



Past soil erosion meeting future challenges

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Soil erosion threatens the environment and the sustainability of agricultural practices since the earliest societies started modifying their natural environment. Still, very little is known about the timing and quantification of past soil erosion phases. This makes it difficult to distinguish between causing factors, which can be anthropogenic, climatic or a combination of both.

Additionally, inferences about present-day agricultural sustainability can only be made when soil erosion rates are known over longer time scales. Even in areas with high soil erosion rates, such as the Mediterranean, degradation of agricultural soil profiles is often slow and yields might not be affected for decades or centuries. This makes that a potential decrease in agricultural potential does not manifest itself until a critical threshold is crossed and the agro-ecosystem is already unsustainable.

In this presentation, we provide a state-of-the-art of the past soil erosion research field. Above all, we wish to highlight the challenges for future research and the emerging links with other fields of research. Studying past soil erosion and identifying its causes is usually a multidisciplinary effort involving geomorphologists, soils scientists, ecologists, archaeologists and historians. In recent years, there have been several attempts to calibrate and validate erosion models with historical land use and management data. We discuss data needs for different communities and possible interactions between research fields by means of case studies at different time scales ranging from the Holocene a few centuries and at spatial scales ranging from individual fields to landscape scale.