Assessment of Rainfall Stations for its Suitability to Represent Magalla Reservoir Catchment, Nikaweratiya, Sri Lanka

M. D.T. Buddhimal[1], D.S. Sampath [2*], S. Sivakumar[2], T. Mikunthan[1] and M. Pirabhaharan[1]

[1]Department of Agricultural Engineering, Faculty of Agriculture, University of Jaffna, Kilinochchi, Sri Lanka
[2]Department of Civil Engineering, Faculty of Engineering, University of Jaffna, Kilinochchi, Sri Lanka
*saliya@eng.jfn.ac.lk

Magalla is a reservoir which is located at Nikaweratiya area in Deduru Oya river basin. Deduru Oya river basin which is in dry zone of Sri Lanka has severe flood during rainy season and lean flow during dry season. Magalla is one of the ancient tanks and major source of water is receiving through Ridi Bendi Ela canal which is also an ancient canal. There is a diversion scheme just downstream of the Deduru Oya reservoir which is named as Ridi Bendi Ela weir. Water is diverted to the Ridi Bendi Ela canal from Ogee type weir and length of the canal is 21 km. Runoff water which is coming from Magalla reservoir catchment also significant, other than Ridi Bendi Ela canal inflow. Objective of the study was to analyze rainfall data and check whether data is statistically suitable for further hydrological modeling. Numbers of rain gauge stations are available at Deduru Oya river basin and gauging stations at Nikaweratiya, Wariyapola and Ridi Bendi Ela are selected for this study. Missing rainfall data is estimated using simple arithmetic mean and Normal ratio method. Polonthalawa and Kurunegala rain gauge stations also used during missing data estimation depend on data availability and distance between stations. Daily Rainfall data from 1990 – 2010 was statistically checked for screening and consistency. Outlier test and Spearman's rank correlation test also carried out for the data set. Results of the study revealed that rainfall data are statistically distributed and suitable for further hydrological analysis.

Keywords: Consistency check, Deduru Oya, Ridi Bendi Ela, screening check, spearman's rank correlation test