Vegetation setbacks within the Holsteinian interglacial (MIS 11) as recorded in an annually-laminated core from Dethlingen, Northern Germany

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A new core from Dethlingen paleolake (Lüneburg Heide, Northern Germany) comprises a 10 m thick interglacial sequence which partially consists of annually-laminated diatomite. A high resolution (decadal-scale) palynological study reflects the typical features of the Holsteinian interglacial (i.e. Fagus, Buxus and Pterocarya) in this region. Although there has been a controversial debate, it is mostly accepted that the Holsteinian interglacial is associated with MIS 11. The most interesting finding is the occurrence of two short intervals of vegetation setbacks within full interglacial conditions. During the earlier one the frequency of thermophilous tree taxa was reduced by around 60% within a few decades (based on varve counting). This setback was possibly a result of an extreme and abrupt decrease of mainly winter temperature. On the other hand, the decline of thermophilous tree taxa during the upper setback was long (probably lasting ca 1000 yrs) and more gradual. Even though, a minimum of thermophilous tree taxa was also established relatively abrupt within a few decades. The pollen data during this setback indicate a climatic deterioration during the summer season. We conclude that these two setbacks have a different signature in terms of rates of change and intensity which points to different mechanisms underlying the two events. Further mirco-facies and geochemical analysis are in progress in order to reveal the possible trigger mechanisms of these two events.