Hydrology and Earth System Sciences
An Interactive Open Access Journal of the European Geosciences Union

Hydrol. Earth Syst. Sci., 8, 256-265, 2004
www.hydrol-earth-syst-sci.net/8/256/2004/

Chloride concentrations in Lake Tanganyika: an indicator of the hydrological budget?

Ph. Branchu[1] and L. Bergonzini[2]
[1]GEOTOP-UQAM-McGill, CP 8888, suc. Centre-Ville, Montréal (Québec) H3C 3P8, Canada
[2]UMR-CNRS IDES, Bât. 504, Université Paris-Sud, 91405 ORSAY Cedex, France
E-mail of corresponding author: pons.branchu@wanadoo.fr

Abstract. On a historical time scale, this paper investigates the effect of hydroclimatic variations on the surface water salinity of Lake Tanganyika, the largest African lake and an open freshwater reservoir. Through annual water and chemical budgets, based on original and bibliographic data, a tracer of the water regime is proposed. Chloride, an inert and conservative element, seems to be the best candidate although its contribution to salinity is small; its use as a tracer of the water regime is validated on seasonal and historical time scales. Seasonally, a monthly water and chloride budget, constructed for an average year has been compared with data acquired in 1973. On a historical time scale, bibliographic data of chloride concentrations, compiled since 1939 have been compared with the level variation curve. The relation between lake level and surface water chloride concentration is significant on both time scales. Hence, the surface salinity/chlorinity of this freshwater lake is sensitive to hydroclimatic variations even if level variations are very limited in comparison with its great depth. This sensitivity is due mainly to the permanent thermo-haline stratification of the lake.

Keywords: climate, water budget, hydrochemical budget, Lake Tanganyika, limnology, salinity

Final Revised Paper (PDF, 708 KB)

Citation: Branchu, Ph. and Bergonzini, L.: Chloride concentrations in Lake Tanganyika: an indicator of the hydrological budget?, Hydrol. Earth Syst. Sci., 8, 256-265, 2004. Bibtex EndNote Reference Manager