



A new ELSA time series of tephra layers and paleobotanical evidence from laminated Eifel maar sediments covering the entire last 120,000 years

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The ELSA Project has drilled a total of 50 sediment cores (2000 m of laminated lake sediment) from Eifel maar lakes and dry maar structures during the last 15 years. These records have been dated using 7 different methods, including 370 ¹⁴C dates. Ten records reveal the established palynological succession of trees during the Holocene down to the Laacher See Tephra, which is used for synchronization with seven more recently drilled laminated sediment cores, which all are ¹⁴C-dated too and analyzed for tephra, pollen and paleobotanical macroremains. The seven newly established records reveal a continuous MIS2 section with mosses, ostracods and characea oogonia. They show that the 28.000 – 40.000 BP has witnessed an open landscape dominated by grass, but with rhythmic spread of conifer trees following the Greenland interstadial/succession. Seeds of Ranunculaceae provide excellent material for ¹⁴C dating. Even deciduous trees are present in small amounts until 28.000 BP. The time from 48.000 to 40.000 BP is characterized by a pronounced transition from the open landscape to an early MIS3 spruce (*Picea*) dominated forest during Greenland Interstadial GI17-14. Modern man apparently arrived at the end of this principal vegetation change near 40,000 BP. Volcanic activity in the Eifel had a stable and pronounced recurrence from 55,000 – 30,000 BP every 4000 years, but commenced with the beginning of MIS2. This landscape evolution with a forested early MIS3 is quite different to peat and sediment records from Netherlands/ Northern Germany/Scandinavia/ Poland, but is similar to conditions in parts of Switzerland. We address the early MIS3 forest to the nearby continuously moist soils and warm conditions in the nearby Mosel valley, i.e. on those stands where wine is growing today, and which most likely had served as a local refugia even for deciduous trees during MIS4 and MIS3. The MIS5 sections of the presented ELSA records reach down at least to the beginning of MIS5d near 118,000 BP, probably even back into MIS5e. The oldest Ar/Ar dated ELSA records reach down to 480,000 BP.