Geophysical Research Abstracts,
Vol. 10, EGU2008-A-06037, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-06037
EGU General Assembly 2008

Mineral and paleomagnetic record of Lake Lehmilampi (Finland)

E. Haltia-Hovi (1), T. Saarinen (1), N. Nowaczyk (2) and B. Plessen (2)

(1) Department of Geology, FI-20014 University of Turku, Finland, (2) Sektion 3.3: Klimadynamik und Sedimente, D-14473 Potsdam, Germany (eeva.haltia@utu.fi / Phone: +35823336323 / Fax: +35823336580

Mineral and paleomagnetic properties of three long sediment cores (7.5 m) were investigated from Lake Lehmilampi (63º37'N, 29º06' E) in eastern Finland, covering the last 10 500 years.

The sediment of Lake Lehmilampi is continuously varved since its isolation from Lake Pielinen approximately 5500 years ago. Varve deposition is a remarkable characteristic of the Lake Lehmilampi sediment record, providing good chronological control for the upper 4.3 m of sediment sequence (error estimation $\pm$2.3%). Comparison of PSV from other Fennoscandian lakes was used to determine the age of non-varved sediment section predating isolation.

Mineral magnetic properties were analysed from all the paleomagnetic specimens by measurement of magnetic susceptibility, remanence parameters ARM and SIRM. Acquisition of IRM was measured from 10% of samples. Interpretation of mineral magnetic properties is supplemented by determination of total organic carbon (TOC) and varve properties analysed by x-ray densitometry and digital image analysis. According to the IRM acquisition results, magnetite is the dominant ferrimagnetic phase in the Lake Lehmilampi sediment. Isolation of Lake Lehmilampi from Lake Pielinen exerts a significant impact on magnetic properties, recording a shift from oxic lake bottom conditions to anoxic with isolation. Concentration of magnetic minerals and magnetic grain size decreases upcore, as determined by magnetic susceptibility κ, SIRM and magnetic interparametric ratios. TOC content increases upcore, partly diluting the fer-

rimagnetic component by diamagnetic material but possibly also causing alternation of magnetic minerals. If so, relative paleointensity estimates from Lake Lehmilampi should be treated with caution.

Relative paleomagnetic directional data show only little scatter and exhibit strong and stable single-component behaviour. Inclination and declination records from all cores are coherent, suggesting that the magnetic minerals in the lake sediment record reliably PSV. The paleomagnetic data from Lake Lehmilampi will be used in compilation of a Karelian master curve in combination of PSV data of several cores from a nearby Lake Kortejärvi.