



## **Changes in suspended sediment sources in the Carpathian catchment during transition from centrally planned to free-market economics**

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Over recent decades, many mountain regions of Europe have been subjected to suspended sediment (SS) transport changes associated with socio-economic transformation of rural areas. In the Polish Western Carpathian a gradual decline in the cultivated land which accelerated after the collapse of the centrally planned economy in 1989 was observed. Changes in land use and land cover (LULC) have changed the sources of sediment supply to the river channel. The main aim of the study was to analyze suspended sediment sources in small mountain catchment (Bystrzanka catchment, 13 km<sup>2</sup>) affected by various forms of human activity in the period 1970–2018. In the study area observed an increased in grassland area by 90 % and decreased of cultivated land by 82 %. LULC changes have reduced soil erosion on slope by 74 % (Revised Universal Soil Loss Equation). The population, number of buildings and road network also increased (unpaved road decreased). Construction of new paved roads mainly in the valley bottom accompanied the abandonment of agricultural fields and cart roads on slopes. Precipitation data, as well as suspended sediment load (SSL) during analyzed period have not shown a statistically significant trend despite changes in the sediment sources. In the last nine years (2010-2018) SSL was the highest in compare to earlier periods. In recent years, new sources of sediment supply to the stream channel have appeared associated with construction works. That was confirmed in the principal component analysis (PCA). The effect of LULC changes was disturbed by the overlap of new sources of sediment supply, as well as landslides (hotspots) and erosion in the stream channel. Notably, the recognition of changes in the sources of sediment supply to the channel is of great importance for the proper analysis of long-term data of SS transport in stream.