

Atmos. Chem. Phys. Discuss., referee comment RC1
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Comment on acp-2022-588

Anonymous Referee #1

Referee comment on "High emission rates and strong temperature response make boreal wetlands a large source of isoprene and terpenes" by Lejish Vettikkat et al., Atmos. Chem. Phys. Discuss., <https://doi.org/10.5194/acp-2022-588-RC1>, 2022

The manuscript by Vettikkat et al. presents an impressive EC BVOC dataset focusing on terpenes in a Boreal wetland. It is well written and publication is warranted after addressing some minor comments below.

The abstract is too long. A large part of the abstract reads more like an Introduction. The abstract could be shortened to highlight the main findings more concisely.

Line 108: What is a classical PTR-MS?

Line 185 and Fig S5. VOCUS seems to underpredict isoprene or the GC seems to overpredict isoprene– Could this perhaps be related to a transmission issue/variation of VOCUS during the campaign for low molecular weights – how was the transmission checked? For such a local isoprene source, one would expect that the flux stationarity criterium for isoprene (and others?) would be violated for a large fraction of the dataset (?). This does not seem to be the case. Alternatively the GC measurements could be overestimating isoprene concentrations. Were the GC cartridges cross calibrated on site with the isoprene standard?

Figure 2: adding the $\times 10$ only to the isoprene panel is somewhat confusing at first sight. Only after reading the figure caption it becomes clear that all compounds were multiplied by 10 for the first part of the campaign.

Figure 4 cc: The reported fluxes are extremely high. Higher than in most Boreal forests, particularly also for DT. MT / SQT ratios have typically been reported as a 10 : 1 ratio in Boreal forests. Here, the emissions are comparable (e.g. 1:1) DT seems 50x higher than fluxes reported over a Boreal forest.

Line 535. The authors emphasize that such high fluxes could have significant ramifications for studying NPF in the Boreal region and future studies should put more emphasis on wetlands. To that end, can the authors at least qualitatively estimate how much wetlands could contribute to reactive terpene emissions compared to Boreal forests (e.g. by scaling up based on land cover).

Minor comment:

References should be double checked for ACP style.