

THE GEODIVERSITY OF LOESS SEQUENCES IN THE PO PLAIN (NORTHERN ITALY): SCIENTIFIC VALUES, THREATS, AND PROMOTION OPPORTUNITIES

**IRENE MARIA BOLLATI and
ANDREA ZERBONI**

University «La Statale» of Milan
Earth Science Department A. Desio
(irene.bollati@unimi.it)



- ✓ Quaternary loess deposits and complex pedosequences developed on wind-blown silt as parent material are **very powerful palaeoclimatic and palaeoenvironmental indicators** allowing to reconstruct the glacial/interglacial dynamics



352

COMUNICAZIONE PRELIMINARE

SUL

LOESS PIEMONTESE

NOTA

dell'ing. A. VIGLINO e dott. G. CAPEDER

Estratto dal Bollettino della Società Geologica Italiana
 Vol. XVII (1898), fasc. 1.

ROMA

TIPOGRAFIA DELLA R. ACCADEMIA DEI LINGUI

1898



Viglino, Capeder, 1898. The loess in the Piedmont region, the first report on Italian loess

- ✓ For this relevant scientific value, loess outcrops are gaining great attention in the framework of geoheritage valorisation.

Strategies balancing **geoconservation** and **promotion** are hence required, and they should be based on the **assessment** of sites specific **values** and **threats** that each site might undergo.



GLOBAL VALUES OF LOESS GEOMORPHOSITES

according to Vasiljević et al. (2011a, 2014) and Wang et al. (2019).

A. Research and Education Values (Scientific)

B. Cultural Values

C. Aesthetic Values

D. Economic Values

E. Functional Values

Loess sequences 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**.

FACTORS THREATENING LOESS GEOMORPHOSITES

according to Vasiljević et al. (2011a; 2014) and Wang et al. (2019).

A. Natural

Erosion:

Earthquake

Freeze-thaw cycle and exfoliation

Piping

B. Human-induced

Functionality/economical

Legislative framework

Ignorance

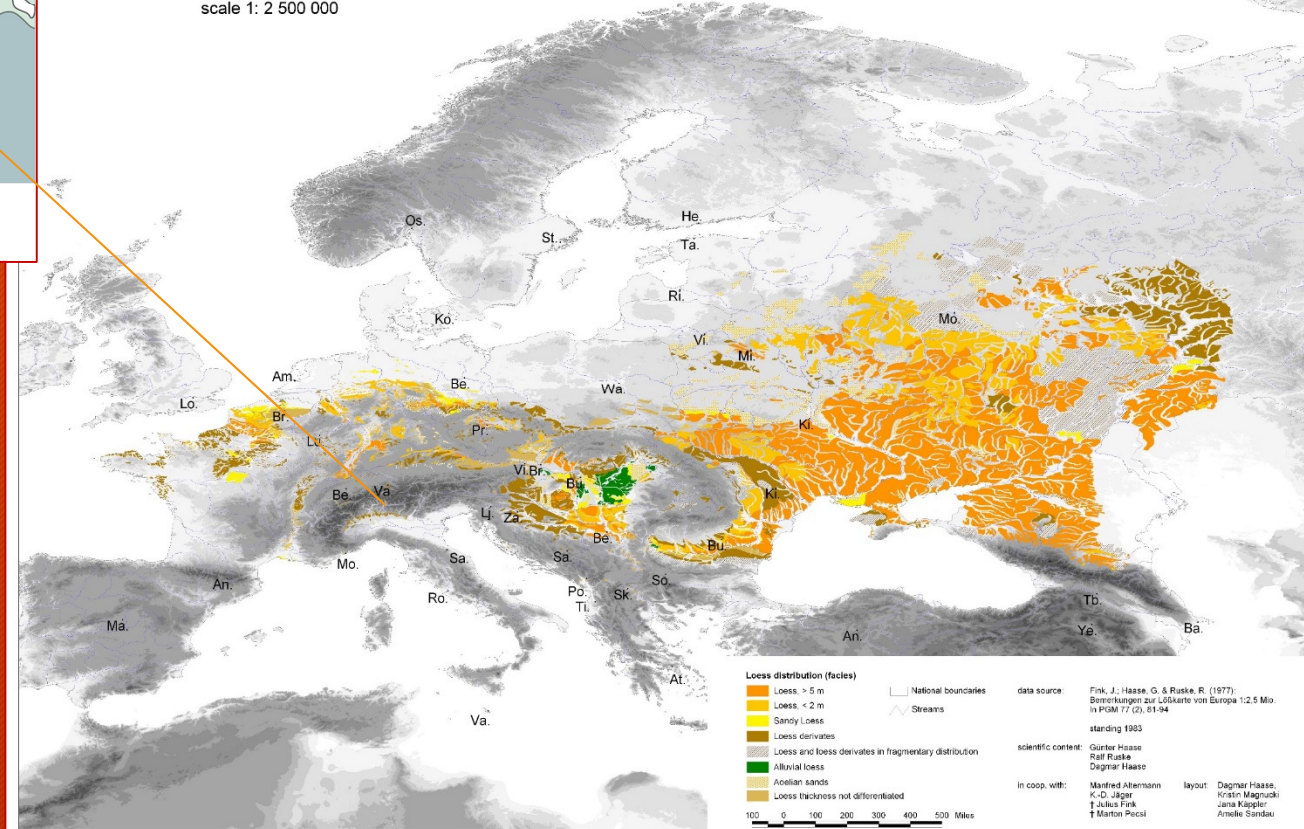


Loess sequences are distributed along wide latitudinal ranges in both the Boreal and Austral Hemispheres, but they are less frequent if compared to other kinds of Quaternary sediments, and often characterized by a **hotspot-like distributions**. They are, hence, key-points in geodiversity assessment at basin-scale.

Haase et al., 2007

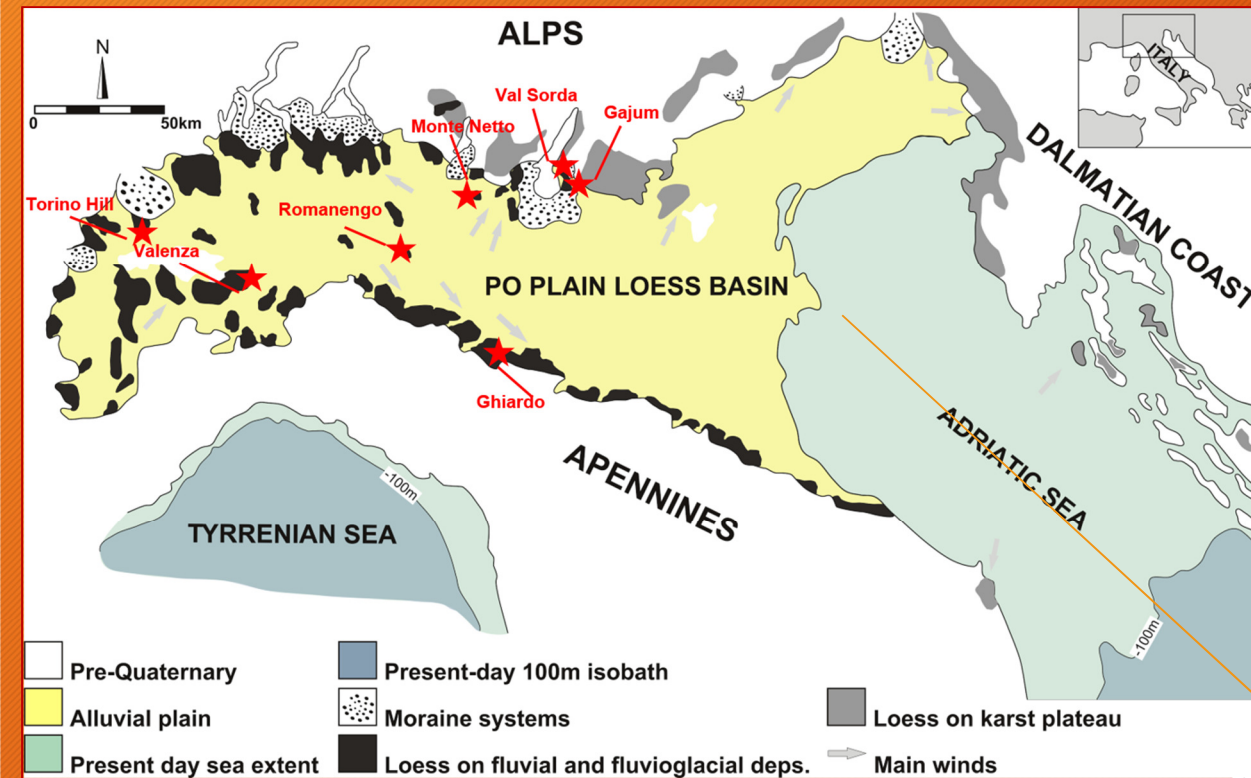
Map of loess distribution in Europe

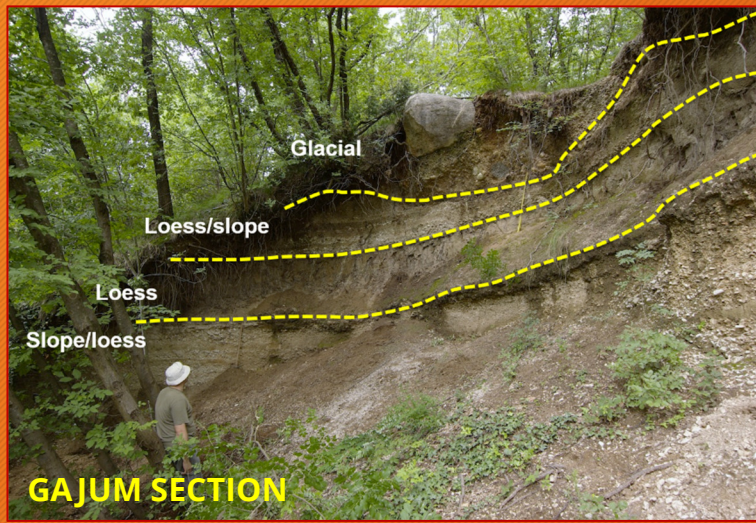
scale 1: 2 500 000



Map of the Po Plain Loess Basin (modified from Cremaschi 1987)

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**).

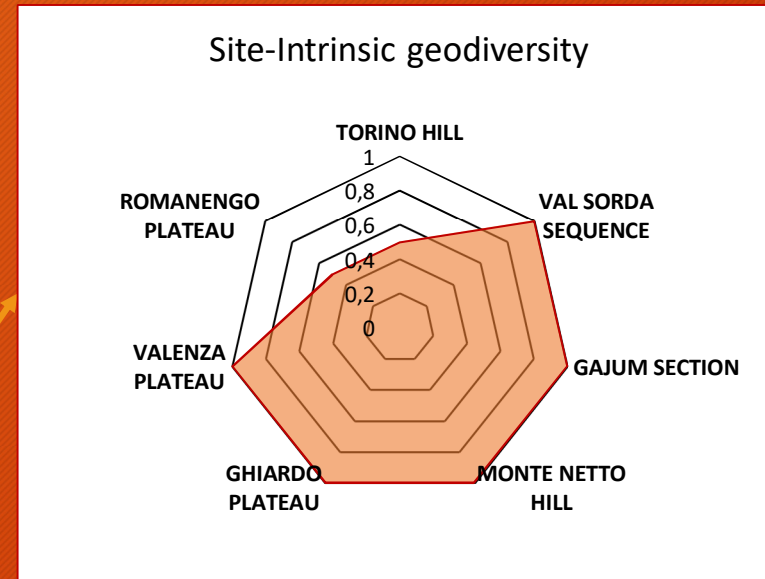




Some pictures to highlight geodiversity in terms of Scientific-Additional Values and potential for use



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. According to the results obtained, for each locality, tips for enhancing Italian loess sites through promotion and geoconservation could be elaborated.



Site-Intrinsic Geodiversity (Gd)	1 lithology, 1 main landform	0
	1 lithology, n-landforms	0,50
	> 1 lithologies, n-landforms	1

Monte Netto - A complex sequence of loess, paleosols, and fluvial sediments.... disturbed by faults

