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Soil Erosion map of Europe based on high resolution input datasets

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Modelling soil erosion in European Union is of major importance for agro-environmental policies. Soil erosion estimates are important inputs for the Common Agricultural Policy (CAP) and the implementation of the Soil Thematic Strategy. Using the findings of a recent pan-European data collection through the EIONET network, it was concluded that most Member States are applying the empirical Revised Universal Soil Loss Equation (RUSLE) for the modelling soil erosion at National level. This model was chosen for the pan-European soil erosion risk assessment and it is based on 6 input factors.

Compared to past approaches, each of the factors is modelled using the latest pan-European datasets, expertise and data from Member states and high resolution remote sensing data. The soil erodibility (K-factor) is modelled using the recently published LUCAS topsoil database with 20,000 point measurements and incorporating the surface stone cover which can reduce K-factor by 15%. The rainfall erosivity dataset (R-factor) has been implemented using high temporal resolution rainfall data from more than 1,500 precipitation stations well distributed in Europe. The cover-management (C-factor) incorporates crop statistics and management practices such as cover crops, tillage practices and plant residuals. The slope length and steepness (combined LS-factor) is based on the first ever 25m Digital Elevation Model (DEM) of Europe. Finally, the support practices (P-factor) is modelled for first time at this scale taking into account the 270,000 LUCAS earth observations and the Good Agricultural and Environmental Condition (GAEC) that farmers have to follow in Europe. The high resolution input layers produce the final soil erosion risk map at 100m resolution and allow policy makers to run future land use, management and climate change scenarios.