



## PREFACE

In this special volume of *Geological Quarterly*, we delve into a fascinating array of geological phenomena, with a primary focus on the Pleistocene Epoch, loess covers, and the dynamic interplay between human activities and geological processes across Europe, particularly in Poland and its neighbouring regions.

This volume is not simply a collection of scientific articles: it is the result of the 21st Field Seminar “Correlation of Loess and Glacial Deposits in Poland and Ukraine”, which was also a scientific event in the series “Interdisciplinary Scientific Seminar on Glacial and Periglacial Phenomena of Central Europe”, all under the overarching theme “Methodology for the Reconstruction of Climate and Environmental Changes Recorded in Loess Covers”, which took place in Jarosław, eastern Poland, on October 6–8, 2022. This conference was a significant event, not only due to its scientific contributions, but also as a tribute to the memory of two Polish eminent loess researchers: Professor Adam Malicki (1907–1981) and Professor Henryk Maruszczak (1922–2012). Their pioneering works and lasting impact on the field of loess research are honoured throughout the discussions and studies presented in this volume.

The manuscripts compiled in this special issue offer an in-depth exploration of various aspects of geological science. Each paper contributes to our understanding of the geological past, with a particular emphasis on the insights gleaned from loess and glacial deposits. The articles highlight innovative research methodologies and present new findings, continuing the legacy of Professors A. Malicki and H. Maruszczak in advancing our knowledge of Earth’s history and processes. This volume stands as a testament to the enduring importance of loess studies in understanding our planet’s geological and climatic history.

Bakhmutov et al. (2023) offer a comprehensive review of the magnetostratigraphic studies in Ukraine and Moldova, focusing on the Pleistocene loess-palaeosol sequences. This work provides a historical overview and highlights recent advances in the field, particularly emphasizing the situation of the Matuyama–Brunhes boundary in the stratigraphic scheme of Ukrainian loess. Their work stands as an important contribution to understanding Pleistocene climate change in Europe.

Teodorski (2023) discusses the use of the anisotropy of magnetic susceptibility method in the study of some Quaternary deposits. His paper details the application of this method in reconstructing the directions of transport of rock material and in complementing the results of paleomagnetic dating, showcasing its importance to geological studies.

Kenis et al. (2023) delve into the nano-scale analysis of aeolian quartz grains. Their use of advanced techniques such as SEM/FIB and S/TEM reveals two distinct types of polymineralic coatings on quartz grains. This research opens up new perspectives on the paleoenvironmental implications of, and challenges in, optically stimulated luminescence dating.

Gawrysiak and Kołodyńska-Gawrysiak (2023) present a novel study on the distribution and geomorphometric features of loess covers in the Lublin region (eastern Poland). They have developed an accurate map based on various data sources, including high-resolution digital terrain models, which allows detailed insights into the morphological characteristics of these loess patches. Their methodology and findings contribute significantly to our understanding of the diversity and distribution of loess covers.

Żogała et al. (2023) utilize electrical resistivity tomography (ERT) in their study of the Late Magdalenian site in Wilczyce, Poland. Their research focuses on identifying loess covers and their formation in relation to bedrock, highlighting the effectiveness of ERT in geological profiling and understanding loess-palaeosol sequences, but also pointing out the limitations of the method in loess field studies.

Alexandrowicz and Łanczont (2023) present lithological and malacological studies of a Carpathian loess site in Zalesie near Przemyśl. The exposed profile is among a select group of loess sites in Poland with an almost complete malacological sequence, representing MIS 2–MIS 3 and indicating significant local paleoenvironmental variability in the valley of a small Carpathian stream.

Łanczont et al. (2023) present an intriguing study of burial mounds on the Subcarpathian loess plateau. Focusing on the kurgans built by Late Neolithic communities, their non-invasive research approach sheds light on the construction and environmental context of these prehistoric structures, offering a glimpse into Neolithic pastoral practices.

Gębica (2023) explores the transformation of slope relief and the age of buried soils in the marginal part of Subcarpathian loess plateau, emphasizing the impact of prehistoric human activities. Utilizing radiocarbon dating and archaeological surveys, the study reveals the scale and significance of anthropogenic transformations of the landscape, particularly during Neolithic farming.

Ryzner et al. (2023) examine the colluvial deposits in the loess gullies of southwestern Poland. Their study aims to assess the interactions between natural environmental changes and land degradation due to human impact. Through a combination of lithostratigraphic analysis and dating techniques, they provide a comprehensive view of land-use changes and their impact on the environment.

Finally, Marks (2023) revises the understanding of Pleistocene glaciations in southern Poland. His work on the modified stratigraphy of the Middle Pleistocene and the geological evidence from key sites provides critical insights into the Scandinavian glaciations and interglacial organic sequences in this region.

The manuscripts presented in this special volume of *Geological Quarterly* collectively offer a rich and diverse exploration of geological science, each contributing valuable insights and advancing our understanding of the Earth’s geological history.

and processes. This compilation is a shining example of the successes achieved through international and national interdisciplinary cooperation, as well as collaboration among various academic centres. The cross-pollination of ideas and methodologies from different fields and institutions has enriched these studies, demonstrating the power of collaborative scientific endeavors. The interplay of diverse academic backgrounds and research traditions has not only enhanced the quality of the research presented, but also opened up new avenues for exploration and discovery.

Moreover, this collection underscores the need for continued joint research on loess covers. The complexity and significance of loess in understanding environmental and climatic history demand ongoing collaborative efforts. Future research, building on the foundations laid by these studies, is essential for

further advances in our comprehension of loess dynamics and their broader implications.

In closing, profound gratitude is extended to the Editor-in-Chief – Prof. dr hab. Tadeusz Peryt – for his trust, patience, and understanding throughout the process of working on these individual manuscripts. The Editor's role has been pivotal in shaping this volume, ensuring that each contribution not only stands on its own merits but also seamlessly integrates into a cohesive and informative whole. This volume, as a result, stands as a testament to the fruitful outcomes of enduring dedication and cooperative spirit in the realm of geological research.

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