

THE ASSESSMENT OF DROUGHT IN SRI LANKA (CEYLON)

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INTRODUCTION

In the world context the importance of drought studies has been realized rapidly. The further researches on drought identification and analysis in both Agro-climatology and Dynamical climatology, have taken place, specially in 1960's. Studies have been progressing in areas most affected by drought i.e. Southwest and Midwest of United States, Australia, India, U.S.S.R., Brazil and Sahel zone. Generally Thornthwaites (1948) and Palmers (1965) water balance approaches have been more important in the studies of drought in U.S.A. and India. Drought analysis in terms of statistical assessment of rainfall have taken place in Australia and U.S.A. (Gibbs and Maher 1967; Thomas H.E. 1962 respectively). In terms of the Dynamical approach to drought Namias (1967, 1972), Lamb (1972, 1974), Winstanley (1973) have published many theories on zonal and global circulation systems. Charney et al (1974, 1975) have reported a biogeophysical feed back mechanism in terms of albedo, plants and rainfall in relation to Sahel zone. Thus, the understanding of the mechanism of drought is in progress.

Even so, the drought studies in the Sahel zone have only attracted climatologist or hydrologist. It has suffered its worst drought for more than six years. As in the Sahel zone, the occurrence of drought in Sri Lanka has not been studied. It does not mean in anyway that occurrences of drought, its magnitude and severity are the same as the Sahel zone but as there, the drought has not been studied in Sri Lanka. Sri Lanka experienced droughts and floods several times. Sometimes these occur in the Southwest and Central massif. regions and sometimes they occur in the North, Central and East regions of the country. Occassionally these events cover all the regions.

The studies which dealt with drought in Ceylon are very few. The Southwest monsoon drought of 1929 over Sri Lanka, was discussed by Jameson (1931). He also assessed the liability to drought at Colombo (1932). Afterwards, until 1956 there were no studies of drought. In 1956 B. H. Farmer (1956) analyzed the incidents of rainless months. More recently by employing Thornthwaites water balance technique, water needs and irrigation facilities in the dry zone of Sri Lanka have been assessed (Srinanda 1970).

Therefore, it was hoped that a drought study should be carried out and the result was this assessment. This is not concerned with Agro-climatology or Dynamical climatology, but concerns only a purely rainfall assessment. For this, the monthly rainfall data for 30 stations throughout the Sri Lanka for the period of 23 years (1948-1970) were utilized. This data was missing in some months (Appendix 1.1), but it has not greatly affected this study. This study was carried out in terms of monthly and yearly basis regardless of seasonal trends and main approach is bringing out of the frequency of droughts.

Thus as in all drought studies, the definition and methodology, which have been employed in drought studies so far, and the definition and method employed in this study are described in Chapter 2. An attempt has been made to reveal the frequency of drought throughout the period on a monthly basis. The magnitude and its categories are also considered. This study has also been extended to define the area of drought on both a frequency basis and an annual basis. These are described in Chapter 3. The past experience might be used to predict the future range in weather; so this is considered in Chapter 4. Sometimes the observed and expected events, in our case

drought, would show a close agreement but sometimes it does not. This would be tested in Chapter 5.

All necessary frequency of droughts, drought areas and probability of droughts, are shown in figures. The appendix contains most of the tables which are very important.