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**Biogeosciences Discussions**

# *Interactive comment on* "Long term BVOC fluxes above mountain grassland" *by* I. Bamberger et al.

**Anonymous Referee #1**

Received and published: 12 February 2010

Overview: This paper presents data over a prolonged period - unusual for flux measurements, particularly for BVOCs. The data add to the corpus of measurements using the PTR-MS/vDEC techniques, and appear to have been made thoroughly. However, more details of the exact techniques used would greatly improve the paper (see below). It would be helpful if the final version were read by a native English speaker before submission - although the current version is not ambiguous. The conclusions section, and discussion in relation to previously published similar studies, is weak.

Specific:

p.87 line 5: PFA or PTFE?

p.87 line 20: lined = switched?

p.87 line 24: was the calibration gas mixture at ambient or zero humidity? This



can/does affect sensitivity for at least some compounds, so should be stated.

p.87 line 29: 0.5s is long for eddy covariance - but the Table shows this dwell time was not used for flux measurements - suggest a minor rewording to improve clarity.

p.89 top: the choice of lag time is all-important to achieving accurate flux measurements. More detail is needed on how lag times were determined, and the criteria used for exclusion of data when the lag time was not well characterised. Use of an inappropriate lag time leads to a bias low in the flux - some estimate of the uncertainty from the chosen criteria for data inclusion/exclusion should be presented. There also needs to be some justification for inclusion of data for which an appropriate lag time was not available - setting it to the 'value of a neighbouring measurement' (whatever that means) may not be the best estimate. How much of the lag time was created by the flow/sampling system, and how much by the data-handling system?

p.90 line 3: at some stage the absolute contribution of low and high-pass filtering on fluxes needs to be presented - although corrections were made, I cannot see easily by how much the fluxes were corrected.

p.90 line 8: what is the definition of 'significant background drift' - make it quantitative.

p.92 line 6: quote actual reported ranges and conditions - give more detail

p.92 line 17: did the calibration mixture contain hexenal? If not, how was the signal calibrated?

p.93 line 11: how were these compounds calibrated?

line 12: methanol concentrations in Figure 8 appear to be in range 4-7 ppb not 7-9 ppb as stated.

p.93 line 19: the statement about stomatal conductance and diurnal radiation may be specific to this site and this should be noted.

p.95: the discussion is rather short, and lacks any detailed comparison with the pub-

lished data on methanol fluxes to/from other types of vegetation. There should be a comparison with absolute measured fluxes, patterns of behaviour (no deposition seen here, but observed elsewhere) and a critical evaluation of the measurements in the light of previous results. Moreover, the only discussion appears to be in terms of methanol, whereas a range of other BVOC fluxes were measured. How do they compare with other grasslands/short vegetation?

Table 1: could/should show which compounds were included in the calibration mixture, and what the measured sensitivities were (cps/ppb or similar)

Table 2 (and text): was the discrimination between day and night based on time of day or solar radiation level, and how did this change through the seasons? What do 'min' and 'max' refer to? Does this mean that only 31 half-hour periods were included from a whole month? The table needs better explanation.

Figure 3: vertical axis has unusual units!

Figure 5: label two halves of graph as 'day' and 'night' to help readers

Technical comments: p.84 line 20 VOCs reach the atmosphere.....estimated global emission....

line 26 affect

p.86 line 5: example of a short....

line 10: village of Neustift

p.92 line 6: same range as the.....

line 9: fluxes of compounds other than methanol....

p.93 line 14: during the daytime.

p.94 line 16: Norway spruce

line 24: an intensively managed...



Interactive comment on Biogeosciences Discuss., 7, 83, 2010.