

EGU21-4891, updated on 17 Oct 2021

<https://doi.org/10.5194/egusphere-egu21-4891>

EGU General Assembly 2021

© Author(s) 2021. This work is distributed under the Creative Commons Attribution 4.0 License.



Multi-proxy studies of the Late Glacial fluvio-aeolian succession in the type site Mierzyn, central Poland

Moska Piotr¹, Sokołowski Robert², Jary Zdzisław³, Zieliński Paweł⁴, Raczyk Jerzy³, Krawczyk Marcin³, Skurzyński Jacek³, Poręba Grzegorz¹, Łopuch Michał³, Szymak Agnieszka¹, and Tudyka Konrad¹

¹Institute of Physics, Centre for Science and Education, Silesian University of Technology, ul. Konarskiego 22B, 44-100 Gliwice, Poland (piotr.moska@polsl.pl)

²Department of Geophysics, Institute of Oceanography, University of Gdansk, al. Piłsudskiego 46, 81-378 Gdynia, Poland

³Institute of Geography and Regional Development, University of Wrocław, Pl. Uniwersytecki 1, 50-137 Wrocław, Poland

⁴Institute of Earth and Environmental Sciences, Maria Curie-Skłodowska University in Lublin, ul. Kraśnicka 2cd, 20-718, Lublin, Poland

Multi-proxy studies (including sedimentological, pedological, radiocarbon and optically stimulated luminescence dating methods) were used to establish origin and chronology of depositional processes in the type section Mierzyn, central Poland. The investigated key site is located in the extraglacial zone of the Last Glaciation, ca. 130 km to the south from the Last Glacial Maximum in the Luciąża river valley area. In the studied profile (16 m thick) two lithofacial complexes were identified. The lower, fluvio-aeolian complex consists of silty-sandy sediments (1.6 m) deposited. The final phase of fluvio-aeolian deposition is expressed by initial pedogenic processes. Above is located aeolian complex (13 m of thickness). Three aeolian units are separated by two palaeosols.

To establish stratigraphic framework of depositional and pedogenic processes, four samples for radiocarbon dating from palaeosols and twelve samples for OSL dating from sandy units were collected. The obtained results reveal very good agreement of both absolute dating methods. It led to reconstruct chronology of main palaeoenvironmental changes. The fluvio-aeolian complex and the lowermost part of aeolian complex (below the lower palaeosol) were deposited in the Oldest Dryas in relatively cool and dry climate conditions. The amelioration of climate in the Bølling interstadial caused development of pedogenic processes expressed by 0.3 m thick palaeosol. Main part of aeolian complex (10 m of thickness) was deposited in the Older Dryas. The upper palaeosol developed in the Allerød interstadial as a result of the next amelioration of the climate. During the Younger Dryas was deposited the uppermost part of aeolian complex.

Classic development of fluvial to- aeolian succession in the Mierzyn site as well as detailed chronology based on two independent absolute age methods reveal that it can be treated as stratotype for the Late Glacial and correlated with other type sections in the Central and Western Europe.

Acknowledgments

Presented results were obtained with support of Polish National Science Centre, contract number

2018/30/E/ST10/00616.