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Vegetation history of Western Russia (Upper Dnieper, Smolensk region): Climate and human impact on landscape in last two millennia

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Climate and vegetation history of Upper Dnieper region (Western Russia) is investigated poorly while archaeological studies provide evidences of human activities during last 3 millennia. Our study presents vegetation reconstruction based on pollen analysis of sediments extracted from two sites in Smolensk region. The first site is located in Katynka river basin and pollen analysis of extracted buried soil, alluvium and peat sediments demonstrates vegetation dynamics in archaeologically rich area over 5 millennia. The second site is located in 50 km from to the west from Smolensk and in 15 km to east from the Russian-Belarus state border. The analysis of extracted peat sediments presents regional history of vegetation. The aim of our study is to compare data obtained from both sites and to estimate climate and human influence on vegetation during last two millennia when activities associated with agriculture changed Dnieper valley landscape significantly.

The first results of pollen analysis data of the first site allow to register significant human impact on vegetation 2.0-0.8 ka BP. Before that period pollen of indigenous forest trees dominates in spectra while since 2.0 ka BP pollen composition changes dramatically and pollen of *Betula* and *Pinus* is in majority in so-called "Gnezdovo soil" layer. Medieval layers of sapropel contain mostly pollen of *Pinus* with admixture of *Betula* and *Alnus*. Taxonomic diversity and presence of meadow herbs, weeds and cultivated taxa pollen increases significantly (up to 30%). Dynamics of pollen composition in specimens from the second site allows us to register slow processes of indigenous vegetation recovery over last 3 centuries approximately. Modern analogue technique applied on pollen data and analysis of historical data makes possible to separate impacts of climate and human on vegetation of the past and to reconstruct the climate of last two millennia.

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