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Last glacial rapid climate variability in surface water properties from the Eastern Equatorial Pacific Ocean

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Many different paleoclimatic records from the North Hemisphere have demonstrated that climate during last glacial period, particularly at MIS3, was extremely unstable. In contrast, sensibility of equatorial regions to glacial rapid variability is not so well constrained. Here we present very high resolution last glacial records from the Eastern Equatorial Pacific (EEP) based on d18O and Mg/Ca ratios from Globigerinoides ruber and Neogloboquadrina dutertrei analysed in the ODP Site1240 (Leg 202, 0ž 01.31'N, 86ž 27.76'W, 2921 mbsl). Relatively high sedimentation rates from ODP1240 (10-15 cm/kyr) give us a sampling temporal resolution of 200-150 years. Chronology of ODP1240 have been established in base to 19 AMS 14C dates for the last 30 kyr whereas older ages have been calculated after correlating our N. dutertrei 18O record measured with the deuteriun record of the Vostock ice core. Our N. dutertrei record shows an "Antartic-like" variability pattern, which according to the absolute radiocarbon dated section, occurred synchronously at both Vostock and ODP1240 sites. N. pachyderma inhabits the deep thermocline and as a consequence, it is recording mostly the variability in the equatorial undercurrent (EUC) which is fed by the Antarctic Intermediate Water and thus is likely to transfer the Antarctic climatic signal. In contrast, records from the surface layer based on G. ruber measurements, show a very different pattern. MIS3 record from G. ruber d18O is punctuated by five events of isotopic enrichment which, apparently, lead the North Atlantic Heinrich events (HEs). Our temperature record based on Mg/Ca from G. ruber indicates that these events terminated with rapid warming phases of about 2žC. In any case, these results confirm that HEs coexisted with relatively warm EEP conditions as it has been previously proposed but they provide a new perspective about the causes and

consequences of the preceding abrupt changes in the EEP surface conditions.