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Bed-load Measuring System for large Alpine Gravel Bed Rivers

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At the beginning of 2006 a system of bed load measurement devices were installed at the free flowing reach of the river Drau and his most important tributary Isel, both large Alpine gravel bed rivers, situated in Austria. The measurement system is situated in three locations distributed over both rivers (distance 40 kilometres). The measurement sites are all representative for their part of the study reach.

Two of the study sites (Dellach at the river Drau and Lienz at the river Isel) are supplied with hydrophone installations, different types of bed load traps, mobile bed load sampling and other related measurement devices e.g.: suspended load measurements, flow velocity measurements, water gauges, etc.. Each of the measurement devices operated separately leads to specific deficits, using all together they are complementing one another. Most data are collected automatically, a remote control allows operating the facility from the bureau.

A third study site, installed 2002 at the upper branch of the river Drau at Falkensteiner Steg, is equipped with hydrophones, a velocity measurement system and a water gauge.

Together with hydrological, geological, meteorological and other related data e.g.: information about sediment sources, sediment dredging, etc. this allows observing the transport processes in detail in the study reach. Former measurements in the study reach were performed using mobile bed load samplers and fixed bed load traps.

Within the study especially the initiation of motion the bed load transport rate and bed load transport processes (cross sectional variation, periodicity in bed load movement) are analysed.

In this work we want to introduce the new measurement system with its possibilities and present results of investigations already made 2006 with the applied devices.