Title: Analysis of rainfall intensity impact on the lag time estimation in tropical humid rivers

Author(s): Mohammed Seyam 1, *, Faridah Othman 2, Ahmed El-Shafie 2, Zaher Mundher Yaseen 3

Affiliation(s):
1 Civil Engineering Programme, University College of Technology Sarawak, Sibu, Sarawak, Malaysia
2 Civil Engineering Department, Faculty of Engineering, University of Malaya, Kuala Lumpur, Malaysia
3 Civil and Structural Engineering Department, Faculty of Engineering and Built Environment, University Kebangsaan Malaysia, 43600 UKM Bangi, Selangor Darul Ehsan, Malaysia

Abstract:

Rainfall intensity is considered as one of important hydrological variables affecting the lag time in tropical humid rivers. The lag time is the time interval from the time of maximum rainfall intensity to the time of the peak rate of stream flow. The main objective of this paper is to study the influence of the rainfall intensity and other related variables on the lag time between the upstream and downstream stations in tropical humid rivers. The lag time was estimated using 95 high rainfall-stream flow events. The Rainfall and water level data was collected from 4 upstream stations that were selected in accordance with data availability. The results indicated that the lag time is inversely proportional with rainfall intensity in a moderate strength relationship. The moderate relationship can be explained by the high complexity and the interaction of the other variables influencing the lag time. This approach is potential to be used in many future hydrological applications, especially those related to the surface water hydrology and river basin integrated management.

© 2017 The Authors. Published by IASE.

This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

Keywords: Hydrology, Rainfall, Surface water, Lag time

Article History: Received 10 January 2017, Received in revised form 20 July 2017, Accepted 23 July 2017

Digital Object Identifier:

https://doi.org/10.21833/ijaas.2017.010.003