

Review : Long-term fluxes of carbonyl sulfide and their seasonality and interannual variability in a boreal forest

I find that the manuscript has been significantly improved. The authors replied to my comments in an appropriate manner and followed my main suggestions. They added more explanations in the "materials and methods" section and performed additional evaluations of the COS fluxes simulated by the SIB4 Land Surface Model against measurements at Hyytiälä. There are still some minor points that need to be clarified before publication.

5 Page 4, line 100: Add a reference as for the provenance of the equation 1.

Page 5, equation 6: Replace T by T_a .

Page 6, section 2.6 : Add a sentence precisising that the year 2014 was not used in determining fitting parameters.

Page 7, line 197: Consider adding a sentence saying that e is believed not to be gas dependent.

10 Page 7, section 2.7 : Although the authors added some clarifications in the review regarding the e parameter, they do not appear in the manuscript! Add a few sentences explaining the reasons why e is equal to 2.1. "The in-situ LAI is the all-sided lead area index, while SIB4 LAI is projected leaf area index. For this reason, e in SIB4 is fixed to 2.1".

Page 8, lines 220-224: The authors calibrate now the SIB4 meteodata based on in situ measurements but the calibration method is not mentioned clearly in the manuscript. Add a sentence explaining how the SIB4 meteodata are calibrated with a reference to Figure S10.

15 Page 10, legend of the Figure 2 : "show daily gap-filled averages (see Text S1)" Where is the Text S1?

Page 11, line 297: "avoid including radiation related-correlation". Explain why there is a radiation related correlation.

Page 14 ,Table 1: Given the high non-linearity underlying the equations 7-11, the statistical analysis would require a random forest approach as done in Maignan et al., 2021 to deal with the high non linear interactions between variables.