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

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Present-day climate in northwestern Africa strongly depends on the avaiability of water. At least since the Pliocene the Saharan Desert and the semiarid Sahel belt (tropical North Afrika) have been frequently affected by sudden shifts to more arid climate. The rate of change from arid to humid conditions is presently under heavy debate (e.g., deMenocal et al., 2001, Kröpelin et al., 2008). A recent example of abrupt droughts occurred in the early 70's and 80's of the last century.
In this study we compare different high-resolution marine sediment records of Sahel climate variability from the Senegal mud belt, northwest Africa. Marine sediment cores show the variations of terrigenous input (both aeolian dust and fluvial matter) from the African continent. Due to their different distinctive grain-size distributions, aeolian dust and fluvial mud can be recognised and quantified in marine sediments (e.g., Stuut et al., 2002). Based on these variations in the grain-size distributions of the terrigenous sediment fraction, deconvolved with an end-member modelling algorithm (Weltje, 1997), are used to reconstruct rainfall variability and dust production on land for the last 4,000 years.

References

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