Australian Monsoon during the last two terminations recorded in the deep sea sediment core MD052970 from Timor Sea

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Timing of the past changes in the monsoon system is a key to understand low to mid latitude climate in the past. We therefore examined the sediment core obtained from Timor Sea to understand the evolution of the Australian monsoon since previous works proposed much lesser Australian monsoon during the ice ages. Radiocarbon based as well as oxygen isotope of the planktonic foraminiferal age model revealed that the core preserved 220 kyr long record of the paleoceangraphy in the region which enabled us to compare the proxy data of the last two terminations. Our planktonic foraminiferal oxygen isotopes were ranged between ca. -1.1 permil to and ca. -2.7 permil respectively during the Holocene and the last glacial maximum, which is consisted with previously reported data from nearby locations which reconstructed past 80 kyrs (Spooner et al., 2005). Since our record can be extended back longer than the 200 ka, the present study showed that the similar structures of oxygen isotopes between the penultimate glacial maximum and the last interglacial. However the oxygen isotope record obtained from the Makasser Strait showed ca. -1.1 permil and ca. -3.3 permil respectively for the last two glacial maxima and the interglacials (Visser et al., 2003). No differences in the SST between the two core sites are recognized at present and hence any discrepancies in the oxygen isotopes can be attributed as changes in the oxygen isotopes of seawater due to the hydrological differences. Modern satellites based observations show that the sea surface salinity in Makasser Strait is reduced as much as 4 psu during the Austral summer due to the transportation of the fresher water from the Banda Sea by Austral summer monsoon. This creates the salinity difference between the Makasser Strait and the Timor Sea. On the other hand no salinity differences between the two sites observed during the Austral winter. Therefore Austral summer monsoon was not as strong as today to create salinity differences between the two during the glacial times. Time series analyses of the two oxygen isotope curves will tell us the inception of the intensified Austral monsoon and we will discuss the timing of the intensification of the Austral monsoon during the last deglaciation as well as penultimate deglaciation.