



South Indian Ocean surface hydrology over marine isotopic stage 13 and 11: comparison with EPICA Dome C climatic record

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Core MD97-2101 has been retrieved in the South Indian Ocean, east of the Kerguelen Islands, at the same location as a previous shorter core, MD94-102. Sediment magnetic properties have been measured on both cores and allow us to patch MD94-102 existing records with new MD97-2101 records. We present new high resolution planktonic isotopic and Mg/Ca signals over the lower part of core MD97-2101 covering marine isotopic stage 13 to 10, as well as lower resolution foraminiferal sea surface (SST) reconstruction along the entire core. Our high-resolution records encompass the transition from lower to higher amplitude climatic cycles observed in EPICA Dome C ice core records. Our results show that SST derived from *G. bulloides* Mg/Ca leads the oxygen isotopic ratio ($\delta^{18}\text{O}$) signal measured on the same species by 3 to 5 ky over stage 12-11 transition. This implies that Southern Ocean *G. bulloides* $\delta^{18}\text{O}$ can not be used as a proxy for SST, and that correlating *G. bulloides* $\delta^{18}\text{O}$ to EDC ice isotopic records is not a valid way of building consistent time scales between Southern Ocean marine cores and Antarctic ice cores. Our records further demonstrate that a significant increase in sea surface salinity took place at core MD97-2101 site during stage 12-11 transition and lasted until the end of stage 11. Finally, although SSTs are significantly lower during stage 13 than during stage 11, the relative increase in core MD97-2101 SST from stage 13 to 11 appears to be much lower than the corresponding increase in air temperature derived from the EDC ice isotopic record.