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Linking atmospheric and oceanic circulations in the Southern Indian Ocean during the last glacial period

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Terrestrial inputs were reconstructed using high molecular weight n-alkane concentrations in the sub-Antarctic Indian Ocean marine core MD94-103 (45˚35'S; 86˚31'E, 3560 m) to examine regional changes in the atmospheric circulation over the last 27 ka. This record was compared to the dust content in EPICA-Dome C ice and continental data from South Africa (e.g. pollen sequences and isotope records in speleothems) to get a comprehensive understanding of atmospheric links between low and mid-latitudes of the Indian Ocean. Terrestrial n-alkanes indicate higher glacial than Holocene inputs and marked glacial oscillations. Minimum values during the Last Glacial maximum (LGM) are consistent with colder and drier climate presumably caused by the persistence of subtropical anticyclones over Southern Africa limiting the amount of rainfall and vegetation growth. The otherwise higher glacial n-alkanes point to stronger tropical summer rainfall over Southern Africa than today. During Northern Heinrich events moderate decline of n-alkanes suggest reduced summer rainfall over Southern Africa possibly caused by weaker tropical Easterly winds when, according to *Stott et al.* [2002], the Pacific Ocean would have experienced Super-ENSO conditions. These results agree with the marine proxy records (alkenones, oxygen isotopes in planktonic foraminifera) along the core showing the remote influence of the ENSO on the surface hydrology at Indian Ocean Southern mid-latitudes.