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Interactive Comment

## *Interactive comment on* "An automated dynamic chamber system for surface exchange measurement of non-reactive and reactive trace gases of grassland ecosystems" *by* L. Pape et al.

## Anonymous Referee #1

Received and published: 5 November 2008

An automated dynamic chamber system for surface exchange measurement of nonreactive and reactive trace gases of grassland ecosystems by L. Pape, C. Ammann, A. Nyfeler-Brunner, C. Spirig, K. Hens, and F. X. Meixner

This manuscript is a description of a dynamic chamber system designed for reactive gas flux measurements. It is an automated system which has up to six chambers including one blank chamber. Materials are chemically inert to minimize their effect on reactive species. The manuscript is well within scope of the Biogeosciences.

Manuscript deals with all important aspects of the chamber measurements including solar heating of the chamber, purge flow, mixing inside the chamber, and penetration





of PAR and jNO2 radiation to the chamber. The calculation of the effect of O3-NO-NO2 reactions on the emission and deposition fluxes is presented together with simulations and examples from a field experiment. The authors also derive a means to estimate surface resistances from the chamber measurements. They also estimate accuracy of the chamber measurements from the blank chamber results. Comparison between chamber and micrometeorological fluxes gives very good results.

The manuscript is well structured and written and includes illustrative examples. The paper is not too lengthy, in spite of the fact that many factors are dealt with.

I have one question concerning NO2 flux measurements. The authors have used a NOx monitor which uses non-specific converter for NO2 concentrations. How does this affect NO2 fluxes?

Technical corrections.

p. 3177 Meteorology Consult Inc. should be Meteorologie Consult GmbH

Corrections to the Reference List:

Bassin et al., should be 2007 in the reference list. Davidson et al., 2007 is missing from the reference list. Kesselmeier et al., 1997; Muller->Müller, Schafer->Schäfer ; add information that this article is in the Supplement. Maljanen et al., 2004, which is in the reference list, is not in the text.

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