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## Time Step Issue in Unit Hydrograph for Improving Runoff Prediction in Small Catchments

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### ABSTRACT

Unit hydrograph is a very practical tool in runoff prediction which has been used since decades ago and to date it remains useful. Unit hydrograph method is applied in Way Kuala Garuntang, an ungauged catchment in Lampung Province, Indonesia. To derive an observed unit hydrograph it requires rainfall and water level data with fine time scale which are obtained from automatic gauges. Observed unit hydrograph has an advantage that it is possible to derive it for various time steps including those with time step less than an hour. In order to get a more accurate unit hydrograph, it is necessary to derive a unit hydrograph with small time step for a small catchment such as those used in this study. The study area includes Way Kuala Garuntang and its tributaries, *i.e.* Way Simpung, Way Awi with areas are 60.52 km<sup>2</sup>, 3.691 km<sup>2</sup>, and 9.846 km<sup>2</sup> respectively. The results of this study highlight the importance of time step selection on unit hydrograph, which are shown to have a significant impact on the resulting unit hydrograph's variables such as peak discharge and time to peak.

### KEYWORDS

Unit Hydrograph; Time Step; Peak Discharge; Time to Peak

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