

Flash flood retention in headwater areas of the Natzschung River using small retarding basins

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Abstract The concept of decentralised flood protection measures is based on the idea to localize and use the natural capability of a catchment to retard runoff as early as possible and at several places at the same time by means of a combination of different small-scale measures. Because common flood protection management mostly focuses on the downstream catchment regions, the question arises if for headwater areas any opportunities exist to mitigate flash floods. The headwater areas of the Ore Mountains in Germany are often one agent triggering flash floods in downstream valleys. Against the background of severe damages caused by flash floods in the past, the hydrological effect of small retarding basins on flood generation was analysed for the case study of the Natzschung River. The modelled scenarios indicate that the use of small basins has a distinct and local impact on the reduction and time shift of peak discharge.

Key words decentralised flood protection; flash flood retention; retarding basin; Ore Mountains, Germany; rainfall–runoff model