



## **Simple method to determine the temporary sediment deposition in a series of check dams**

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A series of check dams is often used as a measure for sediment management in torrential. Besides the main function to stabilize the channel bed the construction of a series of check dams offers a dosing function to bed load transport. It reduces sediment transport at high bed load rates and offers the possibility to remobilize these sediments during lower flow rates by changing the compensation angle. In this case the slope of deposition is mainly a function of the volumetric sediment concentration and of the mean grain diameter. The temporary changing effects of deposition and erosion are on the one hand sustaining the sediment connectivity and offer on the other hand intermittent sediment storage volumes. To quantify resp. to offer a rough estimation of the possible temporary deposition, laboratory experiments and investigations were carried out. As a result, a simple calculation method was developed to determine the maximum and minimum temporary sediment storage volume resp. the angle of deposition under different natural conditions, including channel geometry sediment composition, discharge and volumetric sediment concentration. In a further step, these results provide the basis for the optimization and dimensioning of the structural parameters of the series of check dams. The developed method provides the possibility to define the sedimentation freeboard at the check dam, the constructive height of the individual structures, the varying distances between check dams and therefore the necessary number of check dams of a particular torrent. As a conclusion a series of check dams offers a natural balancing process by dosing the sediment rates. Deliberately optimizing the constructive distances and height of the buildings, these dosing effects can be artificially directed and used in cases of sediment management and torrential flood protection.