Abstract

This study sought to forecast water flow and sediment flux in the scheme as potential contributions for improved management in the Chókwè Irrigation Scheme (CIS). Fieldwork data was collected during dry (DS) and wet (WS) seasons. Flow measurement was performed at 9 stations using a calibrated flow meter OTT C31. Water flow and sediment flux from 2004 to 2019 were used. Hydrodynamic forecast simulations were performed using Mann-Kendall test and ARIMA model for determination of temporal trends. Findings suggest higher values during DS for water discharge and sediment flux. Mann-Kendall test for sediment discharge trends was not significant at 95% significance level, except for the Offtake in WS. ARIMA test for the sediment discharges, at the Intake, for DS and WS, sediments were well described by the ARIMA model and gave a good result for the sediments. Good fit between the observed and the predicted ARIMA model was found. ARIMA model for sediment discharge at CIS based on AIC has a good fit for AR (p = 1), whereby, at the Intake the ARIMA p-value was 0.822 and 0.932, for WS and DS, respectively. Whilst in the Offtake, the ARIMA p-value was 0.877 and 0.893, respectively. These results can be used to improve the CIS management, both for water flow and sediment flux.