



Biogeochemistry, transport fluxes and emission of greenhouse gases from the Niger River (West Africa): preliminary results after two years of monitoring

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The Niger River is Africa's third longest river and drains an area of $\sim 2,120,000$ km². It encompasses six hydrographic regions and crosses almost all possible ecosystem zones in West Africa. Yet, there is surprisingly little or no information on carbon (C) and nitrogen (N) cycling in this river. Here, we report initial results of a monitoring campaign whereby 2-weekly samples have been collected at Niamey (Niger) [2.01°E 13.57°N] between April 2011 and March 2013 for a suite of physico-chemical and biogeochemical characteristics, including total suspended matter (TSM) concentrations, quantification and stable isotope composition of particulate organic carbon (POC and $\delta^{13}\text{C}$ -POC) and particulate nitrogen (PN and $\delta^{15}\text{N}$ -PN), dissolved organic carbon (DOC $\delta^{13}\text{C}$ -DOC) and dissolved inorganic carbon (DIC and $\delta^{13}\text{C}$ -DIC), concentration of greenhouse gases (GHGs) (partial pressure of CO₂, CH₄ and N₂O), as well as major elements, total alkalinity, and oxygen isotope signatures of water ($\delta^{18}\text{O}$ -H₂O). This dataset allows us to construct an annual budget for both particulate and dissolved carbon fluxes, as well as a first seasonally resolved characterisation of the matter transported by the Niger River and of the GHGs emitted to the atmosphere.