



Experience with the information system at Lattenbach/Tyrol

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The catchment area of Lattenbach (District of Landeck / Tyrol) is prone to debris flows due to the geological situation, as the tectonic border between Silvrettakristallin and the Northern Limestone Alps runs through the basin, forming the channel bed. On both sides of the torrent spacious mass movements arise and cover most of the catchment. Numerous debris-flows are documented since the beginning of the last century leading to an intensive design of technical mitigation measures starting in the year at 1908. Up to now numerous checkdams have been built up, but a lot of them, especially in the middle reach, are partially destroyed. Numerous buildings on the fan (community of Pians) are endangered, if debris-flows block the old federal highway bridge (B171) and overburden the channel on the alluvial fan. The debris-flow deposits accumulate in the receiving stream Sanna, causing backwater effects. Subsequently the upstream situated buildings of the village will be flooded. A few years ago a monitoring system was installed in order to inform the authority in case of a debris flow. Since that time 3 torrential events happened. In 2005 a debris flood occurred after a one days rainfall of about 125 mm, depositing all the sediments (about 25000 m³) along the middle reach, overwhelming a series of checkdams and clogging and old arch bridge. But down on the fan only a minor increase of the hydrograph was recorded. In June 2007 a debris flow was triggered by a cloudburst (45 mm). All the material could pass the middle reach leading to several debris surges of about 150 m³/s causing backwater effects in the receiving stream. Some checkdams were damaged by this flow but the major experience was, that the monitoring system did not sent an alarm. The reason for this was on the one hand the very short duration of the surges (several seconds), on the other hand the sensor technology itself. Several weeks

later again a debris flood appeared, causing similar effects as the 2005 debris flood. Therefore the monitoring and information concept has to be reconsidered, taking into account the different reaction of the catchment due to different precipitation scenarios and triggering thresholds. One conclusion may be, by installing a monitoring system an immediate guarantee of identifying hazardous torrential processes cannot be given. The system must run over some years to get a chance to understand the behavior of the torrent.