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Variations in the Strength of the North Atlantic Bottom water during Holocene.

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In the framework of the FP7 project Past4future, we report on a multi-proxy study of the changes in the dynamics and the properties of bottom water mass in the subpolar North Altantic during Holocene. Magnetic properties coupled with sortable silt and benthic carbon isotopes are investigated for Holocene marine sedimentary sequences located in the Charlie-Gibbs fracture zone (53°N) and in central (57°N) and southern Gardar drift (59°N). All the cores are located at water depths bathed by the Iceland-Scotland Overflow Water (ISOW), mixed at the southernmost locality with southern sourced water masses.
The long-term variations in measured proxies are fitted with similar polynomial curves. An early Holocene event characterized by a shutdown/shoaling of the bottom circulation at the deepest sites is most likely related to the main deglacial freshwater inputs. It is followed by a progressive strengthening/deepening of the overflow water which culminates around 6 kyr, in coincidence with the Holocene thermal maximum. After 6 kyr corresponding to a drastic hydrological reorganisation in the North Atlantic, a general decline is observed in the bottom flow strength until about 2 kyr B.P. when it reached its present day state. After detrending, several short periods of reduced bottom flow strength and reduced supply from the northern detrital sources are observed, with a periodicity around 600 years. These results will be discussed together with those from simulations and from other Holocene sequences.