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Which measurement strategies to improve spatial erosion and deposition patterns modelling?

Nathalie Pineux (1), Alexandre Maugnard (2), Gilles Swerts (1), Charles Bielders (2), and Aurore Degré (1)

(1) Soil-Water systems, Gembloux Agro-Bio Tech, Univ. Liège, Gembloux, Belgium (nathalie.pineux@ulg.ac.be), (2) Earth and Life Institue, Environmental Sciences, Univ. Louvain, Louvain-la-Neuve

Validation of the erosion models requires field data. To date, many authors continue to highlight the paucity of accurate field observations and long-term enough studies.
The fields observations are often put aside because these measures are difficult to obtain: weighty experimental devices, climatic dependence, ...
Hence the models are evolving and propose refined calculation procedures including for instance the calculation of landscape evolution. The need of field data therefore increases and new measuring strategies should arise.
In the centre of Belgium we choose an agricultural watershed quite representative of the local context. It covers 124 ha of loamy soil with more than 90% of arable land and a weak proportion of forest and artificial lands. The slope ranges between 0 and 9%.
Instrumentation on the watershed includes meteorological observations and discharge measurement coupled with water sampling at different outlets.
The weather data (radiation, temperature, wind velocity, relative humidity and rainfall) and discharge measurement (comparison between Doppler and pressure sensors) will allow us to model the hydrological behaviour of the catchment.
Rainfall readings (tipping buckets) are completed with erosivity readings (disdrometer). Erosivity, together with soil data, land use and agricultural practices observations on field, will be used as entry in the Landsoil model. The sediment samplings at 3 points in the catchment will give an insight of the sediment delivery of 3 subcatchments.
The Landsoil model calculates the evolution of the DTM through time. This cannot be compared to measurements at the outlet and requires further data collection. Older elevation data and/or archaeological data are a possible source of information even if their precision remains scarce in our context. 1950's soil surveys are on the contrary really informative since they detail the horizons depth in a spatial way and can be compared to new observation across the watershed. Coupled with unmanned aerial system, they should allow us to test the model performances and improve our knowledge of the spatial patterns of erosion and deposition.