

Interactive comment on “In-situ ambient quantification of monoterpenes, sesquiterpenes, and related oxygenated compounds during BEARPEX 2007 – implications for gas- and particle-phase chemistry” by N. C. Bouvier-Brown et al.

Anonymous Referee #1

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General comments:

The manuscript by Bouvier-Brown et al. describes the concentrations of mono- and sesquiterpenes and some oxygen containing compounds in a ponderosa pine forest in the Sierra Nevada Mountains in California. These measurements are very interesting and of utmost importance since there are so few of this kind of experimental data available. The ozone removal technique adopted in the experimental set up did

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not allow quantitative analysis of β -caryophyllene and α -humulene. This is unfortunate, because on the basis of emission rate measurements β -caryophyllene would be an important compound in the area. Hence the current results give only lower limits of the sesquiterpene mixing ratios and of the effect sesquiterpenes have on the OH and ozone reactivity. As pointed out by Thomas Karl these problems could now be avoided by using other ozone removal techniques as shown by Robert Arnts. In spite of this shortage the paper fits well to ACP and I recommend its publication after minor revisions.

Specific comments:

1. The second measurement period was cooler, but how much cooler? Figure 1 shows the temperature, but the mean temperature and radiation could also be shown in Table 1.
2. What was the effect of rain on the mixing ratios? Did the relative contributions remain the same?
3. Units are missing from Table 1.
4. Figure 4 is unclear. It could be divided into two different figures, one comparing the emissions and concentrations and the other one comparing the concentrations and reactivities. The concentrations of light alkenes could also be shown.
5. On the basis of emission rate measurements there are much more compounds emitted by the vegetation than are measured in the forest air. Wouldn't it be more correct to evaluate the reactivity on the basis of emission rate measurements than the concentrations because all emitted compounds react in the atmosphere, although some of the reactions are so fast that these compounds can never be measured in the air?