



## **Integration of paleosoil science and archeology in the study of evolution of natural environment and society in southern Russian steppes within last 6 kyr**

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Integration of soil science and archeology in the study of ground monuments of ancient and middle age history of the steppes of Eastern Europe has led to formation of a new interdisciplinary scientific approach named as archeological soil science in 90<sup>th</sup> of last century (Demkin, 1993, 1997). Its main goals include the study of soil evolution, reconstruction of century dynamics of natural environment, estimating the influence of paleoclimatic conditions on the economic structure, migration, and distribution of ancient tribes. Our soil-archeological data of several hundreds kurgans (burial monuments) of different age provided a new information on soil evolution and climate development in the eastern Europe steppes within last 6 millennia, helped to elucidate the role of spatial-temporal variability of natural conditions in the life of ancient population.

It has been established that the late Eneolith (IV mil. BC) was characterized by elevated humidity, which exceeded that of modern time. The landscapes corresponded to more northern modern ones. By the end of millennium the climate underwent aridization, which activated the processes of soil salinization, dehumification and solonchaks formation.

The Bronze epoch (end III-II mil. BC) was distinguished by sharp climatic changes, which had conditioned repeated migration of the boundaries of soil-geographical zones (sub zones). The boundary of II-II mil. BC was marked by the peak of paleoecological crisis with decrease of amount of annual precipitation not less than 100 mm per year. Eroded, strongly salted surface- carbonate chestnut soils, which have no modern analogs, dominated in the soil cover. The catacomb tribes existed in the region

at that time had changed from settled to movable type of economic life. In the second half of the II mil. BC the humidifying of climate occurred, followed by considerable changes of soils with a shift of landscape boundaries to the south. In the region the population increased, the economic structure of settled tribes of the sрубnaya culture had gained complex character (cattle-breeding, agriculture).

In the early Iron Age (I mil. BC – IV c. AD) the relatively humid and aridic climatic periods followed one another lasting from 100 to 300-400 years. As a rule this had resulted to the changes of soils only on the more detailed level. Aridic epoch occurred in the end of the II – first quarter of I mil. BC favored to the establishment of a new economic type – nomadic cattle-breeding. The strengthening of aridization and continentality of the climate in the IV-II cc. BC had activated migration of early sarmatian tribes from the southern Urals to the low Volga region.

Natural environment of the middle age epoch may be divided into aridic (V-XI cc. AD) and humid (XII-XIV cc. AD) periods. The latter may be considered as a climatic optimum with the amount of annual precipitations by 50-70 mm higher than that of modern time. This period the natural boundaries had shifted to the south with soil evolution on the sub-type level. The improvement of paleoecological conditions might mostly conditioned the tatar-mongolian invasion.

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