



Ecosystem reconstructions for the hinterland of the Atlantic Coastal Plain during the late Mid-Miocene Climatic Optimum (IODP Expedition 313)

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During IODP Expedition 313, cores from three Sites (313-M0027, M0028, and M0029) from the New Jersey shallow shelf (water depth approximately 35 m) were retrieved in 2009. We have investigated the palynology of sediment cores from Site M0027, 45 km off the present-day coast of New Jersey in order to reconstruct environmental and climate change in the region during the second half of the Mid-Miocene Climatic Optimum (MMCO) and the subsequent transition to cooler conditions (ca. 15 to 13 million years before present). Transport-caused bias of the pollen assemblages was identified via the analysis of the terrestrial/marine palynomorph ratio and these results were considered when interpreting palaeo-vegetation from the pollen data. Pollen preservation in the interval analyzed herein was generally very good. Pollen grains were analyzed via both light and scanning electron microscopy.

In the analyzed samples, angiosperm tree pollen grains were most abundant and probably formed the main vegetation zone in the lowland during the MMCO. The pollen-based results point to the presence of a deciduous-evergreen mixed forest that was characterised by e.g. *Quercus*, *Carya*, *Liquidambar*, *Juglans*, *Pterocarya*, *Tilia*, *Engelhardia*. Frequent conifer pollen grains indicate that highland forests with e.g. *Pinus*, *Cathaya*, and *Picea* were present in the hinterland of the New Jersey shelf. Typical wetland elements like *Nyssa* and *Taxodium* as well as herbal taxa like *Polygonum* and *Polygala* were generally rare. The pollen-based climate reconstructions for the hinterland of the New Jersey shallow shelf document a warm temperate climate without winterfrost and relatively high precipitation through the year during this time. Our results imply that the vegetation and regional climate in the hinterland of the New Jersey shelf did not react as sensitively to the cooling phase following the MMCO as other regions in North America or Europe.