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Did Wet conditions prevail in the Zambezi catchment during Younger Dryas and Heinrich events?

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During the late Quaternary, Africa experienced dramatic changes in precipitation due to latitudinal shifts of the African rainfall belt. The Zambezi River drains a considerable part of southeast Africa that is now situated at the southern extent of the rainfall belt. A mixture of Zambezi sediments and marine carbonates (mainly foraminifera and coccolithophores) has accumulated on the continental slope of Mozambique, off the Zambezi River mouth. These marine deposits document changes in Zambezi sediment discharge, which can potentially be related to rainfall.

The relative contribution of Zambezi sediments can be represented by detailed Ti/Ca XRF core scanning. Here, we present records of the relative contribution of terrigenous sediments in combination with lithogenic grain-size properties from piston cores, across a SW-NE depth transect. The spatial distribution of these records allows us to identify reduced/enhanced Zambezi discharge and changes in Zambezi sediment distribution during the late Quaternary.

All cores on this transect show a distinct reduction in the accumulation of terrigenous sediments (up to $\sim$ 9 ka BP) due to the northward transport of fluvial muds after the last deglacial shelf flooding. However, the detailed Ti/Ca records show, particularly in the deeper cores away from the Zambezi River mouth, a distinct increase of terrigenous sediments during both the Younger Dryas and Heinrich 1. Lithogenic grain-size distributions during Heinrich 1 suggest that increasing amounts of fluvial mud were deposited. The deep water records of the Zambezi slope support wetter conditions during typical northern hemisphere cold spells, suggesting a more southern limit of the African rainfall belt.

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