Geophysical Research Abstracts, Vol. 7, 01429, 2005
SRef-ID: 1607-7962/gra/EGU05-A-01429

Holocene environmental changes, human settling strategy and living conditions in the outwash plains (Upper Volga Lowland, Russia)

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Holocene landscape evolution and human history of vast areas of East European outwash plains are closely related to dynamic of hydrological regimes of fluviolacustrine or river systems. Wetting-drying, accumulation and washing out of sediments and soils consecutively changed local environment of human settlements and living conditions.

An integrated analysis of the multilayered archaeological sites and cemeteries within Upper Volga outwash plain was made. Basic data were compiled from archaeological excavations, peat profiles, soil-sedimentary sections and drill-holes. Well-dated archaeological information was combined with palaeoenvironmental archives from the river basin, including biota, soils and geomorphology.

Reconstruction of the climate and hydrological characteristics in the Late Glacial Age and the Holocene of study sites was made, and successive stages of palaeoenvironmental changes were defined. The palaeoenvironmental changes were treated in relations to Early Man way of life, and soils were considered as a living floor.

1. 10330 BP: initial calcareous soil formation on the fluviolacustrine deposits of palaeolake under dry unforested conditions; start of human settling. Settlements occupied lake coast close by water, which is evidenced by archaeological vestiges of the Mesolithic *Resseta* culture most ancient in this region.

2. 9900-8350 (7760) BP: successive climate humidization, forestation and soil leaching under good drainage.

3. 7760 - 7400 BP: relatively warm and dry period with high bioproductivity and biodiversity, good drainage; weeds spreading. Active human colonisation (*Butovo, Lyalovo,* and *Volosovo* forest cultures).

4. Around 6000: start of successive wetting and peat accumulation in the depressions; complex and contrast soil toposequence; high bioproductivity and biodiversity; the beginning of planation of relief.

5. 5840-5580 BP: relatively warm and dry conditions comfortable for human life (?).

6. 4590 - 4130 BP: wetting, waterlogging in depressions of relief.

7. 3520-2750 BP: flooding-drying regime.

8. Around 2600BP: abrupt flooding, which can be considered as a regional catastrophe; depopulation of region and the social-economic collapse.

9. 1900 BP: flooding-drying regime.

10. 1270 (1360) AD: start of successive bogging and peat formation; occupation of highlands.

Newformation of minerals such as fluor-apatite, carbonate-apatite and gypsum in lake-bog deposits and soils is defined as evidence of contemporary processes of ground water rising in Upper Volga Lowland.

Palaeohydrological stages revealed in Upper Volga site are corresponding partly with data of Caspian Sea level change, and it is a ground for correlation of palaeoclimatic data and palaeohydrologic processes within Volga basin.

Researches were supported by the Netherlands Organization for Scientific Research (NWO). Project 047.009.002.