Geophysical Research Abstracts
Vol. 14, EGU2012-8724, 2012
EGU General Assembly 2012

Holocene vegetation and climate changes in Northeast Greece deduced from a terrestrial pollen record

K. Müller-Navarra (1), U. Kotthoff (1), U. C. Müller (2), and J. Pross (2)

(1) Geologisch-Paläontologisches Institut und Museum, Geoscience, Universität Hamburg, Bundesstraße 55, 20146 Hamburg, Germany , (2) Paleoenvironmental Dynamics Group, Institute of Geosciences, University of Frankfurt, Altenhöferallee 1, 60438 Frankfurt, Germany

To unravel Holocene climate setbacks in the eastern Mediterranean region, we performed a high-resolution study of pollen abundances in a core from Tenaghi Philippon, located in the near coastal Drama Basin (NE Greece), spanning the interval from the onset of the Holocene to the present. In addition, we analyzed the carbon- and nitrogen-isotope values of the lower part of the section to reconstruct the water table ranges and thus the precipitation rates. The relative age control is primarily based on the correlation of key events in the Holocene Tenaghi Philippon pollen record with corresponding features in the well-dated marine pollen record of core SL152 from the Mount Athos Basin (northern Aegean Sea). The resulting pollen record indicates that after a forestation phase at the onset of the Holocene, the northern Aegean Region was densely wooded throughout most of the Holocene. The forest assemblages were dominated by deciduous trees, mainly Quercus robur (British oak). Climate setbacks are revealed by the increase of pollen abundances of open-landscape plants, particularly by steppe elements like Artemisia (mugworts/sagebrush) and true grasses, indicating dryer and/or cooler conditions. For the early Holocene, all significant climate setbacks revealed at Tenaghi Philippon are also reflected in the neighbouring marine pollen record from the Mount Athos Basin. The strongest of these climate setbacks occurs between 8.2 and 8.0 ky BP and is most probably linked to the climatic perturbation at ca. 8.2 ky BP that is also reflected in numerous other records from the Northern Hemisphere, e.g. from Greenland and Western Europe. For the early Holocene, most of the climate setbacks are more strongly reflected in the pollen record from Tenaghi Philippon than in the marine record. This is different for the middle Holocene: While the marine pollen record from core SL152 suggest a rapid deforestation at the end of the sapropel-1-formation around 6.5 ky BP, the terrestrial pollen record reveals only a small decrease in arboreal pollen percentages. However, with support of statistical methods, vegetation changes could be identified which indicate an opening of the landscape, and thus probably drier conditions. We conclude that the northern Aegean region witnessed a decrease in precipitation around 6.5 ky BP, but that this decrease influenced the vegetation in the Drama Basin to a lesser degree than the coastal and lowland vegetation reflected in the marine record, and that the differences concerning pollen transport and preservation for both sites may have lead to a stronger reflection of the setback for the marine record.