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## **The geodiversity of loess sequences in the Po plain (Northern Italy): scientific values, threats, and promotion opportunities**

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Quaternary loess deposits and complex pedosequences developed on wind-blown silt as parent material are very powerful palaeoclimatic and palaeoenvironmental indicators allowing the reconstruction of glacial/interglacial cycles. For this relevant scientific value, loess outcrops are gaining great attention in the framework of geoheritage valorisation. Loess sequences are distributed along wide latitudinal ranges in both the Boreal and Austral Hemispheres, but they are less frequent if compared to other kinds of Quaternary sediments, and often characterized by a hotspot-like distributions. They are, hence, key-points in geodiversity assessment at basin-scale. Strategies balancing geoconservation and promotion are hence required, and they should be based on the assessment of sites specific values and threats sites may undergo. Loess sequences, in fact, are geosites of stratigraphic interest and geomorphosites that may suffer geomorphic processes (e.g., pedogenesis, linear erosion, tectonics, slope deformation and erosion) threatening their existence. The same processes, at the meantime, are generating spectacular landscapes. Besides the most famous Chinese loess plateau, the North and South American loess basins, and the central Eurasian loess belt, several other minor loess basins are distributed in the world. Among these areas, we can consider the Mediterranean loess areas, and especially the Upper Pleistocene Po Plain Loess Basin of Northern Italy. The latter includes several loess/paleosols outcrops displaying complex pedosequences formed under contrasting Pleistocene pedoclimatic settings, recording recent tectonic activity between the foreland of the Alpine and Apennine ranges (i.e., site-scale geodiversity), and preserving open-air Palaeolithic archaeological sites (i.e., cultural value). After examining the global values of and the potential threats to loess geosites, as proposed in the current literature, a detailed analysis on the potentialities (in terms of scientific features, values, threats, geoconservation, and promotion strategies) of a selection of loess sites from the Po Plain Loess Basin is proposed. The quantification of the values of the geosites is performed considering the global value (i.e. scientific and additional values) of loess-bearing sites and the potential for use, according to a methodology based on a database, already tested in similar thematic contexts. In particular, this methodology implies the geodiversity assessment at site-scale, and this is particularly relevant for loess sites. Finally, for each locality, tips for enhancing Italian loess sites through promotion and geoconservation are provided.