



Mhydas-Erosion : A physically based erosion model for watershed application.

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Abstract

Several tests have been made with erosion models using common datasets for calibration and validation. The general conclusions of these tests are fairly negative, most of the erosion models tested give results poor at moderate with respect of outlet data. There are many reasons for the poor to moderate capability of tested erosion models. In first, the spatial and temporal variability of the input model parameters and the uncertainty associated with them, in second, the erosion processes may not behave in same way for large and small rain events and in third, many parameters and model factors are considered static over time rain, but in reality they are dynamic and vary significantly within an erosion event: for example the crusting phenomena that reduces the infiltration capacity of soil and in many case decreases the friction runoff coefficient, thus increases the erosive power of the runoff.

The main objective of this work is to present a physically based water erosion model (MHYDAS-EROSION) for one rain event, using finite difference schema. In this model we propose to take account of the interface problematic. To solve this problem we have developed different transport function for each interface type, the objective of the functions is to take of pass-through runoff controlling sediment transport/deposition in function of interface type and water volume. In the preliminary tests the value of soil loss in the catchment is different with the application of interfaces functions showing a promising method for catchments water erosion models.

Key words: Water Erosion Model, Soil Erosion Processes, Hydrological Model