

Abstract

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Occurrences of Drought and Flood Hazards and their Impacts on the Economy of Northern Region of Sri Lanka

In the developmental context of Sri Lanka, there has been a greater focus on the issues pertaining to natural and manmade disasters. Occurrences of drought and flood have had significant impact on many sectors in the region. The prime objectives of this research are to analyze the spatial and temporal patterns of climatic features, to study occurrences of flood and drought hazards and their economic impacts in the Northern Region. Monthly, seasonal and annual climatic data for the stations Akkarayankulam, Ambalapperumalkulam, Iranaimadu, Kanukkerny, Karukkaikulam, Murunkan, Muththaiyankaddu, Nainathivu, Pallavarayankaddu, Pavatkulam, Thirunelveli, Vavunikkulam, and Vavuniya, were collected from 1972 to 2012. The primary sources of data for the study include interviews and observations. Secondary sources of information were the elicitation of relevant information from relevant departments pertinent to economic affairs in the North.

The percentage of the occurrences of flood and drought during the period from 1972 to 2012 in the selected 13 stations were calculated based on the annual SPI (Standardized Precipitation Index) and seasonal SPI. Further the correlation technique was used to find out the relationship between SPI of the flood and drought occurrences and the crop damages. According to the SPI analysis, during the period from 1972 to 2012, the years 1979, 1984, 1993, 2004, 2008 and 2011 were identified as flood years and 1974, 1987, 1988, 1989, 1992 and 2009 as drought years. Further seasonal flood and drought occurrences were also identified. As such during the First Inter monsoon season 4 droughts and 7 flood occurrences were identified. During the Second Inter monsoon season 6 droughts and 6 flood occurrences were identified. During the North east monsoon season 07 droughts and 08 flood occurrences were identified. During the South West Monsoon, 11 droughts occurrences and 6 floods were identified. On Spatial basis, the most flood occurrences were found in Vavunia and the most droughts in Nainathivu. The most droughts were found to exist during the SWM and the most floods during the NEM. As the flood occurrence in the Northern region is concerned, it is higher in its East and lower in its West. Frequencies of the Flood occurrences gradually decrease in the direction from the East to the West.

Compared to drought, flood has caused greater damages in the agriculture sector. The most extent of damage to paddy and cash crops was in Mullaitivu, to subsidiary crops in Vavuniya, to vegetable crops in Jaffna. As the correlation between crop damage and SPI is concerned it is significant to note that the correlation between the SPI of all seasons except the South West Monsoon and the crop damage is strongly positive.