

The investigated issue concerns the most ancient traces of Modern Human settlement in Central Asia, or to be more precise, in the western part of the Tian Shan Piedmont. Until the end of 20th century, archaeologists believed that the area was inhabited by the Neanderthal before the actual appearance of the Modern Human, which was corroborated by numerous sites with stone artefacts, as well as by the burial site of a Neanderthal child discovered on Teshik Task in 1938. It was speculated that the Modern Human made a relatively late appearance on those sites, which is namely dated to only 40-30 thousand years ago.

The beginning of the 21st century was marked by an especially rapid development of the DNA analyses of fossil remains, the results of which were supposed to revolutionize our perception of how the researched area was actually inhabited in the past. In 2002, the results of analyses performed on the newly discovered human remains of the Obi Rakhmat site (located in E Uzbekistan near to the Kyrgyzstan border) indicated that we were most likely dealing with the Modern Human. That find would be far from unusual but for the fact that the remains were discovered in layers dated back to 70 thousand years. The obtained data bore witness to the claim that the Modern Human might have been present in Central Asia two times earlier than it had been previously suspected. That was not the end to astonishing revelations, though. In 2010, the Nature journal published the DNA analyses of a human phalanx discovered in the Denisova Cave of the Altai Mountains. The data obtained from its analysis indicated that neither the Neanderthal nor the Modern Human were being dealt with in that case. That was the first time in the anthropology and archaeology history when a new human species was determined based not on the examination of the skeleton's anatomy, but on the results of DNA analyses.

The discovery proved to be of crucial importance to human evolution and the history of human settlement in Asia as it indicated that between 70 and 30 thousand years, three human species cohabited the area of Central Asia: the Modern Human, the Neanderthal and the previously unknown human species labelled as Homo Denisovan.

The question arose then, in what respects the three species were different from each other; were their tool manufacturing methods, hunting strategies and social structures alike, or on the contrary, completely different. Unfortunately, human remains were relatively rare on the known sites and most of them yielded mainly stone artefacts and the remains of campsites. The analysis of traces of human presence in the form of tools, fire-hearths and animal bones on those sites allows for matching them to one of those particular human species.

The examined period, named as the end of Pleistocene-Ice Age, was long enough for the climate change to occur several times (both warming and cooling). This important factor has to be taken into consideration while analysing the presence of the three humans species in Central Asia and it needs to be established what sort of climatic and environmental conditions the three species lived in.

Determining the climate change sequences in the order of their appearance, as well as matching the discovered traces of human activity to particular climatic periods and environment types will allow to establish if climate shifts had any real influence over the lives of the three species. It will yield answers as to how much the climate change affected their hunting strategies and tool manufacturing processes. It will also reveal what strategies were applied in face of the changes that were taking place at that time; whether they stuck to their old well-known schemes or adapted themselves, and if yes, to what extent they were able to do so. These are the questions we are planning to answer while executing our project.

In order to tackle the above mentioned issues, soil samples from particular layers will need to be collected on selected sites where traces of human activity had been detected. The samples will undergo a series of laboratory analyses, from their chemical composition to analyses of the isotopes of particular chemical elements. All of this will be aimed at allowing to establish what climate the soil layers were formed in, which will in turn indicate what sort of climate the people lived in in that place at the very time when the analysed soil layer was being accumulated.

Comparing the results of our analyses with the analyses of artefacts and their manufacturing process will answer the question of how human life was affected by climate and environment changes.