

The Eemian Interglacial period was the last warm period in the Earth's history before the present Holocene period. A better understanding of this period can help us to better understand the changes which were observed during the Holocene period (last 12000 years). The previous studies in the various karst regions of Europe showed the difference between them. That difference is most visible in the growth rates of speleothems, which depend on the latitude. The possible explanation of observed differences is the thermal-humidity gradient along the N-S direction. Furthermore, in the records from Isotope Stage 5 we may observe significant regional differences in the N-S and W-E gradients. Additionally we can observe changes in that difference during the whole Isotope Stage 5. The differences between the regions seem to be smallest during the warm Eemian period. Existing isotope stage 5 records from speleothems in the European region come mostly from South-Western Europe. There are also some records from Scandinavia and Israel. The regions of Central Europe and South Eastern Europe are still unknown in this area of the research. The main goal of this project is to reconstruct the changes along the N-S and W-E directions in Europe during Isotope Stage 5 and compare the obtained results with gradients on the N-S and W-E directions for the Holocene period. Studies in the variability of isotopic records along the N-E gradient in Europe have been carried out by our team for Holocene period. The comparison between the Holocene and Eemian Interglacial periods is very valuable from the paleoenvironmental science point of view and may enhance our understanding of present climatic changes. The proposed project will provide new paleoenvironmental data and its research topic is in accordance with modern research trends. The results of the project will be an excellent showcase for Polish science. The complexity, high precision and resolution of the methods employed should guarantee its usefulness and possibly negate the need for relative costly analytical research. The project is an attempt to comprehensively reconstruct regional paleoclimatic variability along one from the most important mountain ranges in Central Europe for the Eemian Interglacial period. In fact, it will be first comprehensive research which uses high resolution data from Central European speleothems for a palaeoclimatic reconstruction in the N-S intersection for the Isotope Stage 5 time period.

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