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# Climate condition in the Central Europe during the Weichselian Ice Sheet according to the Educational Global Climate Modeling Project

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The expansion and retreat of the ice sheet is controlled by climate changes, and from the other hand, a huge ice mass influences on the climate in the regional scale. This mechanism is commonly known as the fact but often without making reconstruction by using climatological modeling.
The purpose of our study is to reconstruct the climate condition during the Weichselian Ice Sheet in the Central Europe, especially for Poland and surrounded countries. The Global Climate Model (GCM) is made for predicting climate, but simplified version can be useful for reconstructing paleoclimate. Hence, the simple initial conditions and surface data proposed by the Educational version of the GCM was applied. In our study we used a simplified version of the GCM to calculate main climate characteristics within the time limits c. 21 000 BP – 18 000 BP, which has been previously invented on Columbia University. The model is constructed on grid with a horizontal resolution 8° latitude by 10° longitude and was establish for modeling most of weather conditions based on available paleoclimate data.
It is possible to estimate the probable climate condition along the southern ice sheets margin on the basis of output from the GCM and GIS modeling techniques. Above the ice mass occurs local high pressure area, which seriously interfered on atmospheric circulation. Whereas the low pressure systems in the southern part of continent may caused permanent barometric situation, which stimulates wind directions as well as the precipitable water available in the mass of air.
The climate on the east-south border of ice margin was colder and drier than on the west-south region, where it was more ocean-reliable and gentle with higher temperatures. The differences in temperature between the western and eastern part of the Central Europe reached few centigrade.
Against a background of the mean paleoclimatic situation in the Central Europe there is coming out a question about the particular paleoclimate condition in Poland. In this area occurred a huge ice-lobe, distinct in the geomorphology, during the Weichselian Ice Sheet. Authors try to define the role of such a big ice-barrier on the climate changes at the foreland, between the western and eastern side. It is necessary to consider the ice cap thickness in the lobe estimated from separately prepared in GIS software (GRASS) 3D ice-sheet surface elevation model, together with the climatic data from the GCM for regional situation. The results of modeling are also related to available abiotic parameters for Poland.
Finally, it is suggested that the ice-lobe was high enough barrier to cause the differences in temperature distribution due to limitation of delivery the warm Atlantic air masses to the eastern region. It has also significant impact on local wind field, especially in transition areas.