

## ***Interactive comment on “BVOC ecosystem flux measurements at a high latitude wetland site” by T. Holst et al.***

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Micrometeorological and biogenic measurements taken in a sub-arctic wetland are presented and very thoroughly discussed. This data set completes previous observations and provide a better understanding of the relationship of isoprene emission with meteorology and vegetation dynamics at these Northern latitudes. This is in my opinion, the most interesting and original part of the research (section 3.3 and 3.4). Below, I provide some suggestions and comments to the paper.

Abstract

- Line 20: What do they mean by some nocturnal deposition? Please clarify it. It is also mentioned loosely at page 21145 (line 28).

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## Introduction

-Line 15-20: The authors stressed the dependence of BVOC emission to biological and chemistry. In my opinion, the influence of meteorological factors, for instance boundary layer development, clouds, turbulence-canopy interaction,etc; on the BVOC emission is also not well studied and it exerts a strong influence on the emission levels. Could the authors comment on this effect?

## Methods

### Experimental site

- Line 1-15. I will include here information on the canopy height (it is included at page 21144) and the roughness length of the site. Is the roughness length equal for all the wind directions?

- Page 21137. Line 15. The flux measurements are averaged over a period of 30 minutes. Is this period adequate? What about the contributions of low frequencies to the fluxes? At section 3.2.3., it is mentioned the use of Ogives. From this spectral analysis, it is possible to retrieve the averaging time to calculate the fluxes depending on the turbulence and atmospheric characteristics.

### Results and discussion

- Page 21138. Line 21-25. Could the authors specify quantitatively the time scales of turbulence and chemistry for the different reactants?

- Section 3.2. As mentioned previously, I miss here some comments on the role of low frequencies on the flux calculations.

- Section 3.3. Were clouds observed during the measurement period?

- Page 21146. Line 1-25. It will be very enlightening to show a comparison of the daily evolution of the measured fluxes against the flux calculations. Figure 11 shows BVOC measurements at four different periods. How did the flux algorithms with the

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three different assumptions compared with the observed fluxes?

- Page 21148. Line 21148. I will include at figure 11, the daily evolution of the sensible heat flux and latent heat flux. By so doing, the data set will be more complete allowing future studies of the role of surface and boundary layer dynamics on BVOC compounds. At least, I will be personally interested (see de Arellano et al, ACPD 9, 4159-4193, 2009).

- Figure 12. The discussion here can be more elaborated. For instance, I see that for the same period I, different values of the isoprene flux are observed for the same range of sensible heat flux values (between 100-150 W/m<sup>2</sup>). Is there any explanation?

- In view of the discussion at page 21146 (lines 5-10), would it be more interesting to include and to discuss a figure of PAR versus the isoprene emissions at the different periods?

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Interactive comment on Atmos. Chem. Phys. Discuss., 8, 21129, 2008.

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