

## Review's comments

**Manuscript Number:** essd-2023-129

**Title:** 12 years of continuous atmospheric O<sub>2</sub>, CO<sub>2</sub> and APO data from Weybourne Atmospheric Observatory in the United Kingdom

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### Minor comments:

1. Page 32, line 683-685: The larger magnitude of the atmospheric O<sub>2</sub> decreasing rate than the atmospheric CO<sub>2</sub> increasing rate is partially derived from the fact that the  $-O_2/CO_2$  exchange rate for the globally averaged fossil fuel combustion is 1.38.

We have added this into the sentence.

Atmospheric O<sub>2</sub> is decreasing more quickly than CO<sub>2</sub> is increasing because the globally averaged O<sub>2</sub>:CO<sub>2</sub> exchange ratio for fossil fuel combustion is about 1.38 mol mol<sup>-1</sup> (Keeling and Manning, 2014) and the CO<sub>2</sub> increase is buffered by an increasing land carbon sink and ocean carbon sink, whereas the O<sub>2</sub> decrease is only buffered by an increasing land oxygen source and a small ocean oxygen source from O<sub>2</sub> outgassing (Keeling et al., 1996a).

2. Several papers in References, Dlugokencky et al., 2023, Eddebbar et al., 2017, Friedlingstein et al., 2022, Rödenbeck et al., 2008, are not cited in the text.

Thank you for spotting this. They were previously cited in the text in an earlier version of the manuscript. We have now removed them from the reference list.

3. The journal name of Pickers and Manning (2015) in References (Page 41, line 915) is missing.

Thank you for spotting this. We have added in the journal name.

Pickers, P. A. and Manning, A. C.: Investigating bias in the application of curve fitting programs to atmospheric time series, *Atmos. Meas. Tech.*, 8, 1469–1489, <https://doi.org/10.5194/amt-8-1469-2015>, 2015.