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# Annual resolution $\mu$XRF geochemistry of ELSA maar lake sediments (Eifel, Germany): Implications for paleoclimate variability of the last 60 kyr

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High resolution $\mu$XRF geochemistry of maar lake sediments from the West Eifel volcanic field (Germany) is obtained for two sediment cores (12m, 88m long) that cover together the time period of the last 60 kyr, with an average sedimentation rate of 1.5$\pm$0.5 mm/a. The core from the Schalkenmehrener Maar reaches the Holocene back to 16 kyr BP where as a core from the Dehner dry maar reaches down to 60 kyr BP, based on six 14-C ages.

The cores were subsampled in 10 cm increments and impregnated with resin before analysis with a micro X-ray fluorescence spectrometer EAGLE III (Röntgenanalytik Meßtechnik GmbH) with 0.5 mm resolution for Al, Si, P, Ca, Ti and Fe. High contents of Al and Ti are evident for the detritus dominated cold climate phases of MIS2. Si content is a mixture of quartz and diatoms. During warm intervals the Si content is high caused by an enhanced diatom flux. However, the highest values in Si result of an intensive input of clastical silicates in the time of cold phases.

High contents of P and Fe are characteristic for the biogenic organic rich gyttja of MIS3 sediments and the Holocene. Both elements are part of a amorphous vivianite product indicating low Eh/pH ratios at the lake bottom. Vivianite concretions are identified by its typical blue colour in the core and by optical microscope observation but because of its amorphous state they are not detectable by X-ray diffractometry.

The Ca content is a mixture of biogenic and detritic carbonate. Highest values of Ca are due to autochthonous carbonate products in the lake. In contrast detritic Ca is at

a maximum during cold phases and reflects the provenance of the glacial dust from Devonian and Triassic limestone. Therefore it is used to reconstruct wind directions for dust storms during the LGM when wind direction apparently was from the West.