

## ***Interactive comment on “Reconstruction of Atlantic Water variability during the Holocene in the western Barents Sea” by D. E. Groot et al.***

**J. Giraudeau (Editor)**

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Dear authors,

The open discussion phase of your manuscript is now closed. The manuscript is now entering its “final response phase”, when you will have the occasion to answer (cumulatively) to the referees’ comments. According to CP rules, this final response is compulsory before being allowed to submit a revised version. I have no doubt that the two in-depth and detailed reviews might foster new approaches as well as more elaborated interpretations of your original and impressive high-resolution dataset. When preparing the final response, please pay particular attention to some of the most important points raised by the referees as well as from my personal reading of the manuscript:

C2156

- Calculations of  $d_{18}O$  water and  $d_{18}O$  equilibrium calcite ( $d_{18}O_{ec}$ ), based on your independent bottom water temperature and salinity estimates, would expand the discussion on the question of  $d_{18}O_w$ /salinity mixing line, isotopic disequilibrium (benthic foram  $d_{18}O$  vs  $d_{18}O_{ec}$ ), and might help explaining some of the inconsistencies pointed out by the referees between foram  $d_{18}O$  and bottom temperatures for instance.
- The term “influence of Atlantic water” should be more clearly defined throughout the manuscript: volume transport/speed or temperature (or both) signatures?
- Also, on various occasions in the manuscript, it is not clear whether “bottom temperatures” refer to values estimated from transfer functions or derived from  $d_{18}O$ .
- A restructuring of section 5.2 (see comments by referee #2), as well as a more thorough interpretation of the mid-Holocene interval (section 5.3, referee #1) are needed.
- Please discuss the  $d_{13}C$  record (bottom water ventilation, organic matter flux, comparison with other existing record from nearby locations (eg. Rasmussen and Thomsen (Geology, 2009)) or remove any references to this dataset in the text and figures.
- Brine water convection is a very hot topic in the studied area; your dataset (benthic  $d_{18}O$  and  $d_{13}C$ ) might help investigating the presence (or not) and impact of such a phenomenon in the western Barents Sea throughout the investigated time period (see above reference, as well as the Holocene record of Sarnthein et al., Boreas, 2003). Though I am aware that such a topic would deserve a manuscript on its own.
- Finally, your final response should include a comment to the point raised by Rütther about the erosional feature within the early Holocene part of the sediment core.

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Interactive comment on Clim. Past Discuss., 9, 4293, 2013.

C2157