

**Correlation analysis between the Physical Catchment Descriptors  
(PCD's) and the ihacres Rainfall Runoff Model Parameters.**

**Busingye Evelyne**

**Masters in Integrated Water Resources Management.**

**University of Dar es Salaam, Master of Engineering and Technology 2008**

The purpose of this study was to analyze the correlation between the physical catchment descriptors (PCD's) and the IHACRES rainfall Runoff model parameters for the Kasese catchment. Further researchers can base on the output of this study for regionalisation of Kasese catchments. The model was calibrated for four(4) catchments to obtain a set of dynamic response characteristics (DRCs) describing the hydrological behaviour within the region. For the four catchments, Mubuku, Rwimi, Nyamugasani and Chambura, IHACRES model calibrated with an R2 of 0.12, 0.25, 0.38 and 0.51 respectively. It was concluded that the poor measures of fit between observed and modelled stream flow (R2) could have been due to lack of good-quality time series of rainfall data representative of the whole basin and influence of snow melt for especially Mubuku, Rwimi and Nyamugasani. Physical Catchment Descriptors (PCDs) indexing Topography, soil type, land cover, length of main channel, drainage density, and basin area were correlated to the hydrological model parameters, from which a set of DRC-PCD relationship results indicate that strongest correlations were found with the quickflow proportion (Vq). Catchment storage index (1/c), catchment drying constant (TauW) and the temperature modulation factor (f) with the PCD's. It was then concluded that IHACRES model is applicable to Kasese catchment but further work is necessary to correlate the records from river flow measurement stations and rain gauges to facilitate better modelling results when using this model