

**AN INVESTIGATION OF PRECIPITATION PATTERNS IN
SRI LANKA**

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Summary.

There is increasing scientific evidence that humans are gradually but certainly changing the earth's climate. The earth's climate is affected by factors that cause a change in the redistribution of energy within the atmosphere or between the atmosphere, land and ocean. Greenhouse gas emissions are altering the atmosphere, creating an uncertain future of global warming, altered patterns of precipitation, and sea level rise for the generations to come.

Therefore, the potential threat of global climate change is a very serious problem collectively faced by humanity as a result of its own activities.

When the hydrological cycle is predisposed by global warming, naturally-occurring droughts will set in quicker, plants will wilt sooner and the droughts will likely become more extensive and longer lasting.

The impact of climate change and increase in extreme climate events on water resources will affect human well-being to various degrees, depending on how country-specific water management methods can accommodate such change. Wealthier countries with sophisticated water management systems will be better prepared to deal with the consequences of climate change, whereas poorer nations that are more dependent on seasonal rainfall will be more vulnerable. In general, irrigation may be the first activity to be significantly affected in many countries facing water shortages.

Therefore, a reliable quantification of the potential impacts of climate change on hydrology and water resources is essential for the effective and efficient management of water resources.

Precipitation is the major driving force of the hydrological system. As indicated earlier, a warming trend will intensify the hydrological cycle and significantly affect regional conditions. Changes of precipitation in the amount, intensity, duration and timing during the year will affect river flows and groundwater recharge, but to what degree will depend on the amount of change and the type of catchments. For example, changes in short- duration rainfall characteristics will have a large effect on flood regimes in highly-responsive catchments, but less impact in large, unresponsive catchments, which will be more affected by changes in the rate of occurrence of prolonged wet spells.

The main objective of this research is to investigate & detect any statistically significant trend, periodicity, variability or change in the annual and seasonal precipitation at several meteorological

stations in Sri Lanka. A comparison is also made using synthetically generated data, based on the statistical characteristics of the historical data. Despite its tropical nature, the annual rainfall of Sri Lanka exhibits remarkably large spatial and temporal variability. In order to find out the changes, statistical tests had to be applied to analyze historical precipitation records. The method of moving averages is used in the calculations in order to reduce the amount of variation present in the data. For simulation, six sets of synthetic time series have been generated for each meteorological station using pseudo random numbers.