

## Past precipitation changes in Finland inferred from annually laminated lake sediments

S. SAARNI<sup>1\*</sup> AND T. SAARINEN<sup>1</sup>

<sup>1</sup>*Department of Geography and Geology, University of Turku, 20014 University of Turku, FINLAND*

*(\*correspondence: saitur@utu.fi)*

Three annually laminated (varved) lake sediment records were studied in Central and Eastern Finland. Each record extends more than 3 000 years back in time. Sediment in two of the lakes, Lake Kalliojärvi and Lake Kuninkaisenlampi, are of clastic organic varve type. A varve year consists of three laminae. The first, clastic minerogenic lamina, results from increased erosion caused by spring snow melt. The second and third laminae consist of organic matter. The second lamina is composed of organic matter from autochthonous biogenic production and allochthonous organic matter transported from the catchment. The third lamina is composed of fine homogenic organic matter that is accumulated under the ice cover during winter. Lake Kallio-Kourujärvi sediment is of organic varve type that consists of the alternation of the second and third lamina types.

Both minerogenic and organic matter accumulation are related to precipitation during winter and growing season, respectively. The amount of erosion is controlled by the amount of accumulated snow during the previous winter and the length and intensity of the melting episode. In addition to spring floods, the growing season precipitation regulates transportation of nutrients and allochthonous organic matter from the catchment into lake. Thus clastic and organic laminae can be used as proxies in order to reconstruct seasonal precipitation changes. The reconstructions from the studied three lakes shed light on the mechanisms that produce changes in precipitation. The results suggest that winter precipitation is related to North Atlantic Oscillation in Central Finland while solar forcing explains the precipitation variation in Eastern Finland.