# ANALISIS INTENSITAS CURAH HUJAN EFEKTIF DAN WORKING RAINFALL UNTUK DASAR PENGEMBANGAN KRITERIA PERINGATAN KEJADIAN ALIRAN LAHAR
## (Studi Kasus Kali Gendol, Kawasan Gunung Merapi)

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## ABSTRACT

After the eruption of Mount Merapi in October-November 2010, at least 140 million $m^3$ volcanic material piled on the back of Merapi and some flows shortly on and after the eruption through the rivers that disgorge on peak of Merapi. To date, the impact from the silting of the river and falling volcanic material from the top of Merapi cause lahar flood which swept through areas far enough from the peak of Merapi. Given the dangers and impact caused by the lahar flow, as well as the limitations of existing data, the simplest method by perform rainfall data analysis is expected to predict lahar flow events in Gendol river.

The analysis method performed by setting of standard rainfall for warning and evacuation were used for prediction of sediment disasters based on Guidelines for Development of Warning and Evacuation System Against sediment Disasters in Developing Countries, published by the Ministry of Land, Infrastructure and Transport, Infrastructure Development Institute - Japan, namely: (1) specifies serial rain which total amount of rain ≥ 80 mm, (2) Calculations on working rainfall ($R_W$) and working antecedent rainfall ($R_{WA}$), (3) Calculation on effective rainfall ($R_E$), effective time, and effective rainfall intensity ($I_E$), (4) Make a graph of effective rainfall intensity and working rainfall, (5) Predict the potential for debris flow by calculating the probability of debris flow occurrence on Gendol river.

The reseach results showed that the number of reviewed serial rain with total value ≥ 80 mm is 9.28% of the whole serial rain, and 12.5% of them caused lahar flow in Gendol River. Debris flow occurrence probability on total rainfall amount of ≥ 80 mm that may occur on Gendol river amounted to 1.89%. This value represents less possibility of debris flow in Gendol River, this is due to the rain conditions in the Gendol Watershed different from the situation in Japan as well as the limitations of the available data. It is recommended for further research on the limitation of total rainfall in accordance with the conditions in Gendol Watershed by considering other parameters becoming the lahar flow controller factor. Further, necessary to perform the analysis using rain catchment method by averaging rainfall values on each of serial rain.

Keyword: *lahar flows, working rainfall, Gendol River*