

***Interactive comment on “CO<sub>2</sub>,  $\delta^{18}\text{O}_2/\text{N}_2$  and APO: observations from the Lutjewad, Mace Head and F3 platform flask sampling network” by I. T. van der Laan-Luijkx et al.***

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Author's reply to anonymous referee #1

The authors firstly would like to express their gratitude to the referee for commenting this paper. The suggestions are very much appreciated and included in the new version of the paper. Below the authors reply to each comment individually.

P13058 L2-4: this has been included.

P13059 L2-3: a citation has been included.

C6184

P13060 L7-8: details have been included.

P13061 L13-14: this sentence has been re-written.

P13061 L15-27 and P13062 L1-5: details on the uncertainty range have been included together with a reference to the PhD thesis of the first author for further details on the procedures.

P13064 L1: a reference has been included.

P13065 L1-6: the station locations have been included in the figure. For Lutjewad we have used the average of the two grid cells just below the actual location since the cells above represent shipping routes in EDGAR and are therefore less representative. The text has been modified to include these clarifications.

P13065 L5: changed accordingly.

P13065 L20: the criteria used to remove samples from the data set have been described in the text. Long storage is mentioned as a possible cause for contamination by e.g. fractionation or leakages through the o-rings of the flask valves. Flask samples are not removed from the data set based on storage duration.

P13066: on average around 10% of the data was excluded by applying the filtering procedure to each of the data series. This has been included in the text.

P13066 L24: the time period was included in table 2 and has been included in the text for clarification.

P13067 L4 and Figure 5: the double peaks are typical for the Northern hemisphere and also seen in other data series. In the fits they are a result of the second and third harmonics. However, our data do not give precise enough information on the exact timing of the second peak in these series, which is why the authors chose not to go into further detail.

P13068 L13: this has been included in the text.

C6185

P13074: the authors have chosen not to include the records for CO<sub>2</sub> for both Mace Head, nor Lutjewad, since there are no concurrent O<sub>2</sub> continuous record available for these stations. As one of the main interests in this paper is the APO, the addition of only the continuous CO<sub>2</sub> record would not be sufficient. Also to improve the estimate of the marine CO<sub>2</sub> uptake, both records are required.

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Interactive comment on Atmos. Chem. Phys. Discuss., 10, 13055, 2010.

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