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A Decision Support System for Climate Change Adaptation in Rainfed Sectors of Agriculture for Central Europe

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• Background and aims: Rainfed sectors of agriculture such as nature-close forestry, non-irrigated agriculture and animal husbandry on nature-close pastures are threatened by projected climate change especially in low-elevation regions in Southeast Europe, where precipitation is the limiting factor of production and ecosystem stability. Therefore the importance of complex, long term management planning and of land use optimization is increasing. The aim of the Decision Support System under development is to raise awareness and initiate preparation for frequency increase of extreme events, disasters and economic losses in the mentioned sectors.
• Services provided: The Decision Support System provides GIS-supported information about the most important regional and local risks and mitigation options regarding climate change impacts, projected for reference periods until 2100 (e.g. land cover/use and expectable changes, potential production, water and carbon cycle, biodiversity and other ecosystem services, potential pests and diseases, tolerance limits etc.). The projections are referring first of all on biological production (natural produce), but the System includes also social and economic consequences.
• Methods: In the raster based system, the latest image processing technology is used. We apply fuzzy membership functions, Support Vector Machine and Maximum Likelihood classifier. The System is developed in the first step for a reference area in SW Hungary (Zala county).
• Novelty: The coherent, fine-scale regional system integrates the basic information about present and projected climates, extremes, hydrology and soil conditions and expected production potential for three sectors of agriculture as options for land use and conservation.
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