

## Abstract

This dissertation begins with an introduction to the southwest monsoon and its apparent synoptic scale features and changes. Then, the mechanism that Sri Lanka is receiving southwest monsoon rain and its effects on the Sri Lankan economy and power generation sector are discussed.

Over the years the southwest monsoon rainfall in the wet zone of Sri Lanka has dropped and it is observed in the comparison of long term mean value with decadal means. Spatial change in occurrence of southwest monsoon in Sri Lanka has taken place. The rainfall maximums, which are supposed to have been in the central hills, have reduced. Southwestern (coastal) and southern plains have begun to show increased rainfall figures in the southwest monsoon confirming the spatial change.

The Extremes of wet zonal southwest monsoon rainfall are strongly related to the global phenomenon like ENSO (El Nino Southern Oscillation) and increased SSTs (Sea Surface Temperatures). In particular correlation between ENSO and wet zonal southwest monsoon rainfall in the recent ENSO episodes are discussed. 64% of extreme southwest monsoon rainfall in Sri Lanka is ENSO related.

The results of the Fast Fourier Transformation (FFT) analysis show common periodicities of occurrences of rainfall in different stations in the wet zone and same periodicities are repeated when the analysis carried out for the Entire wet zone. 3.5 – 4.5 years and 12 – 12.6 years are the common periodicities shown by southwest monsoon rainfall.