

Biogenic sediments of selected drainless depressions of the covered karst of the Wyżyna Małopolska and their paleogeographical significance

Dorota Brzozowicz

Summary

The PhD thesis presents the results of research on three selected sites located within the activity of covered karst processes. The sites under study are located in three different mesoregions of the Wyżyna Małopolska: Wzgórza Opoczyńskie (Daleszewice), Niecka Włoszczowska (Łykawe Doły) and Niecka Solecka (Gaik-Winiary). The goal of the research was to determine whether the fillings of the studied depressions retained the stability of the deposition and whether the biogenic sediments deposited in forms of covered karst origin contain reliable data that can be used as the basis for palaeo-environmental analyses. The area of the Wyżyna Małopolska is poor in reservoirs of biogenic sediments containing data on the Holocene palaeo-environment, so the sites selected for research may become a valuable supplement to the database on environmental conditions in this period.

On the basis of the available literature and geological maps, the nature of the geological background of the studied sites was determined, and a digital terrain model of the Quaternary and sub-Cenozoic surface in the vicinity of the sites was made. Lithology analysis of the sediments filling the depressions was performed and their physicochemical parameters were determined. An essential part of the study of biogenic sediments of the aforementioned sites is pollen analysis, which enables the determination of changes in the plant cover in and around the study sites also chronology (from Younger Dryas to Subatlantic), and its results were compared with palynological profiles from reservoirs whose genesis is not related to the activity of karst processes. Radiocarbon dating was also performed, which indicated the approximate age of the research sediments. Based on the analysis of the species composition remains of Cladocera and Chironomidae, it was possible to determine changes in the conditions in the karst reservoirs and their character at various stages of development.

The results showed that the selected drainless depressions located in an area of covered karst processes, which do not show significant disturbances in the continuity of sediment accumulation, have good potential as a basis for palaeo-environmental analyses. Studies of profiles from sites located within the limestone karst activity have shown that the continuity of sediment accumulation was preserved in them, and the plant succession is complete. Only the site located in the area of gypsum karst activity, where the dynamics of karst processes are higher, showed disturbances. The analyses also allowed the scheme of development of covered karst depressions proposed by prof. Różycki (1946) to be verified

and modified and the stages of reservoir development in which individual layers of sediments filling them were formed to be determined.