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Climatic records of the last and penultimate deglaciations in the South Atlantic and South Indian Ocean

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Surface and deep-water records of Termination I and II in two twin South Atlantic deep-sea cores (44°09' S, 14°14' W, 3770 m depth) and one South Indian core (46°29' S, 88°01' E, 3420 m depth) are presented. Sea surface temperature has been reconstructed based on planktonic foraminifera census counts in all cases, as well as Mg/Ca of G. bulloides and N. pachyderma s. over the last deglaciation. The uncertainty on reconstructed SST using different statistical methods and different faunal databases is assessed.

Over the last deglaciation, combined 14C dating and correlation of the SST record with the air temperature signal recorded in Antarctic ice cores allowed us to correct for variable surface reservoir ages in the South Atlantic core (Skinner et al., 2010). Preliminary dating of the South Indian core over the last termination has been done by correlation of its magnetic signal with those of a neighboring 14C dated core (Smart et al., 2010). We have refined the later age scale using the Atlantic core age scale as reference. Benthic isotopic signals in the South Atlantic and South Indian cores over the last deglaciation exhibit the same amplitude and timing. Our results thus indicate that bottom waters at the South Indian site remained isolated from better ventilated deep waters of northern origin until $\sim$15 ka (Waelbroeck et al., 2011).

Over Termination II, the two cores have been dated by correlation of their SST records with the air temperature signal recorded in EDC versus the EDC3 age scale (Govin et al., 2009; 2012). A careful examination of the various sources of uncertainty on the derived dating has been performed. Benthic and planktonic isotopic signals reveal analogies but also differences with respect to the last termination. SST was significantly warmer during the Last Interglacial than during the Holocene in both sites. South Atlantic deep waters were also significantly better ventilated during the Last Interglacial than during the Holocene, whereas bottom water ventilation was similar during these two interglacials at the South Indian site.