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Long- and Short Term Holocene Variations in the Strength of the North Atlantic Deep Water at the Charlie-Gibbs fracture zone.

C. Kissel (1), J. L. Turon (2), E. Cortijo (1), and C. Laj (1)

(1) Laboratoire des Sciences du Climat et de l'Environnement/IPSL, CEA/CNRS/UVSQ, 91198 Gif-sur-Yvette Cedex, France (KISSEL@LSCE.IPSL.FR, 0033 169823568), (2) Département de Géologie et d'Océanographie, Université Bordeaux 1, UMR EPOC CNRS 5805, Avenue des Facultés, 33405 Talence Cedex, France

The precise documentation of the natural variability of the THC during the interglacials in North Atlantic is of critical interest for the understanding of its future evolution under the effect of global warming. It is one of the goals of the AMOCINT project (06-EuroMARC-FP-008).

We report on detailed magnetic analyses of a Holocene marine sequence taken at the Charlie-Gibbs fracture zone (52°S), on the path of the contourite drift at the place where it turns around the Reykjanes ridge, from the Gardar drift northward. This location has been sampled twice. The first core (gravity) has been taken in 1977 with the R.V. J. Charcot from IFREMER. The second one (Casq core) has been taken during the IMAGES MD168-AMOCINT cruise on board the R. V. Marion Dufresne in 2008 (IPEV). In the first core, the apparent sedimentation rate varies between 50 and 79 cm/kyr and it obviously results from compaction as the second one known to be free of any distortion has sedimentation rates of the order of 50 to 140 cm/kyr between present and 10 kyr B.P.

The two cores can be perfectly correlated using any physical property allowing to precisely transfer the 19 radiocarbon dates from the old series to the new one. Detailed magnetic analyses have been performed on both cores and will be compared. The magnetic fraction is uniformly composed during the Holocene period of magnetites with a grain size distribution in the pseudo-single domain range (a few micrometers). The magnetic concentration varies in time on both long and short terms. The long-term trends may be fitted by a 4th order polynomial with an increase of the bottom circulation strength in the mid-Holocene. We shall discuss these long term trends together with the short term features in terms of changes in the strength of the bottom current through Holocene and compare them to other proxies an other records also obtained from North Atlantic.