DYNAMIC MODEL FOR SEDIMENT TRANSPORT DUE TO VOLCANIC ACTIVITIES

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ABSTRACT

It is a crucial matter for Indonesia as a country with many active volcanoes that a control system of their activities is made for mitigation. The flow of volcanic sediments like sand is a focus in this paper through which a dynamic control system of sacks called as Sabo is to be developed. The dynamic property of the system is the balance between the inflow of sandy materials from volcanic activity and the outflow of the materials due to mining. Sabo in some extend is aimed at the mitigation to halt the heavy down stream flow of sediments towards the village communities, however its mining may also be done by communities. The optimal size of sabo is then a matter to be modeled subject to random properties of inflow and outflow of sandy sediment itself. A dynamic control system is developed into model based on real data obtained from Merapi mountain in Central Java Island which is considered very active, and consequently a simulation is made to predict the inflow and outflow in the following years to determine the optimal size of sabo. The model has been simulated and successfully indicated the optimal size of sabos and their potential location of placement.