Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09428, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09428
EGU General Assembly 2008

Timing of massive 'Fleuve Manche' palaeoriver discharges over the last 400 kyr: Deglaciation patterns of the European ice sheet between MIS 10 to MIS 2

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During Pleistocene glaciations, the presence of the European ice sheet combined to sea level lowstand has strongly modified the fluvial drainage directions of the western and central European rivers flowing northwards. The French, Dutch and German rivers indeed flowed into the Bay of Biscay (NE Atlantic Ocean), via the 'Fleuve Manche' palaeoriver, during periods of coalescence of the Fennoscandian and British ice sheets in the northern North Sea. High-resolution multi-proxy study of several long-piston cores retrieved in the northern part of the Bay of Biscay allow us to reconstruct 'Fleuve Manche' palaeoriver discharges, which were mainly triggered by European ice sheet oscillations, over the last 400,000 years.

Mass accumulation rates (MAR) have been estimated based on robust age models. These age models have been constructed based on oxygen isotopic composition of benthic foraminifera (δ^{18}O), $CaCO_3$content, abundances of the polar foraminifera *Neogloquadrina pachyderma* (s) and radiocarbon dates. MAR and XRF measurements of the Ti/Ca ratio reveal that a significant increase of terrigenous input occurred at the beginning of the Termination IV (ca. 340 kyr – MIS 10) and I (ca. 20 kyr – MIS 2) as a response to the onset of the global deglaciation. The retreat of the European ice sheet induced a substantial increase of the 'Fleuve Manche' palaeoriver discharges

and seaward transfer of continentally-derived material into the Bay of Biscay. Surprisingly, our results reveal that substantial terrigenous sedimentation pulses during MIS 8 and 6 occurred 10 to 15 kyr before the Termination III and II, i.e. within the mid-MIS 8 (ca. 270 kyr) and mid-MIS 6 (ca. 150 kyr) respectively. These meltwater discharges were most likely the result of large-scale reorganisations of the European ice sheet. These ice sheet oscillations were probably induced by changes in the insolation. Indeed, summer insolation maxima at around 270 and 150 kyr seems to be one of the major trigger mechanism explaining the significant retreat of the southern part of the ice sheet at those times.