



## Late Holocene interdecadal climate variability in the Sahel: inferences from a marine dust record offshore Senegal

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Societies and ecosystems in northern Africa are strongly affected by the availability of water. As a consequence, long-term absence of rainfall has very dear effects on the ecosystems, as was dramatically shown in the 70's and 80's of the 20<sup>th</sup> century. Recent high-resolution reconstructions of Sahel palaeoclimate allow for new insights into these drastic climate variations and to disentangle the effects of the different components of the climate system on African climate change. In this study we extend the instrumental record of climate variability using a marine sediment core that was retrieved off the coast of Senegal, northwest Africa. The 530-cm long record covers the last 4,000 years continuously. A  $^{210}\text{Pb}$  age model allows for a matching of the proxy record with instrumental data. Specifically, variations in the sedimentary Fe/K ratio appear to be indicative of rainfall variability on land. Reconstructed variations in rainfall are most pronounced between approx. 250-1000 yr BP, when they occur at a timescale of 60-100 yrs. This enhancement of the interdecadal variability of precipitation coincides with reduced temperatures in the northern hemisphere. A similar

increase in rainfall variations is found in an ocean-atmosphere model of intermediate complexity (ECBilt-CLIO) for a state without deep-water formation in the Labrador Sea and colder conditions in the northern hemisphere. We use the model experiments to explore potential teleconnections between the North Atlantic and the hydrological cycle in northern Africa.