

Pados et al. present stable isotope data measured on two species of planktonic foraminifera obtained with plankton nets in the Fram Strait. The results are compared to water column $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ as well as to the stable isotope composition of fossil shells. The data are a valuable contribution to what is already known about these species and complement earlier studies in the same area. This kind of studies is essential for a better understanding of the foraminiferal proxy record stored in sediments. While this is not meant as an extensive review of the entire paper, I do have some comments, which, I hope, go beyond a gratuitous self-citation and will help to improve the manuscript.

Sincerely, Lukas Jonkers

My main concern is with the discussion on the offset between $\delta^{13}\text{C}_{\text{calcite}}$ and $\delta^{13}\text{C}_{\text{DIC}}$. Pados et al discuss several reasons for this offset and suggest that the $[\text{CO}_3^{2-}]$ may be an important parameter. However, they ignore the possibility of a temperature effect on the $\Delta\delta^{13}\text{C}$, which has been observed in culture studies (Bemis et al., 2000) and potentially also in field studies on *N. pachyderma* (Jonkers et al., 2013b). It would be a significant improvement to the study if the authors attempted to quantify both effects on the $\delta^{13}\text{C}_{\text{calcite}}$. A temperature effect can readily be evaluated and since no carbonate system data exist for the ARK XXVI/1 cruise I suggest the authors make use of data that is available in the CARINA and GLODAP databases (some is also accessible through ODV) to obtain a first order estimate.

It would also be valuable if the comparison with previous studies in the Fram Strait was more extensive. Perhaps add a figure comparing the different studies. And an additional reference that could be used for this purpose is Stangeew (2001).

Minor comments

- Vital effect: the offset from equilibrium $\delta^{18}\text{O}$ of course depends on the paleotemperature equation that is used to calculate $\delta^{18}\text{O}_{\text{eq}}$. This needs to be highlighted and also means that the estimate of the vital effect derived by Jonkers et al. (2010), which is based on the Kim & O'Neil (1997), needs to be adjusted before it can be compared to the other estimates (see also Jonkers et al., (2013a)).
- *T. quinqueloba* data: is it worth showing these if they are potentially unreliable due to low amounts of calcite? At the very least, this major caveat needs to be stressed again in the discussion of $\delta^{13}\text{C}$.
- Seasonality: both *N. pachyderma* and *T. quinqueloba* have a growing season that is significantly longer than a month in summer (Jensen, 1998; Jonkers et al., 2010; Kohfeld et al., 1996). The fossil signal will therefore not only reflect maximum temperatures during summer, but integrate the entire growing season and hence incorporate lower temperatures as well. This could also help to explain the difference between the (snap)shot plankton tow data and the sediment data.
- Effect of eddies and temporal temperature variability: how sensible is it to compare shell chemistry to snapshots of hydrography when foraminifera reflect ambient water conditions over their entire life span? Part of the offsets between water column and test $\delta^{18}\text{O}$ and $\delta^{13}\text{C}$ could potentially be explained by mesoscale variability (which is visible in Fig. 2). In addition the estimates of advection distance (Von Gyldenfeldt et al., 2000) represent only the sinking phase (i.e. after death of the foram). During its life stage, a test can be advected over greater lengths.
- For comparison with the sediment data it would be useful to also plot the weighted mean isotope data in Fig 7 and 8.
- Sea ice and vital effect: the observation of a variable vital effect is very interesting and deserves more attention, as this is crucial information for paleoceanographers. While I cannot offer an explanation for this variability I would like to point out that the highest concentration of *N. pachyderma* (or of planktonic foraminifera, for that matter) was found in sea ice: up to 320 #/L! (Spindler and Dieckmann, 1986). Perhaps sea ice does therefore not represent unfavourable conditions.

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