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# DISTRIBUTION AND PARTITION OF TRACE METALS IN THE ZAMBESI BASIN

P. Seyler (1), S. Aries (2), J. Viers (1), P. Coppin (2), , A-C. Abraham(2)

(1) IRD - LMTG , Université Paul Sabatier. OMP, 14, Av. Ed. Belin, 31400 Toulouse, France, (2) ANTELLIS Géochimie – Environnement, Impasse Palayré - Bât 4, 31100 Toulouse, France (pseyler@lmtg.obs-mip.fr)

Measurements of trace metals in rivers are of substantial interest for researchers examining basic scientific questions related to geochemical weathering and transport and to scientists involved in pollution control evaluation. The distribution of trace metals (V, Cr, Mn, Co, Cu, Zn, As, Rb, Sr, Mo, Cd, Sb, Cs, Ba, U) was investigated in surface waters and associated particulates in the Zambesi mainstream and it major tributaries. The Zambezi River Basin is the fourth largest in Africa and flows for a distance of more than 2 800 km from its source in the Kalene Hills in northern Zambia to the Indian Ocean in Mozambique. Mean annual rainfall varies from nearly 2 000 mm at the source to as little as 600 mm in the south-western part of the catchment which produces little runoff. The basin is often considered in three parts, the Upper Zambezi, the Middle Zambezi and the Lower Zambezi. The Upper Zambezi and the Middle Zambezi closely correspond to the area of interest for this study, while the Lower Zambezi which starts at the Zambia/Mozambique border falls outside of the study area. The total sampling programme hence identified a total of 19 stations along the river and 5 stations on Kariba Lake. Temperature, pH, conductivity, dissolved oxygen and alkalinity will be measured in the field during the sampling by surveys. For major and trace metals, filtered samples will be acidified and stored until analysis by liquid ion-exchange chromatography (anions), atomic absorption spectrometry (cations).and by ICP-MS (Trace metals). Dissolved V, Cu, As, Sr, Ba, U correlate with major ions and appear to be predominantly derived from soluble rocks occurring in the upper basin. The trace element concentrations in the particulate matter show a clear relationship with the location of the samples. V, Cr, Mn, Co, Ni, Zn, Cs, and Pb are almost entirely carried by the river particulate matter; Cu, Rb, Sr, Ba and U are transported mainly

by the suspended particles, but dissolved phase contribute to the transport. The implication on these results allows us to compute the dissolved and particulate fluxes from Zambezi river.