Soil erosion control in a pasture-dominated Mediterranean mountain environment under global change

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Abstract

Soil erosion control is critical to global food production and ecosystem health. The Mediterranean region is particularly concerned because it is prone to erosion and is expected to be strongly affected by climatic and anthropogenic changes. In this paper we explore how land use and management (LUM) can mitigate climate change impacts and increase agricultural attractiveness in pasture-dominated Mediterranean mountain environments. For that, soil erosion for different combinations of current and plausible future climate and LUM conditions were simulated on a small watershed located in eastern Sicily (Italy) using the LandSoil model. LUM scenarios were established as a modulation of environmental protection and agricultural production/diversification. The main management distinctions tested in this paper included intensive vs. extensive practices for pasture, and conventional vs. conservative practices for cereals and orchards. Simulations showed that the impact of climate change was very low and not significant in the studied watershed. Our results also emphasised that agricultural diversification coupled with adaptations in practices and management can improve the attractiveness of agriculture in pasture-dominated environments while maintaining soil protection at an acceptable level.

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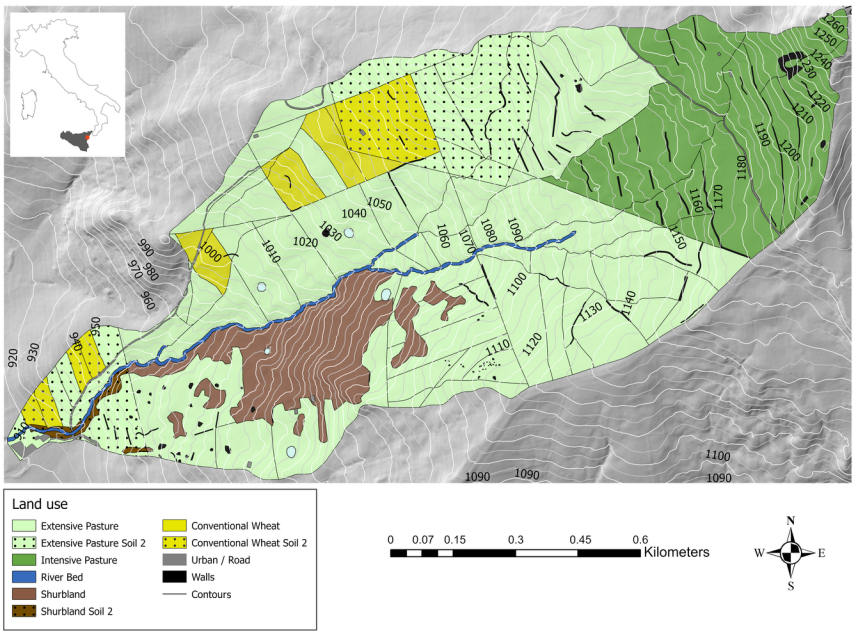

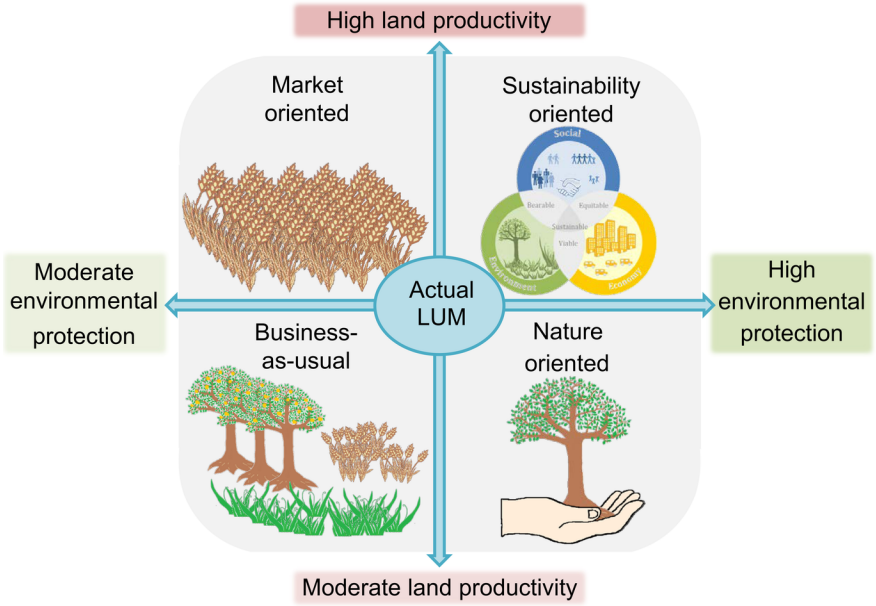

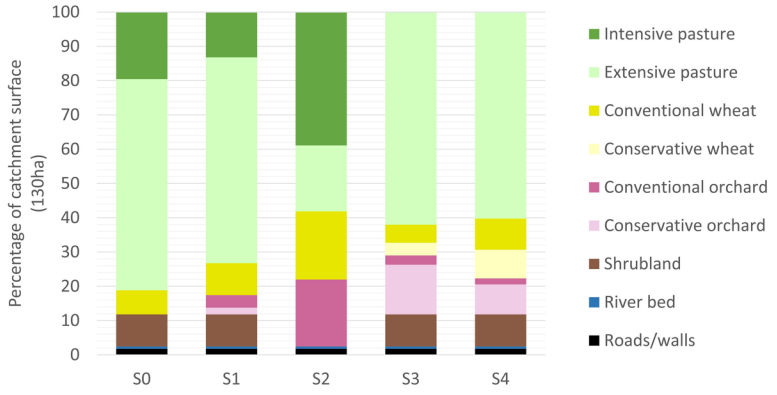

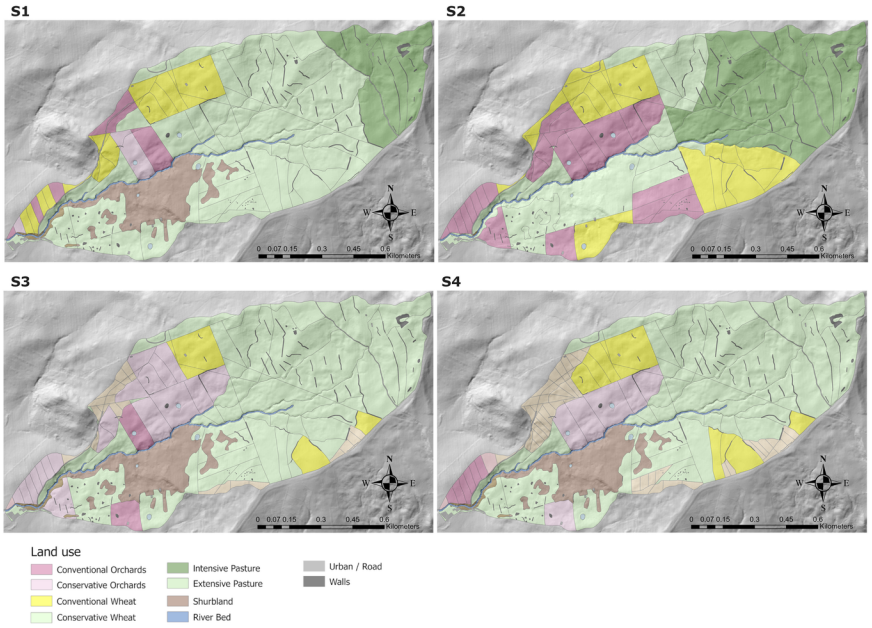

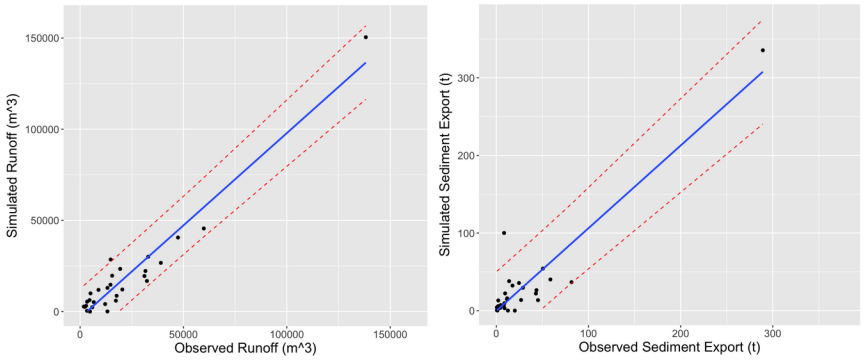

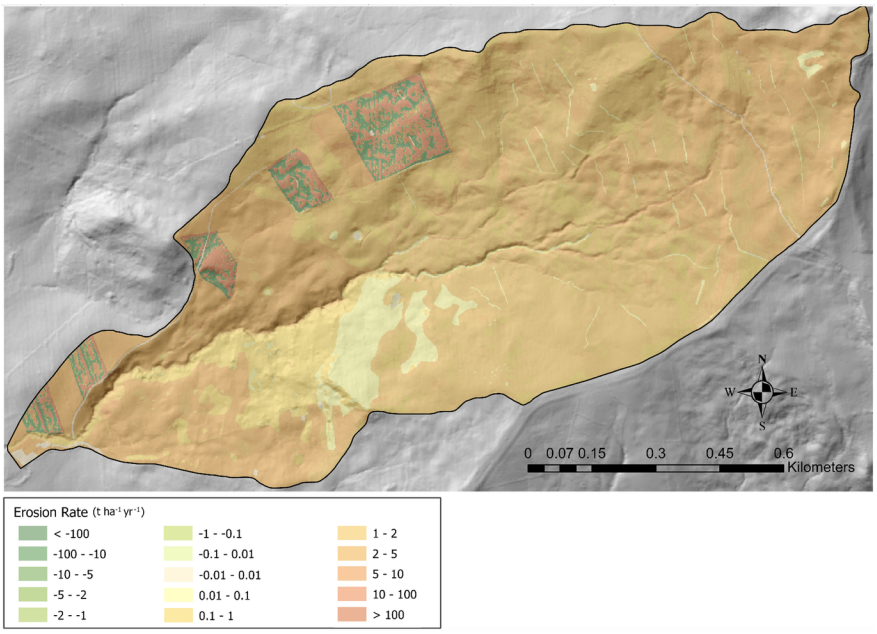

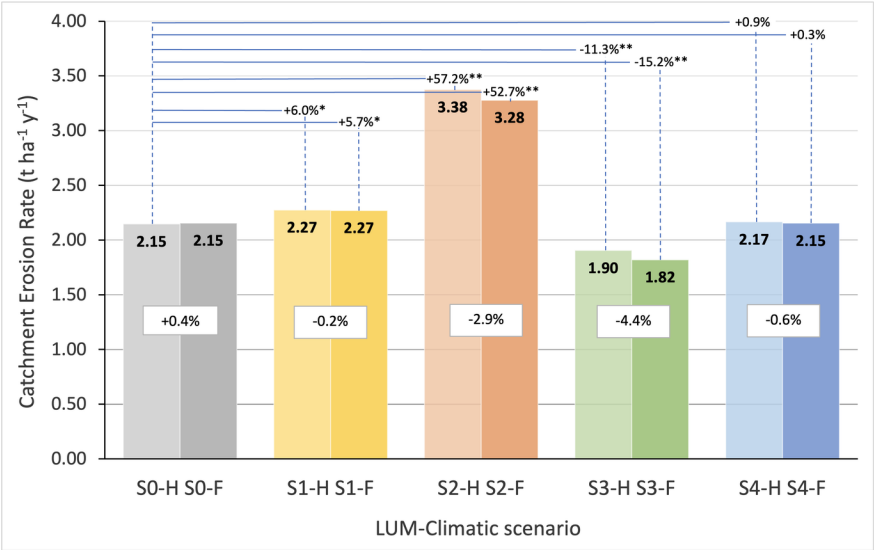

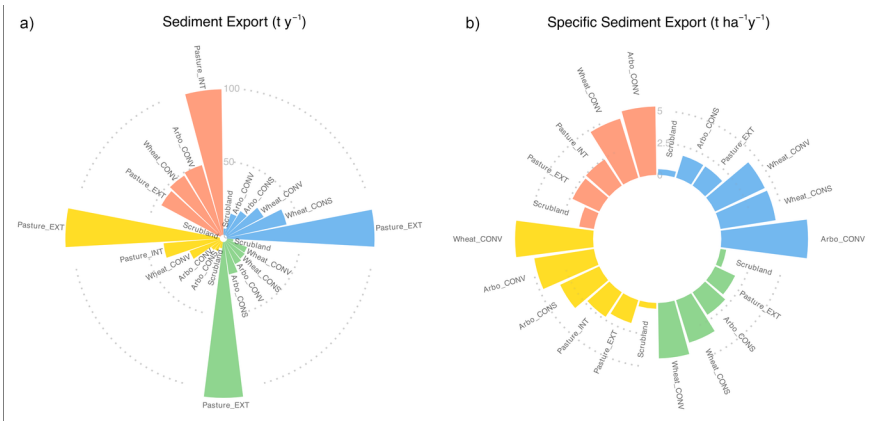

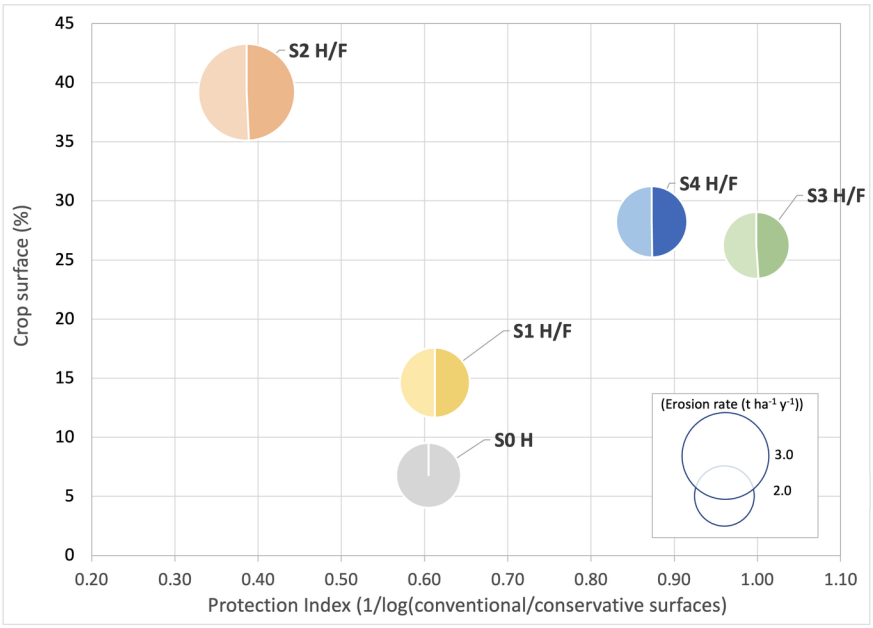

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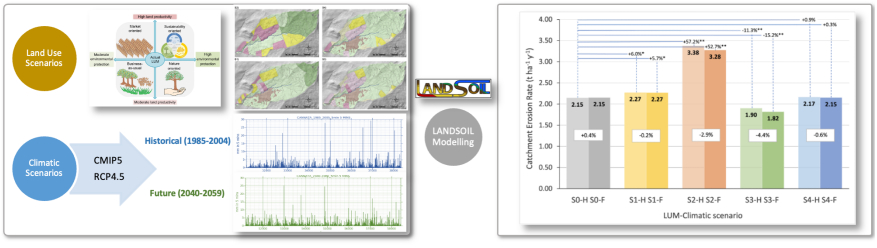

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