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DEVELOPMENT OF "LUMPED MASS DAMPER MODEL" TO PREDICT FAILURE TIME AND VELOCITY OF LANDSLIDE

Summary:

The authors developed a simulation model using viscous damping to predict the moving velocity of landslide before it reaches a strain limit and named this model „Lumped mass damper model". Even if LMDM is very simple model based on the motion equation incorporating viscous damping, it is clarified that the analysis of landslide behavior using this LMDM is suitable method to predict the velocity and further displacement of landslides induced by not only increasing groundwater level but also by terrain modification. Furthermore, LMDM is newly improved using tank model for prediction of landslide displacement corresponding to rainfall. As a result of a lot of case studies on landslide displacement using LMDM analyses, it is found that the results of LMDM analyses are closely related to observation data of displacement up to a certain time, however they deviate after this time point. These deviation points might represent the limit strains. In order to solve this probelm of deviation, the authors modified LMDM with introduction of reduction functions on φ *and* Cd *parameters. There is a possibility to predict not only moving velocity of landslide but also failure time of landslide using analysis results by this modified LMDM.*

Key words:

Lumped mass damper model, Moving velocity, Displacement, Damper, Mass system model, Reduction function

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