Sedimentary diatom assemblages in the northern part of Lake Tanganyika

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Abstract

Surface sediment diatoms from the northern part of Lake Tanganyika were analysed with several ordination and classification techniques. Three sample groups characterized by four diatom assemblages were recognized. The first sample group occurs in a rather shallow area near the delta of the Rusizi River on a coarse-grained sand substrate. The second and most important sample group occurs on the silty bottom of an underwater depression situated off the delta of the Rusizi River in the north-eastern part of Lake Tanganyika; its diatom composition has a great affinity to the Rusizi River diatom population. The third sample group contains all the other samples and covers an area corresponding to the west-, east- and southward continuation of the area of the second group; its diatom composition is also related to the Rusizi River diatom population, but in a less pronounced manner.

Introduction

Lake Tanganyika has been the subject of extensive scientific interest. The algal vegetation was examined in many publications including the investigations of West (1907), Van Meel (1954), Symoens (1955a, b, 1956), Kufferath (1956), Hecky et al. (1978), Hecky & Kling (1981), Gasse et al. (1983), Gasse (1986), Mpawenayo (1985, 1986), Hecky & Kling (1987) and Caljon (1987a, b). The sedimentary diatoms of Lake Tanganyika are less well known. Investigations were undertaken by Kufferath (1956), Degens et al. (1971), Haberyan (1985), Haberyan & Hecky (1987) and Tiercelin et al. (1988).

The sediment samples taken by the project GEORIFT (ELF - AQUITAINE) in Lake Tanganyika and the collaboration of Mme Thouin (University of Burundi) made an investigation of sedimentary diatoms of Lake Tanganyika possible.

In this paper the surface sediment diatoms of the northern part of Lake Tanganyika are studied with a special interest as to their distributional patterns. The benthic, littoral, phytoplanktonic or/and fluviatile origins of the sedimentary diatoms are discussed.

Materials and methods

Study area and sampling procedure

In the northern part of Lake Tanganyika 49 surface sediment samples (Nos. 1–49 = sample Nos. RZA 1–28, ACBUA 710–711, RZA 33–40,
RZB 1–11) were collected with a bottom sampler along four east-west directed transects (A, B, C and D) (Fig. 1) (RZA 1–28, 33–40, RZB 1–11 were collected in 1985; ACBUA 710, 711 in 1986). At each station, depth was measured with an echo-sounder. These observations allowed us to draw four schematic profiles (Fig. 2) of the bottom, each corresponding with one of the above mentioned transects.

Samples were mostly taken from a silty bottom sediment, but in a few cases they were collected from sediment mainly composed of fine (28 and 38) or coarse-grained sand (29 and 30).

The collected bottom samples were compared

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**Fig. 1.** Northern part of Lake Tanganyika. Arabic numerals indicate the approximate sampling localities; A, B, C and D correspond to the 4 sampling transects.