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Climate of the Past Discussions

Interactive comment on "Northward advection of Atlantic water in the eastern Nordic Seas over the last 3000 yr: a coccolith investigation of volume transport and surface water changes" *by* C. V. Dylmer et al.

J. Knies (Editor)

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A few comments from the guest editor.

to chapter:"Rationale for the selection of species-specific coccolith proxies

I am slightly critical to the strict application of the E/C ratio to the Barents Sea and western Svalbard core locations for reconstructing abundance of "Arctic waters" and "Atlantic waters". Baumann et al. (2000) did not define the E/C ratio for the western Barents Sea or Svalbard margin from their set of surface samples. For the Norwegian

Sea, he reconstructed the position of the Arctic Front, but no clear (and strict) separation between Atlantic-water influcend and Arctic-water influenced areas. In addition to the presence of certain types of water masses (Atlantic vs. Arctic), what would be the effect of ecological changes, temperature/salinity gradients within the inflow path of Atlantic-derived water masses on coccolith assemblages? Does the presence of 40% subpolar foraminifera in the Fram Strait record justify a dominance of "Arctic waters" in the Fram Strait core as indicated in Figure 7? I would suggest to elaborate further on these issues and may consider to adjust Figure 5 and 7 for the presence and absence of "Atlantic (AW) and Arctic waters". "Proximity of the Arctic Front" is possibly

Some minor issues:

line 45: be consistent; either Mid-Holocene Climate Optimum, or Mid-Holocene climate optimum

Line 121: better, Denmark Strait and Iceland-Scotland Ridge

Line 154-156: What about the influence of the ESC for the sea ice export towards the south. Perhaps you should mention it here.

Line 337: better, "significant proxies for relative changes in NAC volume flow"

Line 312-314: I agree there is an overall trend towards more positive E/C ratios towards the top of the high latitude cores (in contrast to the decreasing trend on the vøring plateau). However, I would not start interpreting changes on the order of 0.25 or less ("Relatively high ratios....."). I think it is sufficient to discuss the general trend of the Svalbard/Barents Sea cores and point to the distinct differences in relation to the proximity of the Arctic Front (E/C $\sim$1).

Line 383: It should be WSC (not WGC).

Line 395-396: "...where poleward AW did not affect the surface until the last century". Again, what is the effect a gradual temperature changes within the Atlantic inflow along the North-South transect on the E/C ratio? Fixed boundaries between AW and ArW

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over the last 3000 years are potentially more gradual.

Interactive comment on Clim. Past Discuss., 9, 1259, 2013.