

4th World Conference on

CLIMATE CHANGE

October 19-21, 2017 | Rome, Italy

Response of East-European forest-steppe soils on climate change varying periodicity

Yury G Chendev

Belgorod State University, Russia

In the evolution of the geographic environment and soils the paramount importance belongs to climate change. Modern landscapes and soils of Europe formed during Holocene. However, Holocene was heterogeneous on bioclimatic conditions, and history of climate change and natural development of plant cover in different regions of Europe was characterized by individuality. The purpose of the work is the presentation the results of study the forest-steppe soils responses to climate change in Holocene within the Center of the Eastern Europe. The main method of the study is soil-archaeological method or method of chronosequences for surfaced (modern) and buried soils. The objects of research are soils on the territory and in the vicinity of archaeological sites (burial mounds and ancient settlements), including soils buried under earthen deposits of archaeological monuments from 350 to 4600 years old. When comparing the different-aged soils, various morphological, physical and chemical features of forest-steppe soils as indicators of the evolution of climatic and bioclimatic conditions were analyzed. The reaction of soils to climatic changes lasting from decades to millenniums was studied. Climate changes lasting nx1000 years have determined trends in the development of zonal forest-steppe soils - chernozems and gray forest soils (Luvisols). Formation of gray forest soils was delayed in relation to the formation of chernozems. The age of meadow-steppe soil formation in the forest-steppe zone is near 10,000 years. The age of broadleaf-forest soil formation in the forest-steppe zone is less than 4000 years (after the beginning of climate wetting in Late Holocene). Climate changes lasting nx100 years determined the evolutionary dynamics of forest-steppe soils by transformation of their Holocene trends. The development of chernozems in Middle Holocene was interrupted by soil formation under forests as the result of episodic climatic moistening. Development of gray forest soils in Late Holocene was inhibited by episodes of climatic aridizations and returning of steppe environments to former forested areas. Soil responses to decadal climate changes in the 20th century (nx10 years) resulted in dynamics of areas, occupied by saline and non-saline soils, as well as chernozems with different depth of carbonates. Thus, East-European forest-steppe soils are very dynamic systems that respond to climatic changes of varying periodicity. This circumstance should be taken into account in the development of current and long-term plans of economic management of lands and soils of the study region.

Biography

Yury G Chendev is a specialist in field of soil geography, genesis and evolution of soils, palaeogeography, and historical geography. Author more than 200 scientific works (including 5 monographs). He conducted studies in many regions of Russia and foreign countries. He is a participant of many interdisciplinary soil-archaeological expeditions. Dr. Chendev develops theory of evolution of forest-steppe soils in Holocene under influence of natural and anthropogenic factors.

Chendev@bsu.edu.ru

Notes: