

***Interactive comment on* “Direct measurement of the oceanic carbon monoxide flux by eddy correlation” by B. W. Blomquist et al.**

Anonymous Referee #1

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Referee response to “Direct measurement of the oceanic carbon monoxide flux by eddy correlation”

The manuscript presents two days of eddy covariance measurements of CO above a sea near Hawaii, US. To my knowledge this is the first published study where carbon monoxide fluxes have been measured using the eddy covariance technique. In this sense the dataset is unique, but the downside is the very short measurement period. But the major problem is the reliability of the vertical CO flux data. The average afternoon co-spectrum shown in Figure 5 is almost flat and does not follow the typical co-spectra and no inertial subrange is observed. The used methodology to calculate the fluxes raises a question that is a covariance even peak found between the two time

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series? Are the calculated fluxes actual flux values? These questions need to be addressed before the manuscript can be further reviewed or considered to be published in Atmospheric Measurement Techniques. In addition there are some minor comments listed below.

Specific comments

The EC measurement setup and methodology are not explained well enough. What was the anemometer used? How far the air inlet was from the anemometer and was it covered with a mesh. The method to calculate flux values is different than typically used in EC measurements so a reference would be good in the manuscript or more detailed description of data handling. Was any of the hours removed by unstationary conditions? Were other flux quality tests done? What was the data coverage over the two day period? Were the measurements above the detection limit of the instrument? No information about the tube attenuation is given or if it was corrected and if it was not corrected, what kind of errors does it bring to the flux values.

Part of the experimental part is in strange locations: text related to flux calculation methodology (P4813, L1-13) should not be in the results part.

The used time averaging is not clear throughout the manuscript and in some cases 10- or 30-min flux values are used.

P4813, L18: Equation should be given.

P4814, L11: Variables in the equation are not listed.

P4814, L12-17: In the manuscript comparisons are made to DMS flux measurements from different time. DMS is not explained and the whole comparison between DMS and CO remains unclear. Also no error limits for the different values in Table 1 are given.

Figures 1 and 5: How many 10-min samples were used in the plots?

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