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SURFLAT: Measuring and modelling surface runoff in flat landscapes

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Surface runoff is widely recognized as playing an important and unique role in contaminant transport from agricultural fields to the river system. Its quantification however is still underdeveloped, especially in flat areas. Because micro-topography (< 10 cm) likely is an important controlling factor in such landscapes, accurate predictions of the occurrence and quantity of surface runoff are limited by a lack of high-quality data and/or computational power. This project will explore the applicability of both conceptual (fill-and-spill) and state-of-the-art physically based models to estimate surface runoff at the field scale. Laser technology will provide high resolution surface topography data and direct measurements of surface runoff will aid in validating the hydrologic models. The goal of this research is to use the results of the field study to develop an efficient and accurate upscaling scheme, centred around a generic parameterization of micro-topographic variability. This could support decision and policy making and contribute to increasing the water quality of river systems.