



## **DSM for soil erosion risk in Scotland**

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Soils play a crucial role in ecosystem functioning, and modelling its risk of degradation is fundamental, especially in the context of climate change. In this work we used continuous 3D soil information derived from digital soil mapping (DSM) approaches to map sediment erosion and deposition patterns due to rainfall. The test area covers the whole of mainland Scotland, excluding the Northern Islands. Soil profiles data were interpolated using a geo-statistical hybrid Generalised Additive Models method for a range of soil properties such as organic matter, texture, soil depth and peat presence. The same method was used to interpolate climatic data and management information. Remote sensing data were integrated in the process and land use data included. Information on grazing (sheep and deer) pressure was taken into account in the modelling. The uncertainty was accounted and propagated across the whole process. The Scottish test case highlights the differences in roles between mineral and organic soils with an assessment adapted to each of them. The results and intermediate steps were compared with available continental scale results. The results show the importance of the use of DSM approaches for modeling soils and ecosystem functions and assessing uncertainty propagation.