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This study is aimed at analysing the influence of land use changes on soil erosion processes in the mountainous and hilly areas of the Emilia-Romagna Region (RER, Italy) over the period 1954-2003. The sustainability of agro-ecosystems is a significant concern of the European Union (EU) policy, principally based on the Common Agricultural Policy (CAP), because of the impact of farming practices over natural environment and agricultural productivity. Regarding the agro-environmental strategy of the CAP, farmers can receive incentives when they respect specific environmental requirements ("cross-compliance" in Council Regulation No 1782/2003 and Commission Regulation No 796/2004) that form part of the Rural Development Programmes (RDP), such as RDP 2007-2013 of the RER (Council Regulation No 1698/05). Concerning sustainability of agriculture, protection of soil from erosion requires to study the erosion factors in order to perform appropriate farming practices. Quantitative procedures for estimating soil loss have been proposed since 1930s based on several methods. Regarding the RDP of the RER soil erosion has been analysed by implementing the Revised Universal Soil Loss Equation (RUSLE), originally developed by Wischmeier and Smith. In this work the result of RUSLE model implementation is expressed by geographic database in terms of four soil loss classes. The spatial resolution of the database is consistent with the European Reference Grids (Infrastructure for SPatial InfoRmation in Europe). Land cover database is necessary in order to estimate soil loss by means of RUSLE because it is used to reflect the effect of cropping and management practices on erosion rates. Moreover multitemporal land cover database allow us to evaluate the environmental effects of land cover changes as variations of soil loss. For these reasons we analysed the variation of soil loss amount which affected RER mountainous and hilly areas by comparing land cover databases of 1954 and 2003. This output allow us to highlight those areas where land cover dynamics led to environmental critical conditions. Data related to 2003 were collected from the land use database already published by RER. We derived data related to 1954 by visual interpretation and delineation of orthophotos produced from aerial panchromatic photos (G.A.I. flight). We adopted an "a priori" and hierarchical nomenclature system modified from the second and third level classes of the CORINE Land Cover database. We obtained type, localization and extension of changes by post-classification comparison with accuracy assessment based on Congalton and Green methods. The analysis of land cover databases showed that more than 12% of the total area changed from small parcels of mainly permanent crops to extensive arable lands, while about 3% was renaturalized from agriculture to vegetated areas.

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