

## **Chemical and isotopic characterisation of the Chari and Logone Rivers, Lake Chad Basin: a comparison between the 1970's and 2010's fluxes**

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The Chari-Logone system watershed is the only hydrological system currently active in the Lake Chad Basin and accounts for up to 95% of the water supply to the lake. This study is devoted to the chemical and isotopic characterization of the dissolved load of the Chari-Logone system, based on 1) samples collected between January 2013 and October 2016 ; and 2) data collected from studies carried out by ORSTOM researchers in the years 1969 to 1980, which provide a long-term perspective.

Strong seasonal variations are observed in  $\delta^{18}\text{O}$  and  $\delta^2\text{H}$  compositions. The evaporative enrichment observed during the dry season is much more pronounced for the Chari River, as a result of the strong evaporation of wetlands. During the flood period, isotopic signal is similar between the Chari and Logone rivers, reflecting an homogeneous precipitation composition over their two catchments, but significantly more enriched than the values characterizing the 1970's period.

Strong seasonal variations are also observed for major elements, with a dephasing between the behaviour of  $\text{Mg}^{2+}$  and  $\text{Ca}^{2+}$  with respect to  $\text{Na}^+$  and  $\text{K}^+$ . Elemental concentrations appears to be similar during the rainy season while a significant increase is observed today during the dry season with respect to the 1970's situation. These differences with previous data are discussed with respect to climatic and environmental variations which occurred over the basin during the last decades.