

Illuminating the speed of sand - quantifying sediment transport using optically stimulated luminescence

Initiative: "Experiment!" (beendet)

Ausschreibung: Explorative Phase

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How long does it take for a grain of sand to move down a river? This seemingly simple question is quite hard to answer. Sand is eroded from uplifting mountains, it is dumped into valleys by landslides and soil creep, and is transported towards the oceans by water. This movement is not gradual, but occurs by leaps between storage landforms such as channel bars, floodplains or alluvial terraces. Direct measurements of bedload transport rates thus have little significance for the analysis of regional sediment transfer. The authors plan to develop a method that uses bleaching of quartz and feldspar in sand by daylight exposure. The experimental set-up will be tested in the field. If successful, optically stimulated luminescence exposure dating will bridge instrumental observations (hours to few years) and geochronological reconstructions (time scales of 1.000-100.000 years). This would offer new research perspectives including the relative role of extreme events in landscape evolution and natural hazard assessment in mountain environments.

Projektbeteiligte

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