

Editor Comments

to revised manuscript of Honkanen et al. (amt-2018-61)

NOTE: The following page (P) and line (L) numbers refer to the revised manuscript version **with track changes**.

1) Response to RC1.6:

The author response is satisfying but I think it would be important to include the observations about the vertical rotation angles in the manuscript text.

“The vertical rotation angle within the sea sector varied within 0-5° with a mean of 3.1° and a standard deviation of 1.4°, indicating that the flow divergence due to the cliff is limited.”

2) P3 L2: Why should it not be possible with open-path analysers to correct the dilution due to water vapor as a point-by-point operation on the high frequency data? The open-path sensors make synchronous fast-response measurements of CO₂ and H₂O!

Instead, it could be pointed out that the density variations due to temperature fluctuations cannot be corrected on the high frequency data of an open-path sensor due to its separation from the sonic.

3) P8 L21: “the outermost points were discarded”. Please explain, why and on what scientific basis this has been done.

4) P9 L5: If the seawater inlet was attached to a float, the statement “...is kept 4.5 m below the mean sea level” is erroneous. The mean sea level is a geographical/cartographic altitude term and does not account for e.g. tidal changes. In my understanding the sentence should be rephrased to “...is kept 4.5 m below the water surface”

5) Section 2.4: The focus of the present manuscript is on H₂O cross-sensitivity effects of the CO₂ exchange measurements. And it is argued in the Conclusions, that the monitoring of the water-air CO₂ gradient provides useful additional information (e.g. for gap filling).

In the light of this argumentation, the authors should also address the problem of H₂O cross-sensitivity in the water-air gradient measurements as described in Section 2.4. Apparently the pCO₂-eq concentration was not measured with pre-drying of the samples? Here the problem of cross-sensitivity might be even larger, because the water and air concentration are carried out with two different instruments.

LANGUAGE CORRECTIONS (list is not exhaustive!)

P5 Figure 1 Caption: replace “flow-through pumping system” with “sea water sampling system” to be more specific (see also Comment to P8 L32 below)

P7 L23: Correct to: “Here, a 30 min period ...”

P8 L12: Correct to: “...met this criteria.”

P8 L15: Correct to: “...within a predefined range ...”

P8 L22: Taking into account the revisions in the preceding sentences, this line should be rephrased to: “...the transfer function in Eq. (4) was fitted to ...”

P8 L32: The expression “flow-through pumping system” is not very specific and needs clarification (In my understanding, each pump is a flow-through system!). I guess an “immersion pump” or “submersible pump” was meant here?

P9 L4: Omit “intake” here (redundant with “inlet” in the same sentence)

P10 Figure 3 caption (4th line): change “cyan” to “orange”, like in the previous line.