

Total organic carbon and total nitrogen contents in lake sediment as a new proxy of paleoclimate

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The TOC and TN are composed of autochthonous one in the lake and exotic one derived from land area, and the former is dominant in oligotrophic terreginous lakes. It was confirmed by the study on the lake sediments that the stratigraphical changes of TOC and TN contents well correspond with the changes of pollen compositions controlled by climate. It is also recognized recently that the flux of TOC in modern sediments from AD1983 to 1999 has a good relationship with annual chlorophyll a amount in water column and average winter temperature (average from December to March) in Lake Kizaki. This result means that temperature control the TOC flux in sediment via productivity in lake water. The TOC, TN and C/N measured in the sediment core from Lake Nojiri show an excellent example of climate variability during the past 45 ka which may correspond with temperature change. These facts suggest that content or flux of TOC and TN, and C/N ratio in lake sediments may be a powerful tool to clarify the paleoclimate changes. This tool is especially useful for the paleocliamtic reconstruction in the mid-latitude, land regions.