# Trend analysis of hydro-meteorological variables using the mann-kendall trend Test: Application to the niger river and the benue sub-basins in Nigeria

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Abstrak

This paper presents the outcome of the trend analysis of hydro-meteorological variables in the Niger River and the Benue sub-basins in Nigeria. A non-parametric Mann-Kendall trend test was used to analyse the trends exhibited by the variables. The results revealed that precipitation exhibits insignificant positive trends in five locations, while insignificant negative trends were exhibited in the remaining six locations. This implies that the increase or decrease in precipitation would not be noticeable in all the locations, since the changes are statistically insignificant. The evaporation exhibits a significant positive trend in three locations, while in another three locations it exhibits an insignificant positive trend and also exhibits an insignificant negative trend in the remaining five locations. This is an indication that the incremental change in evaporation would be noticeable in three locations, while the increase or decrease would not be noticed in the remaining eight locations. In the case of minimum and maximum temperature, the trends in almost all the locations, except Ibi, are statistically significant positive. However, the runoff and water level in five locations out of six locations exhibit a significant negative trend. The downward trends exhibited by the runoff and water level in the two sub-basins may be due to the effect of climate variability on the hydro-meteorological variables. The reduction of runoff is an indication of the decrease in water resources in the sub-basins and this can result in low reservoir inflow to the Kainji and Jebba hydropower dams located in the basin.