Detecting long-term changes in catchment response, Iringa, Tanzania

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Four rational methods have been developed and applied to two catchments, Mtitu and Little Ruaha-both in Iringa Region, Tanzania-for detecting long-term changes in their hydrological response. These methods are: Double Mass curve analysis, Recession curves analysis, Unit Hydrograph analysis and Time-lag analysis (using moments). Data used in the analysis were monthly inflow volumes and monthly total rainfall for the period from early sixties to late seventies and mean daily discharges and daily rainfall volumes for some selected years in the same span of time. The significance of the study is derived chiefly from the importance of agriculture, water supply-quality. and quantity-and soil conservation Changes occurred in each catchment were identified and the necessary recommendations were stated Mtitu Catchment has undergone changes in its hydrological response starting from the mid seventies while Little Ruaha catchment has not undergone any remark- able changes in its hydrological response. An interesting results also, concluded from this study is that the Double Mass curve analysis can detect the onset of serious data errors as well as detecting long-tern changes in catchment behaviour. UH and Time-Lag analysis methods are not useful in these cases.