TREND ANALYSIS OF RAINFALL IN THE MAJOR CLIMATIC REGIONS OF SRI LANKA

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Sri Lanka has both rain-fed and irrigated agriculture. Also considerable percentage of electricity is generated through hydropower. Contribution of them, to our economy is very high. Not only that, there are so many good and bad influences of rain, on human life and natural ecosystems. Therefore awareness of rainfall trends and climate change is important. In this study trend analysis was carried out for five stations from different climatic regions. Daily rainfalls (millimeters) for Colombo, Katunayake, Hambantota, Anuradhapura and NuwaraEliya from 1951 to 2013 were used for the analysis. Trend analysis was carried out using Mann Kendall test, Seasonal Kendal test and slope of the trend line was obtained using Sen's estimator of slope. Break point test was used to find abrupt slope changes. Finally association between number of annual wet days, annual rainfall and mean wet rainfall were compared using Pearson's correlation coefficient. Abrupt slope changes and significant trends were observed in rainfall of all the stations.Most of annual, seasonal, monthly and pentad total rainfalls and wet days showed declines. Trends of annual total rainfalls and annual wet days for Katunayake and NuwaraEliya showed significant decline at 0.05 significance level. Trend of annual wet days was not significant for Hambantota. For other stations it was significant. Trends were calculated before and after the break points. For Hambantota, increments were observed in annual total rainfall and mean wet day rainfall. But they were not significant. For all the five stations, wet days and total rainfalls of first inter monsoon, southwest monsoon and northeast monsoon were declining. Some of them showed significant declines at 0.05 significance level. Associations were observed between annual wet days, total rainfall and mean wet day rainfall for the five stations. Number of wet days and mean wet day rainfall for Hambantota was the only negative correlation observed among them. We have clearly observed that amount of rainfall per rainy day has increased in Colombo and Anuradhapura. That will lead to decline of ground water storages, increase in soil erosion, floods and long term dry periods. Since the rainfall patterns are uneven over the island, it is necessary to have a proper water management system. Crop cultivation and harvesting should also be planed accordingly.