



## **Modelling erosion on a daily basis**

Dhruba Pikha Shrestha and Victor Jetten

Faculty of Geo-information Science and Earth Observation, University of Twente, Enschede, The Netherlands  
(d.b.p.shrestha@utwente.nl)

Effect of soil erosion causing negative impact on ecosystem services and food security is well known. To assess annual erosion rates various empirical models have been extensively used in all the climatic regions. While these models are simple to operate and do not require lot of input data, the effect of extreme rain is not taken into account in the annual estimations. For analysing the effects of extreme rain the event- based models become handy. These models can simulate detail erosional processes including particle detachment, transportation and deposition of sediments during a storm. But they are not applicable for estimating annual erosion rates. Moreover storm event data may not be available everywhere which prohibits their extensive use. In this paper we describe a method by adapting the revised MMF model to assess erosion on daily basis so that the effects of extreme rains are taken into account. We couple it to a simple surface soil moisture balance on a daily basis and include estimation of daily vegetation cover changes. Annual soil loss is calculated by adding daily erosion rates. We compare the obtained results with that obtained from applying the revised MMF model in a case study in the Mamora plateau in northwest Morocco which is affected by severe gully formation. The results show clearly the effects of exceptional rain in erosional processes which cannot be captured in an annual model.