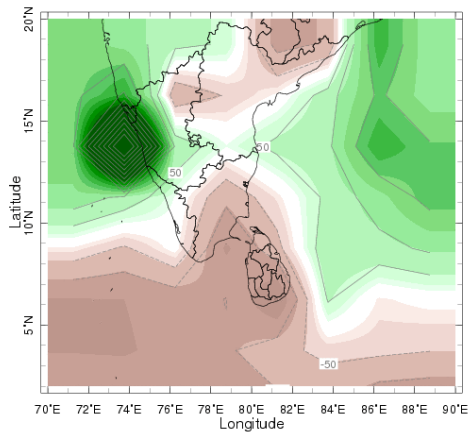
Mar-May 2011



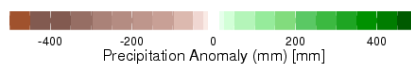
Apr-Jun 2011



May-Jul 2011



Jun-Aug 2011



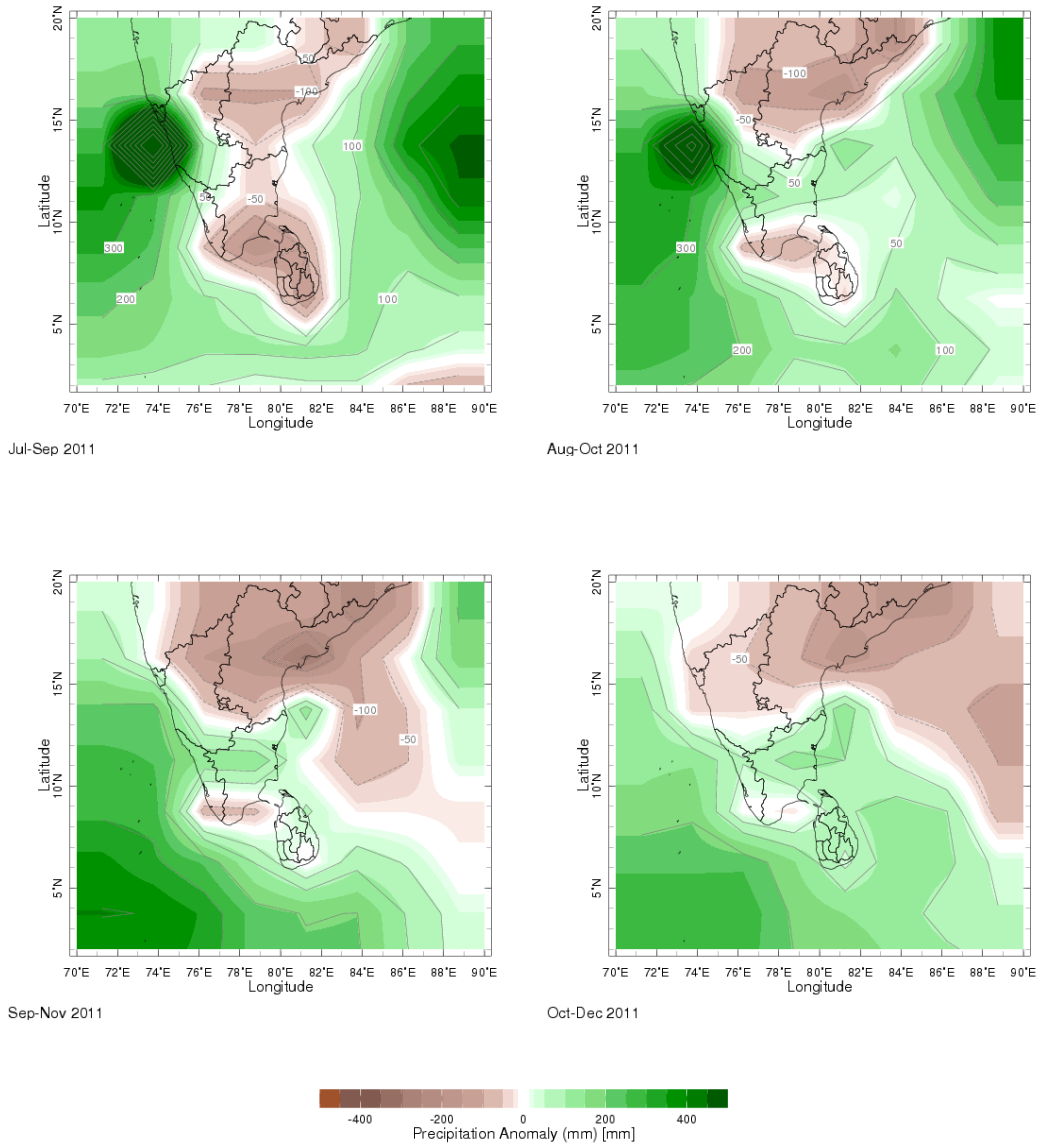


Figure 6: Seasonal Precipitation Anomaly in 2011 over Southern Peninsular India, Maldives and Sri Lanka. Data obtained is from NOAA CPC.