

Interactive comment on “Ozone stress as a driving force of sesquiterpene emissions: a suggested parameterization” by E. Bourtsoukidis et al.

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Received and published: 9 August 2012

We would like to thank Ana Maria Yañez Serrano for her short comment and her nice words concerning the importance of the paper. We believe that it is clear from the article that we didn't get rid of any excess sesquiterpene (SQT) emissions. All measurements were carefully investigated with respect to mechanical disturbances and similar issues and the points that clearly affected by the treatment were excluded from the analysis. The corrections for the ozone destruction applied, were simply performed by considering the individual reaction rates for the reaction of SQT with ozone and the amount of SQTs detected at the instruments inlet. Therefore the monitored ozone concentration inside the cuvette was taken into account at every measurement step (5 measurements during one closure period of 36sec) in order to quantify the SQTs that

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were destroyed during the measurement time. Adding the corrections for deposition and dilution we calculated the SQT mixing ratios that we would have measured without these losses. For the GC-MS analysis, branch samples were sent to Finland since the goal was only to quantify the individual composition. In Finland the adsorbent samples were taken from the Tedlar bags where the branches had been sent and ozone must have been destroyed from sampling bags before the sampling took place.

Perhaps the comment concerning the oxidation in the lower canopy level was a result of misunderstanding. Measurements were conducted at the edge of the forest to the open area of the hill top. This means that although measured at a height of five meters, the branch was facing the atmospheric ozone mixing ratio just as above the canopy. This excludes a notable reduction of ozone stress related emissions due to a lower height and a diminished ozone concentration within the vegetation layer (forest). For modeling studies this is a key aspect regarding the vertical profile with a maximum emission to be expected at the top of the forest. So we also need to consider the geographical characteristics of the site (section 2.1, page 7666). Wind coming from Southern or Southeastern directions transports anthropogenic ozone precursor gases from the Rhine-Main area causing a steady replacement of destroyed O₃. Nevertheless, the decrease of O₃ inside the cuvette during one close was substantial. This was partially caused by NO_x and partially by biogenic VOC emissions. For the site of interest both SQT emissions and ozone mixing ratios were peaking after noon and a direct relationship was observed during the complete measuring period. Of course, measurements at different heights and trees would have provided us with more information and maybe would reveal an inverse relationship, but due to a limited number of instruments this will be addressed in a future study. Finally, I will rephrase or revise the suggested lines at the final manuscript indicating the words cited by " in front of the reference to make the citation more evident.

Interactive comment on Biogeosciences Discuss., 9, 7661, 2012.

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