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LandSoil model application for erosion management in sustainable agricultural landscapes

Anna Smetanova (1), Stéphane Follain (2), Damien Raclot (3,4), and Yves Le Bissonnais (1)

(1) INRA, Laboratoire d'Etude des Interactions entre Sol-Agrosystème-Hydrosystème, Montpellier, France, (2) SupAgro, Laboratoire d'Etude des Interactions entre Sol-Agrosystème-Hydrosystème, Montpellier, France, (3) IRD, Laboratoire d'Etude des Interactions entre Sol-Agrosystème-Hydrosystème, Montpellier, France, (4) Institut Agronomique & Vétérinaire Hassan II, Dept. of Natural Resources & Environment, PO. Box. 6608, Madinat Al Irfane, Rabat, Morocco

Soil erosion and land degradation can lead to irreversible changes and landscape degradation. In order to achieve the sustainability of agricultural landscapes, the land use scenarios might be developed and tested for their erosion mitigation effects. Despite the importance of the long-term scenarios (which are complicated by predictability of climate change in a small scale, its effect on change in soil properties and crops, and the societal behaviour of individual players), the management decision have to be applied already now. Therefore the short-term and medium term scenarios to achieve the most effective soil management and the least soil erosion footprint are necessary to develop. With increasing importance of individual large erosion events, the event-based models, considering soil properties and landscape structures appears to be suitable. The LandSoil model (Ciampalini et al., 2012) – a landscape evolution model operating at the field/small catchment scale, have been applied in order to analyse the effect of different soil erosion mitigation and connectivity management practices in two different Mediterranean catchments. In the soil erosion scenarios the proposed measures targeted soil erosion on field or on catchment scale, and the effect of different extreme events on soil redistribution was evaluated under different spatial designs.
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R. Ciampalini, S. Follain, Y. Le Bissonnais, LandSoil: A model for analysing the impact of erosion on agricultural landscape evolution, Geomorphology, 175–176, 2012, 25-37.