

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

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Received and published: 17 February 2010

General

The paper of Bamberger *et al.* describes a state-of-the-art measurement of volatile organic compound exchange of an Alpine grassland during 2008. Measurements were done with a proton-transfer-reaction mass spectrometer (PTR-MS, Lindinger *et al.*) and the eddy-covariance technique. As described by the authors VOC sources of different vegetation types are currently under revision and potential compounds as well as emission strengths are missing, leading to an atmospheric VOC budget with big gaps of knowledge (Goldstein and Galbally, 2007). Although it seems from the measurements that grasslands do not emit the very reactive compounds hardest to detect with the present techniques, their emission even at the altitude of the investigated site

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in Tyrol, Austria were remarkable.

When reading the paper I would have been happy about a little bit more information on the eddy covariance setup, i.e. more than a single reference and about a more intensified discussion about other studies conducted for similar vegetation types. With this I am sure the present study would be capable to express its strength even more and might attract a broader range of readers, who look on a broader scale. Although I would like to have some specific points clarified, I suggest acceptance of the study after some minor revisions.

Detailed points

- Please give more information about the site, such as size and surrounding vegetation, since your approach would display a fraction of the emissions nearby as well.
- As stated above I would be glad if the authors could provide more details in section 2.
- What about the soil conditions such as wetness, rain fall etc during the measurement period? This would cause different stress response of the grassland. Could you provide a plot with a higher resolution than the statement 85 mm (p. 92)?
- You describe the site as managed by a farmer. Were there any sorts of nitrification used? If so, when have they been applied? Any effect on the emissions and compounds detected?
- You concentrate on three different VOCs, i.e. methanol, acetaldehyde and hexenal and mention other VOCs? Were these the only one? Any chance to learn more about the other VOCs? As it is apparent from Figure 8 monoterpenes were not emitted by the grassland maybe from trees in the vicinity but deposit at the site.
- Methanol is known as a stress emission of grasslands. But what about acetaldehyde? Is this compound emitted straight away or potentially an oxidation product of a different faster reacting species maybe hexenal?

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