

## ***Interactive comment on “Pteropods from the Caribbean Sea: dissolution as an indicator of past ocean acidification” by D. Wall-Palmer et al.***

**D. Wall-Palmer et al.**

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We are extremely grateful to Gerald Ganssen for taking the time to thoroughly review our manuscript and make very constructive comments.

1. We expect changes in the LDX to reflect changes in the carbonate availability within the surface ocean and hence carbonate production of calcareous organisms. The core CAR-MON 2 was collected well above the aragonite lysocline (core collected at 1102 m and aragonite lysocline at 2000 m) and is therefore unlikely to have been influenced by dissolution caused by the lysocline. We agree that this has not been made clear within the manuscript and that occasionally the term ‘dissolution’ is used when perhaps ‘reduced calcification’ would be more appropriate. Changes to the manuscript will be made to rectify this.

2. The presented  $\delta^{18}\text{O}$  data represent global ice volume and is not intended to represent sea-level change and related pressures. It is assumed that during periods of high atmospheric  $\text{CO}_2$ , the atmosphere is warmer and little ice is produced. Where as, during periods of low atmospheric  $\text{CO}_2$ , the atmosphere is cooler, allowing more ice to form. It is therefore being used here to demonstrate the climate and atmospheric  $\text{CO}_2$  concentration. However, we do understand that this is not well explained within the manuscript and changes must therefore be made to clarify this. We agree that it would be beneficial to include Vostok  $\text{CO}_2$  data, however, it would only be available in very low resolution. This is because points of known  $\text{CO}_2$  are limited to points of known accurate date. We have correlated the known  $\text{CO}_2$  to the corresponding LDX and they compare very well. This may be a useful addition to the manuscript, either as part of figure 3, or as a new figure.

3. We agree with your suggested changes to figure 3.

4. We have not discussed the third peak in pteropod preservation in the manuscript as, unfortunately, the presented data is all that was recovered during coring. Since CAR-MON 2 is the longest core that we have at present, we are unable to continue the record. However, we agree that it would be worth mentioning in the manuscript. A further cruise to the area early next year (IODP Expedition 340) aims to extend this record (M.B. Hart will be shipboard micropalaeontologist).

We also agree with your further detailed comments and will make changes accordingly.

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