



## **Investigating soil erosion and hillslope-channel connectivity hotspots in a medium-sized agricultural catchment, Lower Austria**

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Water induced soil erosion on agricultural hillslopes and the subsequent input of sediment into adjacent channel systems pose a problem for fresh-water ecosystems, since eroded sediment tends to entrain fertilizer and pollutants. The degree of lateral connectivity affects the amount of sediment reaching the channel system. The relatively flat, 138 km<sup>2</sup> agricultural Fugnitz catchment in Lower Austria, i.e. the biggest tributary system within the Thayatal National Park area, is a showcase for these effects. Despite advances in soil erosion and connectivity research, there are few approaches which couple soil erosion modelling and connectivity based knowledge. The present study combines process-based soil erosion modeling (GEOWEPP) with the use of a connectivity index (IC – using SedInConnect software) and field assessments to investigate hotspots (i.e. entry points) for lateral input of fine-grained sediment into the Fugnitz channel system.

GEOWEPP modeling showed subcatchments with potentially high amounts of sediment yield are well distributed over agricultural areas in the catchment. Furthermore, scenario modeling showed that a change in crop rotation has a big influence on the rates of sediment yield for the investigated subcatchments. The computed IC showed relatively low values throughout the catchment, expected to be mainly related to the relative flat topography of the area. Although entry points were mostly found in the field in areas with high IC values, some entry points were found in areas with low IC values. This indicates that SedInConnect does not capture all the relevant processes in a relatively flat catchment dominated by fine grained sediment transport.

In conclusion, applying GEOWEPP and SedInConnect in combination with field investigations is a suitable way to identify hotspots for lateral sediment input by superimposing modeled sediment yield values (source areas) with connectivity results (IC in combination with sediment entry points identified in the field). Nevertheless, GEOWEPP needs further model parameterization and calibration, while IC application needs some adjustments to be suitable for flat agricultural areas.