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Soil erosion in Austria – National calculations using regional data delivering local results for the ÖPUL programme

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Empirical models, such as the Revised Universal Soil Loss Equation (RUSLE) are in use since the 1950s to estimate the mean annual soil loss for single agricultural fields or spatially-distributed for larger areas (municipalities, regions or states). A particular focus on the computation of the RUSLE lies in the calculation of the respective factors on which the equation is built on and represent the erosivity of rainfall events, the erodibility of soils, the topography and land management. However, the RUSLE is highly susceptible to large errors in the prediction of the erosion rates of single agricultural parcels, due to the high variability of these factors in large areas (e.g. on national scale).

In this study, we present a parcel-sharp erosion map for the entire territory of Austria. We discuss frequent error sources of the factor computations and their consequences for the representativeness of erosion maps at nation-scale. Based on our results we discuss furthermore regional erosion hotspots and evaluate nationally funded management practices for soil erosion reduction as they are defined in the Austrian programme for an environmentally responsible agriculture (ÖPUL).

Since our approach depicts a novelty for Austria, we further describe opportunities for analysis of our results and highlight potential sources of errors, as well as regional and legal discrepancies of the distribution of national funds for soil conservation.