

Interactive comment on “Isoprene and monoterpene emissions from secondary forest in northern Benin” by J. E. Saxton et al.

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Saxton et al. report observations of terpenoid emissions and ambient concentrations in a West African landscape and discuss the potential importance of landuse change as a controlling factor. There are only a few previous studies of terpenoid compound emissions and ambient concentrations in Africa and none in this region. This is an original contribution with some interesting results and should be published after the authors consider the following comments:

The authors identify the need to “assess biogenic emissions . . . to obtain a more comprehensive picture”. Does this mean using these results to improve quantitative emission estimates for this region? Some discussion on how to do this would be useful.

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Were any tests done to look for decomposition or conversion on the tubes? Previous studies suggest that this occurs with the type of adsorbents used for this study—especially when kept at ambient temperature.

What are the temperature and light intensities associated with the emission rates given in table 2? How many measurements are associated with each value in table 2? Which are branch enclosure and which are cuvette measurements? The Isoberlina and Burkea isoprene emission rates are very low compared to previous measurements (e.g. Otter et al. Atmos. Environ 2002). Is it due to low light or very high temperatures?

Page 4989 line 10 and page 4999 suggest good agreement between essential oil analysis and emission. Please provide any literature references that support this. I find that they are often in disagreement—probably due to the location of some MT in structures that are open to the atmosphere and others in structures that are closed. I do not see very good agreement between the relative contributions of individual MT shown in table 2 (emissions) and table 3 (essential oil). Given these differences, it is not clear what one can conclude regarding the importance of very reactive compounds (Page 4997, line 28). It is informative that they occur but is there any indication of their importance?

Table 3 indicates that “others” contribute a majority of the composition of most species. Since they are so important, it would be valuable to indicate at least a few of the most important species that make up the “other”

Page 4996, line 15 states that “studies considering deforestation in the tropics have not taken into account the effects of the species that replace native forest”. Some examples of studies that have done this include Wiedenmyer et al. Earth Interactions, 10: 3, 2006 (oil palm with high isoprene emissions) and Geron et al. Atmospheric Environ 40:1759–1773 2006 (rubber trees with high monoterpene emissions)

Page 4996, line 26. I suggest either using “light independent” or “temperature-only dependent” to describe these emissions since both types of emission are temperature dependent.

It is not necessary to show the coordinates in the legend for figure 1. The reader can get this information from the figure.

Figure 5 caption says that limonene increases with increasing temperature but the pattern is not very convincing. I suggest either providing some fit and a correlation coefficient or revising the caption to just say that you are showing the relationship between concentration and temperature (or eliminate the figure).

Interactive comment on Atmos. Chem. Phys. Discuss., 7, 4981, 2007.

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