Debris flow events in Austria - regional strategies for mitigation and adaptation in the light of climate change

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Recent years have repeatedly witnessed natural disasters throughout Austria, e.g. the catastrophic debris flows of 2012, 2013, 2016, 2017 and 2019 which caused enormous damage and losses in some areas. The impacts of climate change on these events is rather unclear in many cases, it must be assumed that the intensity and frequency of extreme events and natural hazards is likely to increase in future.

Management of bedload/debris flow processes to ensure the protective function is a major challenge. Observing the historical development shows the constant change of design types and constructions in the course of time. Hand in hand with technical progress, lessons learned from events in the light of climate change as well as a higher process understanding the constructions were constantly improved. Other reasons for the development of fitted systems with an integrative catchment-view down to the receiving stream are the high and still rising maintenance and clearance costs. On the basis of these findings and results, recommendations were derived to improve the function fulfilment of the technical protection measures. Furthermore, integrative concepts focus on the adaptation of the alpine forests to climate change. Under the principle, “fit for the future” the recommendations are summarized and presented in this contribution.