

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.

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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

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Sea, he reconstructed the position of the Arctic Front, but no clear (and strict) separation between Atlantic-water influenced 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 ~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.

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