



Ancient Agricultural Terraces and the Soil Erosion Paradox

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Geoarchaeology lies at the heart of debates about societal stability and change. Geomorphological research has been used as a foundation for simplistic models of resource depletion based almost entirely on the comparison of soil erosion rates with long-term so-called 'geological' rates. However, the neo-catastrophic collapse of complex agricultural societies is rare, and where it is convincingly demonstrated it is even more rarely monocausal. Indeed many societies appear to have continued agricultural exploitation of climatically marginal lands for far longer than soil depletion estimates would forecast. One reason may be that this soil depletion approach has grossly simplified soil creation through weathering, and neglected how past agriculture also affected the soil creation rate (especially on some lithologies) and how soil was conserved (terraces) and utilised even after transport. However, we now have some potentially valuable new tools, including mineral magnetism and cosmogenic nuclides, which can be used to estimate changing soil weathering rates. This approach will be discussed with examples from both the temperate and Mediterranean climatic zones and in relation to causative models of change in complex agricultural societies.