Geophysical Research Abstracts
Vol. 13, EGU2011-10261, 2011
EGU General Assembly 2011

Testing LAPSUS-D, a daily sediment delivery model, in a meso-scale Mediterranean catchment: a case study in Israel.

Saskia Keesstra (1), Arnaud Temme (2), Lea Wittenberg (3), and Noam Greenbaum (3)

(1) Wageningen University, Land Degradation and Development Group, Wageningen, The Netherlands (saskia.keesstra@wur.nl), (2) Wageningen University, Land Dynamics Group, Wageningen, The Netherlands, (3) University of Haifa, Department of Geography and Environmental Studies, Haifa Israel

The new sediment delivery model LAPSUS-D can simulate sediment and water discharge at the temporal scale of one day and the spatial scale of a meso-scale catchment, without making use of very detailed input data.

The landscape evolution model LAPSUS (Schoorl, 2002) was adapted to model sediment yield on a daily basis instead of the original annual basis. LAPSUS-D uses the water balance as a base to calculate water and sediment transport and this feature enables calibration with measured daily discharge at the outlet.
The model only requires a DEM (10 to 30 m pixel size), a soil map, a land use map, daily discharge and precipitation data and a general idea of the soil depths in the catchment. With this information the model can be calibrated for the water flow part which will give a good indication of the possibilities for sediment transport. First testing of the model in catchments with a temperate climate in SW Poland and SE Germany showed that the model is able to postdict the daily outflow well, when focusing on peak discharge characteristics. These hydrological features are the main determining factor for the generation of sediment outflow, and therefore most important to be able predict sediment delivery in a catchment well.
In a Mediterranean catchment in Israel, Nahal Oren, the model was tested for this new climate setting. Moreover, the first testing of the models sediment module was done.

Keywords: LAPSUS-D, daily sediment yield model, meso-scale catchment, Mediterranean climate, Nahal Oren, Israel