PROJECT FACTSHEET

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EROSION

Implementing a process-based erosion model adapted to the diverse physiographical characteristics of Luxembourg.

Inspiration

Soil erosion by water is one of the main threats to the agricultural sector. It causes a significant loss of soil organic carbon and plant nutrients, which directly affects crop productivity. In an agricultural field, precipitation can lead to particle mobilization if water flows on the ground surface and has sufficient energy to transport loosened soil particles down the slope. This occurs when the precipitation intensity exceeds the soil infiltration capacity, which is likely to occur in excessively wet conditions and extreme precipitation events. When this happens, water flows quickly across the land and could cause floods downstream, endangering the sustainability of agricultural landscapes and causing significant damage.

These problems are expected to increase in the current context of climate change. Increased knowledge and adapted tools are thus vital to guide farmers and land managers in finding the best practices to reduce soil erosion, conserve the nutritional and structural quality of the soil and reduce flooding.

Innovation

The EROSION project aims to implement for the first-time a process-based erosion model adapted to the diverse physiographical characteristics of the country.

First, we will configure the model and adapt it to the local conditions. To this end, we will rely on data collected in experimental agricultural fields, which will be instrumented to monitor water and sediment flows accurately above and below the ground.

Secondly, we will implement the model in a larger catchment area to investigate its suitability for predicting water and sediment fluxes across the landscape. Finally, the model will be used as a tool to predict what is likely to happen in the future in different realistic hydro-climatologic and land use scenarios.

Impact

EROSION is a collaborative project between researchers in soil science, agronomy, sediment transport and hydrological modelling, and Convis sc., a national farming advisory service in Luxembourg. The project aims to provide guidance on the landscape configurations and agricultural practices best adapted to future climate conditions in Luxembourg. Convis sc. will make a large data set of farming information available, which will be used in the model and will guide scientists and help them to efficiently valorise the project results among the farming community in Luxembourg.

Partners

Karlsruhe Institute of Technology (DE) , CONVIS (LU)

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