



Supplement of

Global modeling of brown carbon: impact of temperature- and humidity-dependent bleaching

Xinchun Xie et al.

Correspondence to: Yuzhong Zhang (zhangyuzhong@westlake.edu.cn)

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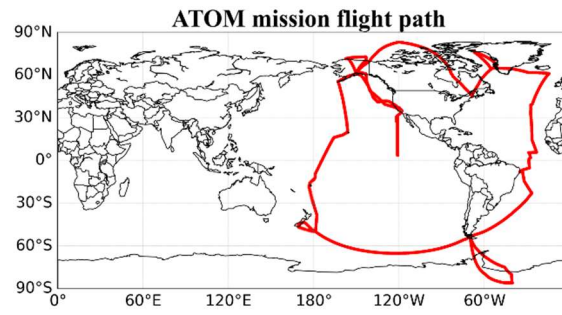


Figure S1. The flight path of ATom-4 mission.

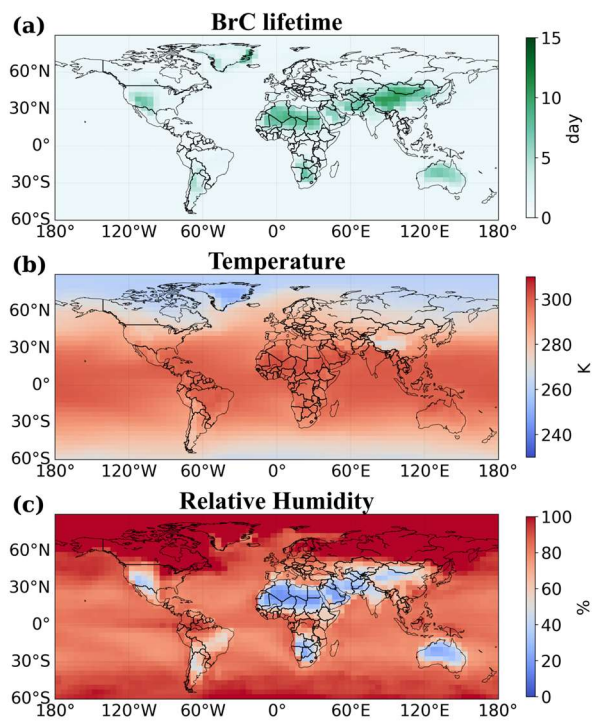


Figure S2. The global distribution of annual BrC lifetime (a), temperature (b) and relative humidity (c) at surface.

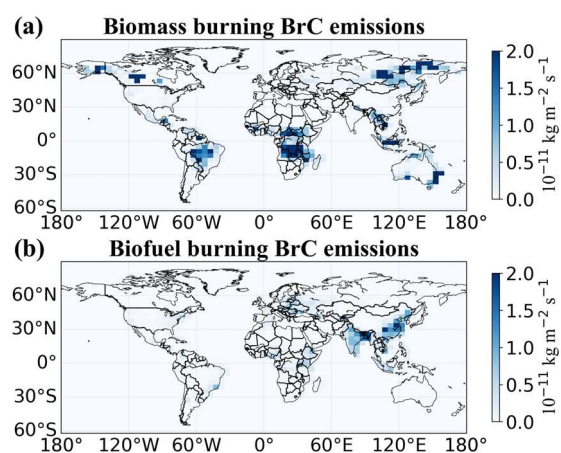


Figure S3. (a) Global biomass burning emissions from GFED4s and (b) biofuel emissions from Bond (2007) distribution of BrC in 2019.

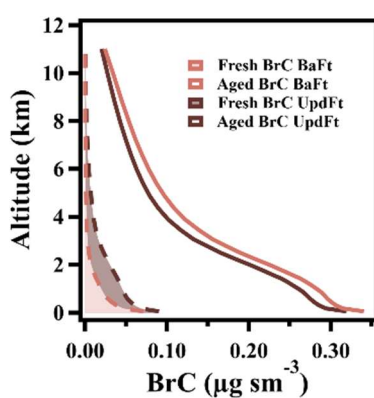


Figure S4. The vertical profiles of fresh and bleached BrC concentration.

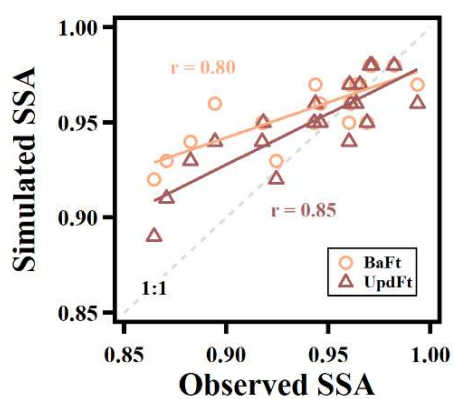


Figure S5. Comparison of SSA at 440nm between AERONET observations and simulations.

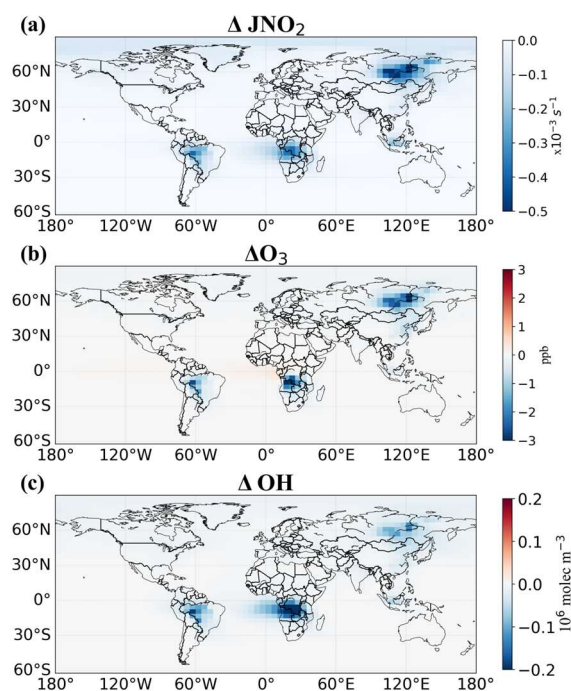


Figure S6. The effect of BrC absorption on global surface photolysis rates JNO₂ (a), O₃ (b) and column OH (c) at August, 2019.

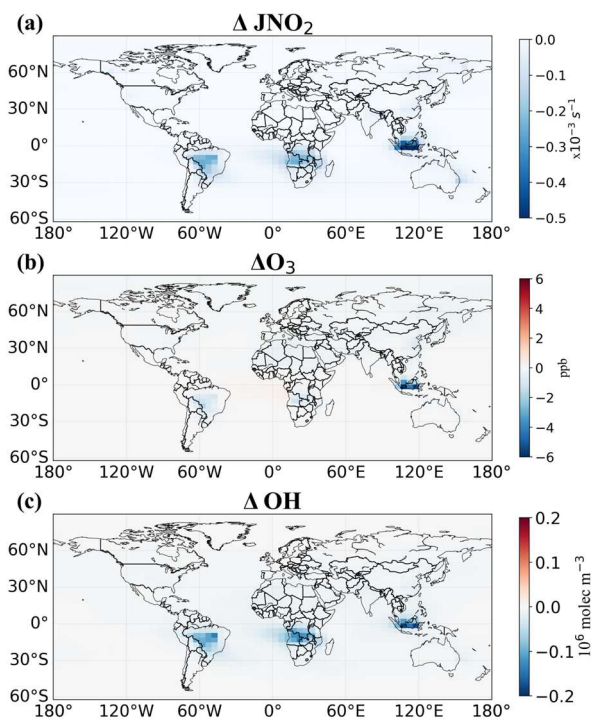


Figure S7. The effect of BrC absorption on global surface photolysis rates JNO₂ (a), O₃ (b) and column OH (c) at September, 2019.

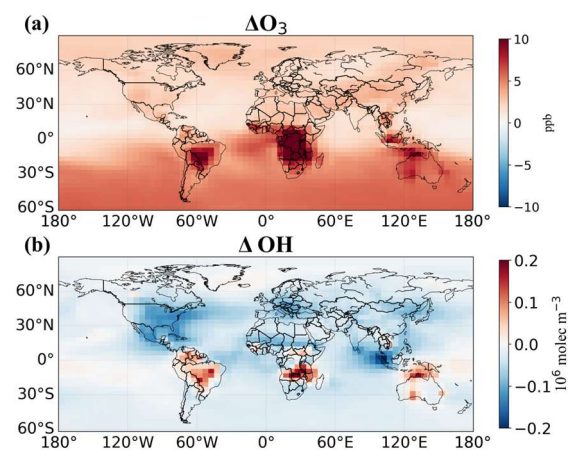


Figure S8. The effect of biomass burning emissions (including all gas and aerosol species) on global surface O_3 (a), and column OH (b), computed as the difference between simulations with and without biomass burning emissions.