

Problems of the results interpretation from different sequences and the better integration on the pollen data of the Baltic region

Tatyana Sapelko

(tsapelko@mail.ru) Institute of Limnology RAS, St.Petersburg, Russia

In the study of the Pleistocene and Holocene sediments we are facing with various difficulties. First of all there is the problem of correlation between data from sequences of different genesis. Sometimes we can get different results when we use for the study sediments of the sea, lake, archaeological site or the sequences of other origin. An attempt to compare the results obtained from different types of sequences was made on the Karelian Isthmus (NW Russia). Different stages of development of the Baltic Sea were studied through the sequence of the marine sediments from the modern Baltic Sea basin, through the lake in the territory, which was flooded in the transgressive stages of the Baltic Sea development; through the peat witnessing regressive stages of the Baltic and through the archaeological sites, fixing the highest possible Baltic waters level. We have examined sequences of different origin using multiproxy analysis, which was the main pollen analysis. It is not very accurate to reconstruct the environmental changes in the past using data only from archaeological sites without comparing the results of studies with similar data from the natural sites (lakes, peat, etc.). Conversely, some vegetation changes under the human influence could be wrongly attributed to climatic fluctuations basing only upon the results of lake and bog sediments studies. In the lake sediments we can trace the natural background of the dynamics of surrounding landscape, the natural laws of changes in vegetation and in climate. In the section of the archaeological site we are able to identify the anthropogenic contribution to these changes. Thus, the comparison of data from different types of sequences allows emphasizing the anthropogenic contribution to environmental changes and, as a consequence, to distinguish between the natural vegetation changes from the impact of human activity. It is of interest especially for the Late Holocene sediment studies, as for the period when the human impact on the vegetation sometimes exceeded the climatic impact. Pollen data from peat sediments allowed us to describe non-anthropogenic part of changes in vegetation and in climate at the local level, while pollen data from the archaeological site made it possible to reconstruct human-influenced vegetation and landscape at the same level. Marine sediments were studied in the eastern part of the Gulf of Finland. Upon this, we have traced the dynamics of vegetation in large parts of the Baltic region during the Last Pleistocene - Holocene. However, it is difficult to judge the development of a particular region, for example, of the Karelian Isthmus, through studying marine sediment data, since it allows to only characterize the vegetation at the zonal level. In addition, marine sediments often contain a hiatus in sedimentation. In particular in the studied sequence the absence of the Boreal period deposits was noted. As a result, we have traced the changes in the environment at the local, regional and zonal level. This in turn made it possible to identify similarities and differences in the pollen zones of different sequences and to interpret the results correctly.