

# Erosion Losses of Soils on Arable Land in the European part of Russia

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## Abstract

© Published under licence by IOP Publishing Ltd. The quantitative assessment of potential soil losses in arable lands of the European part of Russia is carried out in the article. The assessment was carried out using a mathematical model based on the mathematical dependencies of the universal soil loss equation and the mathematical dependencies of the State Hydrological Institute of Russia. Assessment of potential soil losses was performed using calculations in a geographic information system. To perform the calculations the database was created containing information on: the relief; properties of soils; climate and land use. The raster model of data organization was used to create the database and subsequent calculations. The assessment shows that the average amount of soil loss in the plowed land of the European territory of Russia is 11 t/ha per year. At the same time, about half of the territories are located in conditions where the soil loss value does not exceed 0.5 t/ha per year. The potential loss of soil taking into account the soil protection role of vegetation is 3.3 tons/ha per year. In addition, a spatial analysis of the distribution of soil loss by landscape zones shows that there is a consistent reduction in the potential loss of soil from the forest zone (20.92 t/ha per year) to the forest-steppe (10.84 t / ha per year), steppe (8.13 t/ha per year) and semi-desert (4.7 tons/ha per year) zone.

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