



An integrated modeling approach to evaluate likely climate and land use induced landscape changes

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The effects of land use and land cover change (LUCC) can be better understood and assessed through a deep comprehension of past land use practices, current land use and land cover patterns, but also recurring to projections of future scenarios.

Land use time and space distribution is controlled by local factors such as topography, physical and chemical soil characteristics, anthropic pressures (e.g., population growth and density, economic and technologic development etc). Moreover climate and its variability can dramatically affect land-use practices as well as landscape vulnerability to events.

Human decisions concerning land government (cropping, forestation, deforestation, basin planning, urbanization etc.) and climate and hydrologic cycle are involved in a complex mechanism of cause-and-effect.

Coupling climate change (CC) and land use change scenarios with hydrogeomorphologic models may help in addressing the issue of climate and land use induced landscape changes.

Two case studies in Italy are here presented, related to two catchments having different morpho-climatic characteristics. By considering CC predictions obtained by PRUDENCE project and LUCC scenarios obtained applying a land use change models as input to the hydrogeomorphologic model, the hydrological response and erosion are investigated for each combination of climate and land use scenario.