



Environmental impacts caused by the uncontrolled human activities on water resources availability in the Niger Inland Delta

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The Niger River basin is a significant source of water and food for West Africa. As an agricultural region, the basin is highly dependent on the water availability that is currently under pressure from increased demand with rising populations and climate variability and change. The Niger Inland Delta is one of the largest flood plains (about 40.000skm) in Africa and serves a number of interlinked human activities, such as irrigation, fishing, livestock, and reservoirs. Future changes in the dynamics of river flow may change the inundation dynamics of the delta and impact these activities. At the same time, the population in the basin is likely to double in the next 30 years, putting additional pressure on the Delta's water resources and land use.

Most hydrological models do not adequately represent these dynamics of the Inland Delta. Here we present an overview of the hydrological processes that occur over the Niger inland delta. We used digital elevation model and satellite images to analyze the spatio-temporal variations in relation to observed river flow. Based on this analysis, we have developed a representation of these processes fore hydrological models for the basin.

The basic analysis of in situ discharges confirms the impact of the inner delta area on the discharge of the main river, characterized by a strong reduction of about 15% to 50% as a result of evaporation and water abstractions for irrigation.