FEASIBILITY OF CLIMATE INFORMATION BASED SEASONAL STREAM FLOW FORECASTING: CASE STUDY OF KAINJI DAM IN NIGERIA

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ABSTRACT
This paper presents application of climate information to the prediction of seasonal reservoir inflow for Kainji hydropower dam in Nigeria. The direct linkage between seasonal stream flows and Sea Surface Temperature (SST) of the preceding season was identified by performing diagnostic analysis. It was observed that the correlation between reservoir inflow and Atlantic Ocean SST is -0.40, and for ENSO index is about -0.60. Negative correlation implies that positive increase in SST anomalies lead to decrease in stream flow. Once the linkages has been established, the predictor variable, (SST anomalies) were selected from the KAPLAN data bank for different regions of significant correlation and the historical reservoir inflow data is loaded inside SANKA data bank located inside International Research Institute (IRI) data library. The correlation and composite analysis were conducted to construct the model for seasonal climate forecasting of the reservoir inflow for Kainji reservoir using climate predictability tool (CPT). The highest correlation of the observed reservoir inflow at Kainji with the predictor variables is -0.50, while the highest correlation between the observed and predicted reservoir inflows was obtained as 0.70. The values of correlation coefficient obtained are low, but indicates a feasible forecasting of stream flow based on climatic indices.