Analyzing alterations in water availability due to natural climatic variability and climate change is important in developing adaptive responses to current and future changes in regional precipitation patterns. In order to understand these changes, spatial and temporal historic fluctuations in regional rainfall patterns must be analyzed. In this context, precipitation trends were analyzed using a non-parametric statistic Mann-Kendall test for annual, seasonal and monthly rainfall between 1975 and 2006 for 108 precipitation ground stations located in the upper and middle Cauca river basin. The results demonstrate that the significant trend of annual rainfall variation was between -9.3% (-147,3mm) and +6.5% (+128mm) per decade and the average change was -0.7% per decade for 24 stations.

In the seasonal intra-annual analysis of June-July-August, a period of lower intra-annual rainfall, we found the largest statistically significant decrease in seasonal rainfall, with an average of -15% per decade, in 19% (21) of the total stations. The conclusions are that the pattern of seasonal precipitation changed between 1975 and 2006 and before to compare the annual rainfall trends with geographic variables (latitude, longitude and altitude), we found that rainfall had decreased in all cases above 1500 m in altitude and in latitudes lower than 3°52’N within the Andean Mountains. These changes in precipitation will decrease the volume and availability of runoff, which will alter the water availability in the river basin. In order to design adaptation practices in future investigations, is necessary to study daily rainfall changes and its impacts on the inhabitants of the Cauca river basin.

**Abstract**

Analyzing alterations in water availability due to natural climatic variability and climate change is important in developing adaptive responses to current and future changes in regional precipitation patterns. In order to understand these changes, spatial and temporal historic fluctuations in regional rainfall patterns must be analyzed. In this context, precipitation trends were analyzed using a non-parametric statistic Mann-Kendall test for annual, seasonal and monthly rainfall between 1975 and 2006 for 108 precipitation ground stations located in the upper and middle Cauca river basin. The results demonstrate that the significant trend of annual rainfall variation was between -9.3% (-147,3mm) and +6.5% (+128mm) per decade and the average change was -0.7% per decade for 24 stations. In the seasonal intra-annual analysis of June-July-August, a period of lower intra-annual rainfall, we found the largest statistically significant decrease in seasonal rainfall, with an average of -15% per decade, in 19% (21) of the total stations. The conclusions are that the pattern of seasonal precipitation changed between 1975 and 2006 and before to compare the annual rainfall trends with geographic variables (latitude, longitude and altitude), we found that rainfall had decreased in all cases above 1500 m in altitude and in latitudes lower than 3°52’N within the Andean Mountains. These changes in precipitation will decrease the volume and availability of runoff, which will alter the water availability in the river basin. In order to design adaptation practices in future investigations, is necessary to study daily rainfall changes and its impacts on the inhabitants of the Cauca river basin.

**Keywords**

Climate variability analysis, upper and middle Cauca river basin, climate seasonality, precipitation trends, Seasonal Mann-Kendall test.