

Journal of Environmental Hydrology

ISSN 1058-3912

Electronic Journal of the International Association for Environmental Hydrology

JEH Volume 11 (2003), Paper 2, March 2003

Posted March 25, 2003

A GENERALIZATION OF CLARK'S IUH FOR FLATLAND AREAS WITH STRONG HUMAN INTERVENTIONS

Erik D. Zimmermann

Centre of Hydroenvironmental Research, National University of Rosario, Rosario, Argentina

ABSTRACT

We present an improvement of Clark's Instantaneous Unit Hydrograph (IUH), which we call the "GAIUH", linking hydrological parameters and geomorphologic characteristics of flatland basins with strong human interventions. Partition of the effects caused by the direct runoff routing and attenuation due to natural hydrographic networks and structures like culverts are taken into account. A one parameter time area concentration curve as a function of concentration time of the basin is proposed for runoff routing. Two linear reservoirs are considered for attenuation effects. The linear storage coefficient for the culvert reservoir is obtained as a function of geomorphologic features of the reservoir, and hydraulic parameters of the culvert and inflow hydrograph. The proposed GAIUH model was applied to two hydrological systems of the flatland region in Argentina. Simulated and measured stream flow data are compared for a group of storms presenting a good correlation. The GAIUH model has given better results than other mathematical models applied to the hydrological systems.

Reference: Zimmermann, E.D.; A generalization of Clark's IUH for flatland areas with strong human interventions, *Journal of Environmental Hydrology*, Vol. 11, Paper 2, March 2003.

CONTACT:

Erik D. Zimmermann

CURIHAM - FCEIA

University National of Rosario

Riobamba 245 bis 2000

Rosario

Argentina

E-mail: erikz@fceia.unr.edu.ar

[Return to HydroWeb Homepage](#)