

Transfer of the nationwide Czech soil survey data to a foreign soil classification – generating input parameters for a process-based soil erosion modelling approach

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Process-based erosion modelling is a developing and adequate tool to assess, simulate and understand the complex mechanisms of soil loss due to surface runoff. While the current state of available models includes powerful approaches, a major drawback is given by complex parametrization. A major input parameter for the physically based soil loss and deposition model EROSION 3D is represented by soil texture. However, as the model has been developed in Germany it is dependent on the German soil classification.

To exploit data generated during a massive nationwide soil survey campaign taking place in the 1960s across the entire Czech Republic, a transfer from the Czech to the German or at least international (e.g. WRB) system is mandatory. During the survey the internal differentiation of grain sizes was realized in a two fractions approach, separating texture into solely above and below 0.01 mm rather than into clayey, silty and sandy textures. Consequently, the Czech system applies a classification of seven different textures based on the respective percentage of large and small particles, while in Germany 31 groups are essential.

The followed approach of matching Czech soil survey data to the German system focusses on semi-logarithmic interpolation of the cumulative soil texture curve additionally on a regression equation based on a recent database of 128 soil pits. Furthermore, for each of the seven Czech texture classes a group of typically suitable classes of the German system was derived. A GIS-based spatial analysis to test approaches of interpolation the soil texture was carried out.

First results show promising matches and pave the way to a Czech model application of EROSION 3D.