

***Interactive comment on “Transport of the 2017 Canadian wildfire plume to the tropics and global stratosphere via the Asian monsoon circulation” by Corinna Kloss et al.***

**Anonymous Referee #1**

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The paper is well written and deals with observations and simulations of the unique, record-breaking northern hemispheric stratospheric smoke event that occurred in 2017-2018. Large amounts of biomass burning smoke (from bush fires in western Canada) reached the upper troposphere and (later on) the stratosphere up to about 20 km height and circled around the globe. The paper shows that the smoke even reached tropical regions via the Asian monsoon circulation.

The paper provides very interesting smoke observations (SAGE III, OMPS). As a suggestion, one could try to compare the observations with respective lidar observations (Hu et al., ACP, 2019, Haarig et al., ACP, 2018, CALIOP from September 2017 to March

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2018).

Regarding the simulations: In Haarig et al. (2018), they show a size distribution (the soot showed a pronounced aged accumulation mode, but no coarse mode) and they found single scattering values of 0.74 (355nm), 0.8 (532nm), and 0.83 (1064nm). In your simulation you use SSA of 0.9-0.93. This is quite high for soot! Any comment? Maybe, another simulation with SSA of 0.8-0.85?

Please also check the paper of Ditas et al. (PNAS, 2018/19) concerning their simulation of the impact of soot on the radiation field.

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