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Interactive comment on "Isoprene and monoterpene emissions from alder, aspen and spruce short rotation forest plantations in the UK" *by* Gemma Purser et al.

Anonymous Referee #2

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General comments

The paper is aimed at describing how different planted trees affect air quality in Great Britain. VOC emission rates were measured in two years 2018 and 2019. The amount of samples taken was limited considering quite large variability of BVOC emissions. The goal is not reached, but this is a good start to evaluate air quality impacts of planted forests, which is an important topic now when forests are being planted for carbon sequestration purposes.

The paper is well written, uncertainties of the measurements are evaluated, earlier literature is well cited and the overall presentation is well structured and clear. The

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Discussion paper

paper is suitable for publication in Biogeosciences after minor revisons.

Specific comments

The paper is aimed at evaluating VOC emissions impact on air quality, i.e. ozone and aerosol formation, but the measurements include only isoprene, monoterpenes and oxygenated monoterpenes. Sesquiterpenes (SQT) could have been measured at the same time and their secondary organic aerosol (SOA) formation potential is much greater than that of monoterpenes. It is really pity that the SQTs are excluded from the study, they would certainly have had an impact and SQT emission rate data is overall very sparse. In addition to air quality impacts, VOC emissions have also climate impacts, other than C sequestration. SOA formed from the reactions of the VOCs impact the climate by scattering and absorbing radiation. This is beyond the scope of the current manuscript but highlights the importance of knowing also SQT emission rates.

Measurements: -It is very good that the collars were placed already previous year. This certainly reduced emissions from cut roots etc. -Usually Teflon films are used as chamber materials in VOC emission measurements. Why did you choose acrylic chambers? Did you test the suitability of acrylic chambers before the measurements that VOCs are not retained on the surfaces or for memory effects? -All VOC emissions have pronounced diurnal variation with maximum emission during the afternoon and minimum at night, mostly driven by temperature and light. Therefore, it is important to say if you use measured emission rates or standardized emission potentials. Throughout the text, please be accurate what you mean. For example, in Figure 1 and 3 captions it says emissions, but are they measured rates or standardized potentials? -I agree with the authors that measurements on canopy scale would be very useful, but the measurements of the larger VOCs would be even more important.

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