



Monitoring the effectiveness of material input and self-initiated bank erosion in mitigating channel incision at the Mur River, Austria

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Lack of bed load due to intensive hydroelectric power production, missing riverbank erosion, increase of channel slope and decrease of width have led to substantial degradation of the bed level of the Mur River in Austria. As a measure to mitigate bed degradation and its negative consequences a 1 km section has been restored at the border to Slovenia, at the beginning of a section suffering from severe bed degradation. Bank protection structures have been removed and new side arms have been built. The dredged material has been put into the main channel, where it is now transported downstream. Together with eroded riverbank material, the total amount of gravel input is calculated to stop midterm bed degradation.

In an intensive monitoring program the effectiveness of this measure is controlled. Particle tracking by radio telemetry is used to measure the distances of inserted tracers during several flow events. Detailed geodetic surveys are combined with surveying techniques based on webcam pictures to gain higher temporal resolution in monitoring morphologic processes.

10 artificial telemetry stones representing coarse gravel have been inserted and showed different transport activity. The length of the transport paths in the first investigation period from May 2007 to November 2007 vary from a few meters to more than 4 km. The results of the geometry monitoring show high dynamics caused even by small events in the investigation period. The Mur River so far shows the intended response

to the measure with respect to self-initiated bank erosion and distribution of the inserted gravel. A continued and even more detailed monitoring program promises further results.