



Modelling soil erosion in the Drâa catchment (South Morocco) with PESERA

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This work is part of GLOWA-IMPETUS-project, an integrated project for the efficient management of scarce water resources in West Africa. The aim of the second phase of this project (2003-2006) is to forecast the likely changes in water resources and soil degradation up to the year 2020 considering different scenarios and driving forces. In this context, soil erosion by water is modelled using PESERA (Pan European Soil Erosion Risk Assessment), a model developed in the framework of the PESERA – project.

In this study, the Drâa river basin, which is located in the south of Morocco and covers an area of approximately 30.000 km², is investigated. The Drâa catchment reaches from the semiarid High Atlas mountains in the north with a maximum altitude of 4070 m.a.s.l. to the arid edge of the Sahara at about 450 m.a.s.l. in the south. Due to overgrazing and deforestation the vegetation density has been strongly reduced. Semi-natural steppes and deserts cover more than 95 % of the catchment.

The PESERA model was chosen because it is adapted to semi-arid conditions, it requires a limited number of input parameters and can be applied to very large basins. It was originally developed for modelling soil erosion in entire Europe at a resolution of 1 km² and has already been tested in North Africa using a 5 km² grid size. For validation a mean sedimentation rate of the reservoir El Mansour Eddabhi situated in the catchment is available. By the time of its construction in 1972, it had a volume of 592 Mio m³ which was up to 1988 already reduced to 504 Mio m³ (= 11 % loss of capacity). From the sedimentation rates, an erosion rate of 400 t/km²/a can be computed. A simple method to assess erosion risk considering lithology and relief developed especially for Morocco produces similar spatial patterns of erosion as PESERA does. Although the first PESERA-runs use only coarse input data, the applicability of the

model for the given situation seems feasible. Concepts and first results are presented.