**Atmospheric
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Techniques
Discussions

Interactive comment on "Net ecosystem CO$_2$ exchange measurements by the closed chamber method and the eddy covariance technique and their dependence on atmospheric conditions – a case study" *by* M. Riederer et al.

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We thank the anonymous reviewer for his comments which helped us to improve our formulations.

General Comments:

Please see our answer to reviewer #1

Specific comments:

Title:

We have added "case study", because the study is limited to a very specific chamber system and only to low vegetation. This part can be deleted in the title if the editor agrees.

p. 8786, l. 22:

Air pressure fluctuations at the soil surface – e.g. caused by a ventilator – influence the gas exchange. This issue is discussed in the referenced paper. A ventilator just ensures adequate mixing in the chamber but cannot reproduce a turbulence spectrum with smaller eddies and shorter lifetimes close to the canopy and larger eddies at the top of the chamber.

p. 8787, l.1:

The radiation temperatures of the soil and of the top of the chamber are of the same order and therefore the long wave net radiation is close to zero. Outside the chamber the radiation temperature of the down welling long wave radiation can be up to -55 K in the case of clear sky and cold (low aerosol levels) air masses. We wanted to express the large difference, above all on clear nights, where the net long wave net radiation within the chamber is also reduced to a value near zero.

p. 8787 l. 14:

We will add the word "flat" to make clear that the mentioned problems are not present. Furthermore, we will add the time for sunrise and sunset to Fig. 2. We believe that with the complex stability parameter z/L in Fig. 2 the turbulent regime is well described.

p. 8787 l. 21:

In section 2.1 we mention that only one larger data gap was caused by heavy rainfall (38.2 mm) in the night of 31 May to 1 June. Those data were excluded. We can add in p. 8787, line 18 again that the data of the rainy period were not used. The data quality

control scheme is discussed on page 8788 beginning on line 8. By the way, we use the error code of LICOR 7500 to exclude data with rain or we use a weather sensor and delete data when the code is ww>=50.

p. 8791 l. 14:

In agreement with your general comment, it is necessary to select data for which the theory behind the EC method is not fulfilled. In any event, we used only data when both systems provided data of high quality.

p. 8792 l.7:

We will delete the sentence.

p. 8792 l.21:

The oasis effect is a phenomenon of the late afternoon. For further information please see the answer to reviewer #1 and the mid-part of section 2.4.

p. 8793 l. 11-12:

We will delete the symbols in brackets and add the explanation of the symbols to the legends of the relevant figures (Fig. 2 and 3).

p. 8794 l.15:

We will add the "to".

p. 8795 l.9:

Coherent structures are not an error of EC technique but a phenomenon of atmospheric turbulence: well-organized turbulent structures with a period larger than those of the random-like distributed turbulence. We believe that coherent structures are well defined within the relevant references on page 8790, l. 25ff.

Figures:

We believe that Fig. 1 is easily readable and that all legends are well scaled. However, we agree that other figures are hard to read even with the same scaling as that used in Fig. 1. We will discuss this problem with the technical editor. It is only necessary to use the full space of the page. It is probable that the problem will be solved with the better layout of the final printed version.

Interactive comment on Atmos. Meas. Tech. Discuss., 6, 8783, 2013.