



Unexpected spontaneous ignition of Late Glacial sediments from the palaeolake Wukenfurche (NE Germany)

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A new finely laminated sediment archive has been recovered from the palaeolake Wukenfurche, NE Germany, comprising the last Glacial to Interglacial transition. The site is located within the Eberswalde ice-marginal valley and south of the terminal moraine that was formed during the Pomeranian phase of the Weichselian glaciation.

Two sediment cores were obtained from the presently swampy area in July 2014. From these individual profiles a 14.7 m long continuous composite profile has been compiled by correlation of distinct marker layers. Glacial sand deposits covered by basal peat are found at the base of the cores. A visible volcanic ash layer 6 cm above the transition from basal peat into the overlying finely laminated lake sediments corresponds most likely to the late Allerød Laacher See Tephra (LST). Preliminary counting on core photographs of the 3.5 m thick package of reddish and black alternating laminae above the LST yields a total of ca. 2500 layer couplets. Further micro-facies analyses on large-scale thin sections will be applied to test if these couplets are of annual origin (i.e. varves).

Standard preparation for large-scale thin sections involves freeze-drying (for 48 hours) of 10 cm-long sediment slabs stored in aluminum boxes. Immediately after releasing the vacuum of the freeze-dryer chamber we observed an unexpected spontaneous combustion of the sediment from a particular interval of the profile. The exothermic combustion process lasted for approximately 10 to 20 minutes during which temperatures of up to 350°C have been measured with an infrared camera. Preliminary results suggest that oxidation of iron sulfides contributes to the observed reaction.

To our knowledge this is the first time that such spontaneous combustion of lake sediments after freeze-drying has been observed. Details of the combustion process and sediment characteristics will be provided.

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