



Carbon dioxide dynamics in lake Kivu during the dry and wet seasons

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Lakes are significant sources of CO₂ to the atmosphere ranging between 0.14 à 0.17 PgC yr⁻¹ globally. This emission of CO₂ is comparable to the one from rivers of 0.34 PgC yr⁻¹ and from estuaries of 0.32 PgC yr⁻¹. African lakes are characterized by partial pressures of CO₂ (p CO₂) twice higher than the global average (2300 ppm versus 1060 ppm). Also, African lakes represent about 10% of the total lake surface area (225,000 km² versus 2426,000 km²). The emission of CO₂ is attributed to the net heterotrophy of these systems sustained by the organic carbon inputs from the watershed. However, several unknowns remain on the CO₂ dynamics in lakes, in particular African ones : (1) few simultaneous and integrated studies of CO₂ dynamics and metabolic performance are available; (2) African lakes are under-sampled in relation to temperate and boreal lakes, (3) most pCO₂ estimates in lakes are based on pH and alkalinity measurements with unknown quality, (4) seasonal and diurnal pCO₂ variations in lakes are significant but not well constrained, and (5) spatial variability of pCO₂ in lakes is strong but not well documented. Here we present preliminary results on CO₂ dynamics in surface waters of lake Kivu that was sampled in March 2007 and August 2007, in the frame of the Carbon and Nutrient cycles in lake Kivu (CAKI)

project (<http://www.co2.ulg.ac.be/kivu.htm>).