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Expert system methodology to map soil erosion vulnerability in France at the regional scale (ca. 1000-10000 km^2).

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This study was initiated in the context of the recently published French national law concerning natural hazards and of the newly proposed thematic strategy for soil protection. As a first step toward a soil conservation strategy, arose the need to define a common national methodology to delineate areas sensitive to soil erosion risk at the regional scale (ca. 1000-10000km^2). We have therefore defined a "minimum requirement list" in terms of data quality and resolution and proposed a simple modelling framework to combine them. The aim of this work is to develop a methodology based on present knowledge and available data for the evaluation of erosion risk at national scale. The various erosion factors have been graded for different geographical situations and erosion mechanisms have been expressed with the help of expert decision. The various erosion types observed in France had been previously classified. Soil crustability is considered as a key factor in runoff and erosion risk on cultivated soils and a model of erosion risk has been developed within a Geographical Information System. The model uses expert rules to combine data on land use CORINE Land Cover database, soil crustability and soil erodibility determined by pedotransfer rules from the French soil database, relief Digital Elevation Model from the National Geographic Institute and meteorological data from Meteo-France at the scale of 250*250 m pixels. Results are spatially aggregated using various administrative or environmental units. We will present an example of application of the methodology in two contrasted French regions and the first results from the validation procedure.