

Interactive comment on “Long term BVOC fluxes above mountain grassland” by I. Bamberger et al.

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As pointed out by the authors, there are only few studies about BVOC emission from grassland. And I suppose that the measurements presented here could be a valuable contribution in this field. However, the paper can be significantly improved if the following points are considered:

1) In the introduction the authors point out the importance of long-term flux measurements for the understanding of the dynamics of grassland VOC emissions. However the results shown are limited to two mean monthly diurnal cycles (June and October) and one short period covering a cutting event. It would be very useful to show more detailed data on the day-to-day variation of the methanol flux during growth (and its dependence on environmental parameters) as well as on the variation over full growing periods. In addition I think the mean diurnal cycle for 1-30 June in Fig.8 is difficult to

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interpret since it averages cutting and growing phases.

2) Important information on the vegetation are missing for the interpretation of the observed fluxes: i) development of LAI and/or biomass over the measurement period(s) in order to analyse the influence of the plant development stage on the methanol emission (see e.g. Fall and Benson, 1996; Brunner et al., 2007); ii) was there a third cutting event in 2008 beside 10 June and 10 August? iii) what was the plant composition of the grass vegetation, particularly the contribution of clover species which are supposed to show a higher methanol emission than graminaceous species (see Galbally and Kirstine, 2002; Brunner et al., 2007)

3) In my opinion there is not enough evidence given in this paper for the conclusion, that the vDEC "requires less corrections...is easier to use and more reliable" than the gap filling method (P91,L20-21 & P95,L1-2). At least, it should be quantified how large the difference in the high-frequency damping correction was between the two methods. Additionally it has to be considered that the lag-time determination is more difficult for the vDEC method with the much noisier covariance functions.

4) P90,L11-13: It has to be considered that the distance of the maximum of the footprint function (used here as a quality criterion) usually comprises less than 50% of the flux footprint area.

5) P90,L6-8: The term 'background concentration' is misleading in this context. As indicated in section 2.3, the 'instrumental background' was determined by analysing zero-air. Thus the corresponding concentration is equal to zero by definition. The raw signal output of the PTR-MS when measuring zero-air may be denoted as 'zero-air signal' or 'signal offset'.

New Reference: Galbally, I. E. and Kirstine, W.: The Production of Methanol by Flowering Plants and the Global Cycle of Methanol, *J. Atmos. Chem.*, 43, 195–229, 2002.