Regional estimation of sediment flow regime in Timis – Bega hydrographic area

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The purpose of this paper is to present the concept of solid runoff regional modelling, starting form the regional statistic model, solid discharge – duration – frequency.

The analysis has as first stage the statistic description of the solid runoff in an observed hydrographic basin and then the explanation of this hydrologic regime, starting from the basin morphological characteristics.

The regional model uses the results obtained in the local model to determine the regime descriptors for the solid runoff: decennial discharge $Q_{SM}10$, annual discharge $Q_{SM}1$ and Δ.

For the local modelling, of the suspended load discharge, are used the maximum average values from various durations and the peak values of the suspended load, registered at 12 gauging stations of the Timis-Bega drainage basin. The available series of the suspended load discharge $Q_{SM}(t)$ are on the average of 25 years.

The model uses the temporal variability of floods and suspended load given by two hydrological variables: Vd – the maximal average flow continuously exceeded over the duration d during a flood; and $Q_{SM}d$ – the maximal average suspended load continuously exceeded over the duration d during a flood. The duration d, retained for each gauging station must be compatible with the dynamics of the observed floods.

The distribution laws, chosen for representing the Vd and $Q_{SM}d$ samples are the Exponential Law and the Pareto Law, respectively.

The three hydrological descriptors of the regional model are estimated using the multiple regression, starting from the physical sub-basin characteristics: surface, mean

altitude, water course length, basin and bed slope, water courses afforesting and meandering coefficient.

The identification of these explanatory factors is necessary for the characterization of the hydrological regime in areas in which there are no observations or these ones are performed for a short period.