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Debris Flow Hazard Assessments with Numerical Modeling

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Debris flow disasters are usually accompanied by serious loss of lives and properties. However, debris flows are also part of earth's natural phenomenon, what is the reasonable budget to be spent on mitigation measures becomes an important issue for the budget allocation processes. This paper utilizes economic concepts to propose a reasonable estimation of the hazard damage and the cost of proposed mitigation measures. The proposed method is composed of four steps, namely, delineating the area of the disaster with different return periods, itemizing the land use within those area, calculating the hazard lose using official values and computing the expected probable maximum loss with a probability distribution. The comparison between the assessment of hazard and the economic gains of any proposed mitigation measures can be used as a reference for future decision making process.

Keywords: Debris flow, Hazard assessment, Risk analysis, Numerical Simulation, GIS, econometric model